J1.1

Reference:

To produce a list of projects previously turned down by the Board in previous decisions which are now included in the M-factor application for 194 projects.

Response:

Alectra Utilities provides Table 1 below which identifies the two projects for which ICM funding was previously sought in Alectra Utilities' 2018 EDR Application (EB-2017-0024), but not approved by the OEB, and which are included in the M-factor project list.

Table 1 - M-factor Projects previously requested for incremental funding

Project Code	Project Name
101480	Build Double Circuit 27.6kV Pole Line on 19th Ave between Leslie St and Bayview Ave
150047	Rear Lot Supply Remediation - Royal Orchard - North

J1.2

Reference:

To provide the cable replacement and cable rehabilitation project information that's in the plan. Also to indicate which ones are designated in the M-Factor component as opposed to the overall DSP in base rates. Also to check against Exhibit JT2.2, Question One, SEC 2, and CCC-9 and provide a consolidated list of underground cables.

Response:

The attached Excel file J1.2_All Cable Projects, provides a listing of all cable renewal projects (injection and replacement) contained within the Distribution System Plan ("DSP"). Alectra Utilities has identified the projects which are included in the M-Factor. Alectra Utilities has also validated against other responses, and there are no discrepancies with respect to CCC-9. However, in response to JT2.2 and SEC-2, Alectra Utilities provided cable projects exceeding $1MM. In response to this undertaking, Alectra Utilities has provided all cable projects included in the DSP.

Alectra Utilities submits that, as provided in response to AMPCO Technical Conference Undertaking JT2.2, Question 7, performing a summation of the benefits is not a reflection of realized reliability improvement. As identified in JT2.2, there are two types of reliability benefits: one time benefits versus perpetual benefits.

J1.2

ATTACHMENT 1 – All Cable Projects

Project Number	Funding	Project Name	SAIDI (hrs)	SAIFI
151301	Base	Cable Replacement Project - (HAM) - Rymal - Mud - Upper Centennial - Upper Red Hill Valley	0.087073	0.029024
150134	Base	Cable Injection Project - (V37) - Langstaff and Weston, Vaughan	0.019906	0.009953
151363	Base	Cable Injection Project - (M25) - 14th - McCowan - Steeles - Old Kennedy, Markham	0.008758	0.004379
150571	Base	Cable Injection Project - (J3-K3-N2-O2), Brampton	0.004999	0.002499
151362	Base	Cable Injection Project - (M39) - 16th - Warden - Hwy 7 - Woodbine, Markham	0.001327	0.000664
151360	Base	Cable Injection Project - (M31) - 14th - Old Kennedy - Steeles - Warden, Markham	0.009024	0.004512
151303	Base	Cable Replacement Project - (HAM) - Stone Church - Garth - Lincoln M. Alexander	0.003080	0.001027
151367	Base	Cable Injection Project - (M21) - Hwy 7 - Markham - 16th - McCowan, Markham	0.001858	0.000929
151366	Base	Cable Injection Project - (M19) - Markham - Steeles - McCowan - 14th, Markham	0.002389	0.001194
151318	Base	Cable Injection Project - (I3) -Bovaird - Dixie - Queen - Hwy 410, Brampton	0.007431	0.003716
151460	M-Factor	Cable Injection Project - (V17) - Langstaff - Keele - Rutherford - Dufferin, Vaughan	0.003229	0.001615
150025	Base	Cable Injection Project - (V18) - Major Mackenzie and Keele, Vaughan	0.004379	0.002190
151066	Base	Cable Replacement Project - Hamilton Mountain URD	0.015170	0.003792
150014	Base	Cable Injection Project - (V01) - Yonge - Steeles - Bathurst - Center, Vaughan	0.003981	0.001991
151302	Base	Cable Injection Project - (HAM) - Rymal - Mud - Upper Centennial - Upper Red Hill Valley	0.042829	0.021415
151314	Base	Cable Injection Project - (G2) -Wanless - Kennedy - Bovaird - Main, Brampton	0.003096	0.001548
151409	Base	Cable Replacement Project- Central Parkway & Bloor (29), Mississauga	0.003480	0.001832
151307	Base	Cable Injection Project - (HAM) - Upper Sherman - Stone Church - Nebo - Rymal	0.005420	0.002710
151429	Base	Cable Injection- 003- AREA36 -Matheson & Kennedy, Mississauga	0.001435	0.000755
151299	Base	Cable Replacement Project - (HAM) - Millen - Barton - Fruitland	0.015670	0.005223
151402	Base	Cable Replacement Project- Montevideo & Treviso (19a), Mississauga	0.006079	0.003200
151315	Base	Cable Injection Project - (G5) - Steeles - Kennedy - Hwy 407 - Main, Brampton	0.002743	0.001371
151456	M-Factor	Cable Injection Project - (V50) - Hwy 7 - Kipling - Steeles - Hwy 27, Vaughan	0.006547	0.003273
150261	Base	Cable Injection Project - (V38) - Rutherford and Weston, Vaughan	0.001858	0.000929
151275	Base	Cable Injection Project - (SCH) - QEW - Highway 406 - Martindale Road	0.044390	0.022195
151298	Base	Cable Injection Project - (HAM) - Govenors - Old Ancaster	0.014934	0.007467
151300	Base	Cable Injection Project - (HAM) - Millen - Barton - Fruitland	0.031330	0.015665
151424	Base	Cable Replacement Project-Miss. Valley & Bloor (15) Mississauga	0.002458	0.002065
151313	Base	Cable Injection Project - (F5) - Steeles - Main - Hwy 407 - McLaughlin, Brampton	0.004822	0.002411
151349	Base	Cable Injection Project - (V16) - Langstaff - Dufferin - Steeles - Jane, Vaughan	0.001592	0.000796
151352	Base	Cable Injection Project - (M38) - Hwy 7 - Warden - 14th - Woodbine, Markham	0.001681	0.000840
151062	Base	Cable Replacement - (279) - 201 Silvercreek Pky N Subdivision, Guelph	0.000801	0.000100
151361	Base	Cable Injection Project - (V26) - Teston - Keele - Major Mackenzie - Jane, Vaughan	0.002079	0.001040
151407	Base	Cable Replacement Project- Glen Erin & Burnhamthorpe (12), Mississauga	0.005669	0.002984
151325	Base	Cable Replacement Project - (M31) - 14th - Old Kennedy - Steeles - Warden, Markham	0.010307	0.005153
151457	M-Factor	Cable Injection Project - (V25) - Major Mackenzie - Keele - Rutherford - Jane, Vaughan	0.003802	0.001901
151339	Base	Cable Replacement Project - (BA19) - Letitia - Anne - Edgehill - Ferndale, Barrie	0.006104	0.003052
151316	Base	Cable Injection Project - (H2) - Wanless - Heart Lake - Bovaird - Kennedy, Brampton	0.003229	0.001615
151121	Base	Cable Injection Project - (V43) - Hwy 7 and Pine Valley Dr, Vaughan	0.001327	0.000664
151351	Base	Cable Injection Project - (M32) - Hwy 7 - Main - 14th - Warden, Markham	0.001592	0.000796
150026	Base	Cable Injection Project - (M43) - John and Woodbine, Markham	0.001371	0.000686
150021	Base	Cable Injection Project - (V36) - Steeles and Pine Valley, Vaughan	0.002322	0.001161
151355	Base	Cable Injection Project - (M26) - Hwy 7 -McCowan - 14th - Old Kennedy, Markham	0.001637	0.000818
151459	M-Factor	Cable Injection Project - (V24) - Langstaff - Jane - Rutherford - Keele, Vaughan	0.000929	0.000464
151418	Base	Cable Replacement Project- Innovator & Courtney Park E (4), Mississauga	0.004450	0.003739
151310	Base	Cable Injection Project - (E4) - Queen - McLaughlin - Steeles - Chinguacousy, Brampton	0.002964	0.001482
151336	Base	Cable Replacement Project - (BA22) - Sunnidale and Anne, Barrie	0.004247	0.002123
151305	Base	Cable Injection Project - (HAM) - Stone Church - Upper Sherman - Rymal - Upper Wellington	0.024269	0.012134
151176	Base	Cable Replacement Project - MS Argentia distribution feeder(s) upgrade	0.003034	0.000758
151404	Base	Cable Replacement Project- Central Pk E & Miss. Valley (28)	0.000629	0.000331
151463	M-Factor	Cable Injection Project - (F4-G4) - Main - Steeles - Chinguacousy - Queen, Brampton	0.000619	0.000310
151306	Base	Cable Injection Project - (HAM) - Upper Wentworth - Lincoln M. Alexander - Upper Ottawa - Stone Church	0.001837	0.000919
151432	Base	Cable Injection- 007- AREA 43 & 51- Hurontario & Derry Rd W, Mississauga	0.000962	0.000507
151403	Base	Cable Replacement Project- Montevideo & Battleford (19b), Mississauga	0.000756	0.000398
151359	Base	Cable Injection Project - (M16) - Major Mackenzie - 9th - 16th - Hwy 48, Markham	0.001150	0.000575
151464	M-Factor	Cable Injection Project - (F3-G3-H3) - Phase 2, Brampton	0.002123	0.001062
151328	Base	Cable Replacement Project- (21a) Darcel & Brandon Gate, Mississauga	0.000764	0.000402
151461	M-Factor	Cable Injection Project - (V51) - Langstaff - Kipling - Hwy 7 - Hwy 27, Vaughan	0.001194	0.000597
151420	Base	Cable Replacement Project-Eglinton & Credit Valley (5), Mississauga	0.011163	0.009381
151433	Base	Cable Injection- 008- AREA46 - Glen Erin & Aquitane, Mississauga	0.000017	0.000009
151364	Base	Cable Injection Project - (V23) - Hwy 7 - Keele - Langstaff - Jane, Vaughan	0.001150	0.000575
151401	Base	Cable Replacement Project- (21b) Sigsbee & Morning Star, Mississauga	0.000844	0.000444
151348	Base	Cable Injection Project - (M20) - Hwy 7 - Markham - 14th - McCowan, Markham	0.000752	0.000376
151430	Base	Cable Injection- 005- AREA 38- Bristol & Creditview, Mississauga	0.000945	0.000497
151413	Base	Cable Replacement Project- Rathburn Rd W & Elora Dr (9), Mississauga	0.000543	0.000286
151411	Base	Cable Replacement Project- Queensway & Mavis (31), Mississauga	0.001787	0.000941
151319	Base	Cable Injection Project - (I4) -Queen - Dixie - Steeles - Hwy 410, Brampton	0.000752	0.000376
151428	Base	Cable Injection- 002- AREA 30- Eglinton Ave W & Miss Rd, Mississauga	0.000907	0.000478
151276	Base	Cable Injection Project - (SCH) - Vansickle	0.016071	0.008035

Project Number	Funding	Project Name	SAIDI (hrs)	SAIFI
151304	Base	Cable Injection Project - (HAM) - Stone Church - Garth - Lincoln M. Alexander	0.007137	0.003568
151462	M-Factor	Cable Injection Project - (G1) - Hwy 410 - Kennedy - Wanless - Main, Brampton	0.001504	0.000752
151344	Base	Cable Injection Project - (R16) - Major Mackenzie - Bayview - 16th - Yonge, Richmond Hill	0.000619	0.000310
151458	M-Factor	Cable Injection Project - (V31) - Langstaff - Weston - Rutherford - Jane, Vaughan	0.001062	0.000531
150263	Base	Cable Replacement Project - East Left Behind Cable	0.006104	0.003052
151416	Base	Cable Replacement Project- Woodchester & Thorn Lodge (34), Mississauga	0.000569	0.000478
151356	Base	Cable Injection Project - (V44) - Langstaff - Pine Valley - Hwy 7 - Kipling, Vaughan	0.000708	0.000354
151297	Base	Cable Replacement Project - (HAM) - Govenors - Old Ancaster	0.004399	0.001466
151317	Base	Cable Injection Project - (H4) - Queen - Hwy 410 - Steeles - Kennedy, Brampton	0.000664	0.000332
151426	Base	Cable Replacement Project-Southdown & Lakeshore (35), Mississauga	0.002663	0.002238
151417	Base	Cable Replacement Project- Rathburn & Cawthra (27), Mississauga	0.000135	0.000114
151286	Base	Cable Replacement Project - (H2) - Wanless - Heart Lake - Bovaird - Kennedy, Brampton	0.001858	0.000929
151107	Base	Cable Replacement Project - 7143 Main Feeder	0.003034	0.001517
151422	Base	Cable Replacement Project-Queen St W & Paisley (30), Mississauga	0.000343	0.000288
150141	Base	Cable Replacement Project – (M49) - Steeles and Fairway Heights, Markham	0.000398	0.000199
150572	Base	Cable Replacement Project - (J4) - Queen - Clark - Bramalea - Kensington - Knightsbridge, Brampton	0.000575	0.000288
151311	Base	Cable Injection Project - (E5) - Steeles - Mclaughlin - Hwy 407 - Chinguacousy, Brampton	0.000531	0.000265
151365	Base	Cable Injection Project - (V02) - Atkinson and Worth, Vaughan	0.000664	0.000332
151144	Base	Cable Replacement Project and Transformers Replacement - Rathburn Rd. W, Mississauga	0.016383	0.004096
151346	Base	Cable Injection Project - (M45) - Hwy 7 and Woodbine, Markham	0.000442	0.000221
151340	Base	Cable Replacement Project - (V29) - Hwy 7 - Jane - Steeles - Weston, Vaughan	0.001371	0.000686
151427	Base	Cable Injection- 001- AREA 11- Truscott & Southdown, Mississauga	0.000692	0.000364
151421	Base	Cable Replacement Project-Rathkeale Rd & Edenrose St (6), Mississauga	0.001047	0.000880
151342	Base	Cable Injection Project - (M40) - Major Mackenzie - Warden - 16th - Woodbine, Markham	0.000398	0.000199
151419	Base	Cable Replacement Project- Thomas St & Hillside (24), Mississauga	0.000659	0.000554
151435	Base	Cable Injection- 010 - Area 56- Derry Rd W & Ninth Line, Mississauga	0.000652	0.000343
151425	Base	Cable Replacement Project-Rathburn Rd E & Tomken (10), Mississauga	0.000298	0.000250
151290	Base	Cable Replacement Project - (I3) - Bovaird - Dixie - Queen - Hwy 410, Brampton	0.002212	0.001106
151347	Base	Cable Injection Project - (V40) - Teston - Weston - Major Mackenzie - Pine Valley, Vaughan	0.000354	0.000177
151281	Base	Cable Replacement Project - (SCH) - Lake - Linwell - Geneva - Scott	0.000962	0.000321
151181	Base	Cable Replacement Project - Left Behind Cable, Brampton	0.001687	0.000843
151423	Base	Cable Replacement Project-Old Carriage Road (33), Mississauga	0.000205	0.000173
151341	Base	Cable Injection Project - (M15) - 16th - Markham - 9th - Hwy 7, Markham	0.000310	0.000155
151345	Base	Cable Injection Project - (M51) - 14th - Bayview - Steeles - Yonge, Markham	0.000310	0.000155
151343	Base	Cable Injection Project - (M14) - Hwy 7 - Markham - 9th - 14th, Markham	0.000310	0.000155
151338	Base	Cable Replacement Project- (BA15) - Burton - Huronia - Little - Bayview, Barrie	0.001017	0.000509
151329	Base	Cable Replacement Project - (V51) - Langstaff - Kipling - Hwy 7 - Hwy 27, Vaughan	0.000664	0.000332
151335	Base	Cable Replacement Project - (BA14) - Tifffin and Hwy 400, Barrie	0.000840	0.000420
151324	Base	Cable Injection Project - (M3) - Castlemore - Goreway - Queen - Airport, Brampton	0.000310	0.000155
151350	Base	Cable Injection Project - (M22) - Major Machenzie - Hwy 48 - 16th - McCowan, Markham	0.000310	0.000155
151330	Base	Cable Replacement Project - (A01) - Henderson - Yonge - Bloomington - Bathurst, Aurora	0.000575	0.000288
151321	Base	Cable Injection Project - (J5) - Steeles - Bramalea - Hwy 407 - Dixie, Brampton	0.000265	0.000133
151224	Base	Cable Replacement - (920) - Scottsdale Drive Subdivision, Guelph	0.000455	0.000169
151137	Base	Cable Replacement Project - Main Fedeer(s) upgrade - 68F2, 68F4, 68F7, 83F5, 83F3	0.001517	0.000758
151323	Base	Cable Injection Project - (L4) - Queen - Airport - Steeles - Torbram, Brampton	0.000310	0.000155
151283	Base	Cable Replacement Project - (HAM) - Mohawk	0.001469	0.000490
151333	Base	Cable Replacement Project - (BA9) - Little - Fairview - Harvie - Ferndale, Barrie	0.000575	0.000288
151385	Base	Cable Replacement - (892) - 30-250 Janefield Ave Subdivision, Guelph	0.000455	0.000169
151295	Base	Cable Replacement Project - (SCH) - Welland - Bunting - Carlton - Cushman	0.000164	0.000055
151436	Base	Cable Injection-011 - Area 58 & 59- Winston Churchill & The Collegeway, Mississauga	0.000009	0.000005
151331	Base	Cable Replacement Project - (V41) - Stephanie Blvd, Vaughan	0.000442	0.000221
151386	Base	Cable Replacement - (278) - 31 Greengate Rd Subdivision, Guelph	0.000455	0.000169
151292	Base	Cable Replacement Project- (K4) - Queen - Torbram - Steeles - Bramalea	0.000398	0.000199
151353	Base	Cable Injection Project - (V41) - Kirby - Weston - Teston - Pine Valley, Vaughan	0.000221	0.000111
151332	Base	Cable Replacement Project - (BA20) - Bayfield and Simcoe, Barrie	0.000664	0.000332
151309	Base	Cable Injection Project - (E3) - Bovaird - McLaughlin - Queen - Chinguacousy, Brampton	0.000221	0.000111
151354	Base	Cable Injection Project - (V52) - Rutherford - Kipling - Langstaff - Hwy 27, Vaughan	0.000221	0.000111
151372	Base	Cable Replacement - (451) - Country Club Dr Subdivision, Guelph	0.000169	0.000084
151134	Base	Cable Replacement Project - Winston Churchill consolidation - 49F6 and 49F4	0.000910	0.000455
151408	Base	Cable Replacement Project- Burnhamthorpe & Miss. Road (13), Mississauga	0.001187	0.000625
151320	Base	Cable Injection Project - (I5) - Steeles - Dixie - Hwy 407 - Hwy 410, Brampton	0.000221	0.000111
151371	Base	Cable Replacement - (87) - Marksam Rd/ Rhonda Rd Subdivision, Guelph	0.000629	0.000273
150019	Base	Cable Injection Project - (M41) - Woodbine and Elgin Mills, Markham	0.000133	0.000066
151410	Base	Cable Replacement Project-Roselle & Priority Cres (2), Mississauga	0.000493	0.000260
151308	Base	Cable Injection Project - (HAM) - Hollybush - Parkside - Dundas - Spring Creek	0.002057	0.001029
151288	Base	Cable Replacement Project - (H4) - Queen - Hwy 410 - Steeles - Kennedy, Brampton	0.000177	0.000088
151296	Base	Cable Injection Project - (SCH) - Welland - Bunting - Carlton - Cushman	0.001212	0.000606
151357	Base	Cable Injection Project - (V34) - Kirby - Jane - Teston - Weston, Vaughan	0.000133	0.000066
151374	Base	Cable Replacement - (893) - Janefield Ave Subdivision, Guelph	0.000291	0.000097

Project Number	Funding	Project Name	SAIDI (hrs)	SAIFI
151387	Base	Cable Replacement - (833) - 295 Water St Subdivision, Guelph	0.000184	0.000068
151337	Base	Cable Replacement Project - (BA18) - Ferndale and Benson, Barrie	0.000310	0.000155
151326	Base	Cable Replacement Project - (V44) - Hayhoe - Islington - Hwy 7, Vaughan	0.000265	0.000133
151388	Base	Cable Replacement - (724) - 30 Hadati Rd, Guelph	0.000455	0.000169
151291	Base	Cable Replacement Project - (I4) - Queen - Dixie - Steeles - Hwy 410, Brampton	0.000487	0.000243
151358	Base	Cable Injection Project - (V62) - Kirby - Hwy 27 - Nashville - Huntington, Vaughan	0.000177	0.000088
151146	Base	Cable Replacement and Transformers Replacement - Project - Folkway, Mississauga	0.010922	0.002731
151282	Base	Cable Replacement Project - (SCH) - Weiden	0.000047	0.000016
151312	Base	Cable Injection Project - (F2) - Wanless - Main - Bovaird - McLaughlin, Brampton	0.000088	0.000044
150254	M-Factor	Cable Replacement Project - (A02) - Steeplechase Ave, Aurora	0.000840	0.000420
151322	Base	Cable Injection Project - (K4) - Queen - Torbram - Steeles - Bramalea, Brampton	0.000088	0.000044
151405	Base	Cable Replacement Project- Erin Mills & N.Sheridan (16), Mississauga	0.000329	0.000173
150139	Base	Cable Replacement Project – (B19) - Donald St and Simcoe Terrace, Barrie	0.000133	0.000066
151434	Base	Cable Injection- 009- AREA 54- Highway 401 & Argentia, Mississauga	0.000424	0.000223
151465	M-Factor	Cable Replacement - Mississauga Left Behind Cable	0.002533	0.001267
151284	Base	Cable Replacement Project - (E3) - Bovaird - McLaughlin - Queen - Chinguacousy, Brampton	0.000221	0.000111
151293	Base	Cable Replacement Project - (SCH) - Lakeshore - Stanley - Parnell - Chancery	0.000563	0.000188
151327	Base	Cable Replacement Project - (BR6) - 8th and Dissette, Bradford	0.000133	0.000066
151373	Base	Cable Replacement - (923) - Scottsdale Drive Subdivision, Guelph	0.000119	0.000059
150257	M-Factor	Cable Replacement Project - (V15) - Jardin Dr, Vaughan	0.001416	0.000708
151406	Base	Cable Replacement Project- Rathburn Rd W & Queenbridge (8), Mississauga	0.000065	0.000034
151334	Base	Cable Replacement Project - (BA13) - Dunlop and Miller, Barrie	0.000133	0.000066
151294	Base	Cable Injection Project - (SCH) - Lakeshore - Stanley - Parnell - Chancery	0.000138	0.000069
151287	Base	Cable Replacement Project - (SCH) - Bolger - Elma - Dorothy - The Meadows	0.000157	0.000052
151280	Base	Cable Injection Project - (SCH) - Millward - Jeanette Drive - Trevor	0.000014	0.000007
151279	Base	Cable Injection Project - (SCH) - Jacobson - Chestnut - Woodcrest	0.000055	0.000027
151285	Base	Cable Replacement Project - (G2) - Wanless - Kennedy - Bovaird - Main, Brampton	0.000221	0.000111
150262	M-Factor	Cable Replacement Project - (M33) - 16th Avenue and Village Parkway, Markham	0.000487	0.000243
151469	M-Factor	Cable Replacement Project - (F4-G4) - Main - Steeles - Chinguacousy - Queen, Brampton	0.000310	0.000155
151466	M-Factor	Cable Replacement Project - (V24) - Langstaff - Jane - Rutherford - Keele, Vaughan	0.000310	0.000155
151468	M-Factor	Cable Replacement Project - (V51) - Langstaff - Kipling - Hwy 7 - Hwy 27, Vaughan	0.000310	0.000155
151178	M-Factor	Cable Replacement Project - Mason Heights	0.001365	0.000341
151431	Base	Cable Injection- 006- AREA 39- Erin Mills Pkway & Thomas St, Mississauga	0.000467	0.000246
151467	M-Factor	Cable Replacement Project - (V17) - Langstaff - Keele - Rutherford - Dufferin, Vaughan	0.000756	0.000378
151179	M-Factor	Cable Replacement Project - Area of Erin Mills Parkway and South Millway	0.001653	0.000413
151141	M-Factor	Cable Replacement and Transformers replacement - Project - Windjammer, Mississauga	0.006530	0.001632
150138	M-Factor	Cable Replacement Project – (BA23-BA24) - Cook St and Steel St, Barrie	0.000267	0.000133
151145	M-Factor	Cable Replacement Project - Bough Beeches Blvd.	0.001866	0.000466
151143	M-Factor	Cable Replacement and Transformers Replacement -Project - Shelter Bay Rd. Mississauga	0.002457	0.000614
150255	M-Factor	Cable Replacement Project - (B23) - Cundles Rd and Janine St, Barrie	0.000155	0.000077

J1.3

Reference:

To provide a breakdown of the M-factor investments described in Staff-4 by project categories, System Access, Renewal, Service, and General Plant.

Response:

Tables 1 – 4 include all the capital investments proposed for M-Factor funding provided by investment categories. This listing contains 203 projects consistent with what was provided in CCC-9. There were 9 projects that were inadvertently removed from the G-Staff-4 list as they rounded to $0.0MM.

Table 1 – System Access Projects in M-Factor ($MM)

Project Number	Project Name	Total DSP 2020-2024 ($MM)
150605	Residential "ICON F" Meter Replacement - PowerStream RZ	7.3
150343	Bathurst Street Widening	3.4
	Total System Access	10.7

Table 2 – System Renewal Projects in M-Factor ($MM)

Project Number	Project Name	Total DSP 2020-2024 ($MM)
150317	Voltage Conversion - Deerhurst MS, Hamilton	7.8
151139	Voltage Conversion - MS-12 Hansen Rd, Brampton	5.5
151138	Voltage Conversion - MS-2 Church St, Brampton	4.4
150320	Voltage Conversion - Dewitt MS , Hamilton	4.1
150047	Rear Lot Renewal Project - Royal Orchard - North	4.0
150354	Voltage Conversion - Eastmount MS, Hamilton	3.8
150351	Voltage Conversion - Aberdeen MS, Hamilton	3.3
150321	Voltage Conversion - Galbraith MS, Hamilton	3.3
150330	Rear Lot Renewal Project - Marsdale, St.Catharines	3.1
150257	Cable Replacement Project - (V15) - Jardin Dr, Vaughan	2.9
150254	Cable Replacement Project - (A02) - Steeplechase Ave, Aurora	2.9

151460	Cable Injection Project - (V17) - Langstaff - Keele - Rutherford - Dufferin, Vaughan	2.8
150355	Voltage Conversion - Elmwood MS, Hamilton	2.8
151465	Cable Replacement - Mississauga Left Behind Cable	2.7
150356	Voltage Conversion - Clarkson Area, Mississauga	2.7
151141	Cable Replacement and Transformers replacement - Project - Windjammer, Mississauga	2.7
150043	Rear Lot Renewal Project - East of Queen St. to Eastern Ave./North of Greenway St.	2.6
150329	Rear Lot Renewal Project - Main Street / Unionville / Carlton	2.5
151467	Cable Replacement Project - (V17) - Langstaff - Keele - Rutherford - Dufferin, Vaughan	2.4
150399	Rear Lot Renewal Project - Richlieu Dr and Trelawne Dr, St.Catharines	2.4
150262	Cable Replacement Project - (M33) - 16th Avenue and Village Parkway, Markham	2.1
150377	Voltage Conversion and Rear Lot - Montgomery Dr, Hamilton	1.8
150380	Rear Lot Renewal Project - Gunn/Oakley Park/St.Vincent	1.8
150378	Rear Lot Renewal Project - East of Queen Street/North of Mill Street	1.8
150138	Cable Replacement Project – (BA23-BA24) - Cook St and Steel St, Barrie	1.7
100319	Radial Supply Remediation/Conversion - 13.8 kV to 27.6 kV on Miller Ave	1.5
151456	Cable Injection Project - (V50) - Hwy 7 - Kipling - Steeles - Hwy 27, Vaughan	1.5
151457	Cable Injection Project - (V25) - Major Mackenzie - Keele - Rutherford - Jane, Vaughan	1.3
151459	Cable Injection Project - (V24) - Langstaff - Jane - Rutherford - Keele, Vaughan	1.3
151143	Cable Replacement and Transformers Replacement -Project - Shelter Bay Rd. Mississauga	1.1
151463	Cable Injection Project - (F4-G4) - Main - Steeles - Chinguacousy - Queen, Brampton	1.1
150255	Cable Replacement Project - (B23) - Cundles Rd and Janine St, Barrie	1.1
151468	Cable Replacement Project - (V51) - Langstaff - Kipling - Hwy 7 - Hwy 27, Vaughan	1.0
151466	Cable Replacement Project - (V24) - Langstaff - Jane - Rutherford - Keele, Vaughan	1.0
151469	Cable Replacement Project - (F4-G4) - Main - Steeles - Chinguacousy - Queen, Brampton	1.0
150398	Rear Lot Renewal Project - Strathcona Dr	0.9
151132	MS Transformer & HV Switchgear Replacement - Munden MS35 T1 & HV1	0.9
151464	Cable Injection Project - (F3-G3-H3) - Phase 2, Brampton	0.8
151128	MS Transformer & HV Switchgear Replacement - Western MS36 T1 & HV1	0.8
151178	Cable Replacement Project - Mason Heights	0.7
151145	Cable Replacement Project - Bough Beeches Blvd.	0.7
150323	Station Switchgear Replacement - Bloor MS38 LV1	0.7
151461	Cable Injection Project - (V51) - Langstaff - Kipling - Hwy 7 - Hwy 27, Vaughan	0.7

151458	Cable Injection Project - (V31) - Langstaff - Weston - Rutherford - Jane, Vaughan	0.6
151085	Rear Lot Conversions	0.6
150421	2D7X Pimlico Dr - Voltage Conversion and Rear Lot	0.6
151462	Cable Injection Project - (G1) - Hwy 410 - Kennedy - Wanless - Main, Brampton	0.6
151179	Cable Replacement Project - Area of Erin Mills Parkway and South Millway	0.5
150097	Line Protections and HMI Upgrade - KDU-10 Replacement - Markham TS#2	0.5
150362	Voltage Conversion - Dufferin St S, between MS431 and Albert St S, Alliston	0.4
150394	King St. Voltage Conversion & Loop (LRT Betterment)	0.3
150044	Rear Lot Renewal Project - Blake/Kempenfelt	0.3
150607	Station LED Lighting Upgrades - Central	0.1
150606	Station LED Lighting Upgrades - EAST	0.1
150519	Upgrade to Station Facilities (Building / Civil work) MultiYear - East	0.1
151072	Station Service Transfer Upgrade - Vaughan TS#3	0.1
150878	Bus & Main Breaker Protections Replacement - Jim Yarrow TS	0.1
150610	Driveway Paving - Various Stations - Multi-year initiative - Central	0.1
150609	Driveway Paving - Various Stations - Multi-year initiative - East	0.1
150612	Driveway Paving - Various Stations - Multi-year initiative - West	0.1
150608	Station LED Lighting Upgrades - West	0.1
151212	Driveway Paving Multi-year initiative - South West	0.0
151209	Station LED Lighting Upgrades - South West	0.0
	Total System Renewal	101.4

Table 3 – System Service Projects in M-Factor ($MM)

Project Number	Project Name	Total DSP 2020-2024 ($MM)
100340	Vaughan TS#4 Feeder Integration - Part 3	8.8
150360	New build - Extend 44kV feeder Centre View Dr, Mississauga	6.5
150319	New MS - Duke MS 20 MVA Substation, Mississauga	6.2
150371	New build - 27.6kV Feeder Extension Traders, Mississauga	5.5
103633	Install Two 27.6kV Ccts on 16th Ave from Hwy 404 to Woodbine Ave	5.5
100337	Markham TS #4 Feeder Egress Part 3	4.9
150342	HaLRT_New Stirton Feeder for TPSS#4 and 8852X load shedding, Hamilton	4.8
150364	New build - Port Credit Village East (Marina) 27.6kV Feeders, Mississauga	4.4
150332	Non-Wires Alternative Pilot	4.0

100904	Install Double Cct Pole Line on Major Mackenzie - Hwy 27 to Huntington Rd	3.7
150680	Alectra Drive at Home	2.7
100924	Install two additional 27.6 kV ccts on Hwy 7 from Jane St to Weston Rd	2.6
150693	Blockchain	2.4
151233	New Construction - Campbell TS 36M63 Feeder PHASE 1 & 2, Guelph	2.3
101542	New Barrie 20MVA Substation - Harvie	2.2
100909	Rebuild 27.6 kV pole line for 4 Ccts on Warden Ave from Major Mack to Elgin Mills	2.2
150367	Mini-Orlando MS 27.6kV Land Purchase, Mississauga	2.2
100632	27.6 kV Pole Line on 14th Ave from Hwy 48 to 9th Line	2.0
150368	New build - North Central feeders capacity (Carlton TS to Linwell Rd/Lake St) relief, St.Catharines	2.0
102128	Aurora MS6 Expansion	2.0
101569	New Alliston 10MVA Substation - Industrial Parkway	1.9
150370	New build - 27.6kV New Feeders Lakeview Development, Mississauga	1.9
150369	New build - 44kV Feeder Extension York/Meadowpine, Mississauga	1.8
150390	New build - Waterdown 3rd Feeder, Hamilton	1.7
150747	Net Zero Energy Emissions	1.6
102547	Two Ccts on Birchmount Rd from ROW to 14th Ave	1.6
100913	Pole Line Installation Double Cct on Major Mack - Huntington Rd to Hwy 50	1.4
101036	Install a new 4 ccts CNR yard overhead crossing on the south side of Hwy 7	1.4
101487	Add one Additional 27.6 kV Cct on Major Mack Dr and 9th Line	1.3
101480	Build double ccts 27.6kV pole line on 19th Ave between Leslie St and Bayview Ave	1.3
150374	New build - 13.8kV Feeder Extension 9th Line, Derry to Argentia, Mississauga	1.2
150716	New build - 42M69 Feeder Extension Williams Pkwy - Main St to Kennedy Rd, Brampton	1.1
150358	New build - QEW Dixie West New OH Circuits, Mississauga	1.1
102387	Install 44kV & 13.8kV Bryne Drive	1.1
150353	Truscott Plaza - Additional capacity, Mississauga	1.0
150401	136M6 Goreway TS Extensions	1.0
150679	Alectra Drive for the Workplace	0.8
100919	Install 2nd 27.6 kV Cct on Woodbine Ave from Elgin Mills Rd to 19th Ave	0.6
151240	Southgate Dr to Maltby Rd O/H Extension	0.6
150361	Airport 88M5 & 88M7 HONI Purchase	0.5
100159	Hydro One Asset Purchase - Alliston	0.5
101393	Redundant Fibre Path to Aurora MS#4 Sub-Station	0.5
150785	New WiMAX Communications System - West	0.5
150576	Split the 1/0 loop on Cityview Blvd into two loops	0.5
151241	Arlen MTS - New Feeder	0.5
150073	Vaughan TS#1 Bus Differential & Overcurrent Protections Upgrades	0.4

150749	New WiMAX Communication Network - Central South	0.4
150070	Markham TS#1 Bus Differential & Overcurrent Protections Upgrades	0.4
150072	Markham TS#3 Bus Differential & Overcurrent Protections Upgrades	0.3
150071	Markham TS#2 Bus Differential & Overcurrent Protections Upgrades	0.3
150079	Markham TS#1 T1/T2 "B" Overcurrent Protections and HMI Upgrade	0.3
150074	Vaughan TS#2 Bus Differential and Overcurrent Protections Upgrade	0.3
150773	New WiMAX Communications System - Central North	0.3
150084	Markham TS#2 T1/T2 "B" Differential Protections Upgrade	0.2
150095	Vaughan TS#1 T1/T2 "B" Differential Protections Upgrade	0.2
150089	Markham TS#3 T1/T2 "B" Differential Protections Upgrade	0.2
150512	Installation of SWI Video security system at 4 MS stations per year - Annual Multi-year initiative-CENTRAL	0.2
150511	Installation of SWI Video security system at 4 MS stations per year - Annual Multi-year initiative-WEST	0.2
101003	Richmond Hill TS#2 Upgrade Bus, Line & Transformer Protections	0.1
151245	Capacitor Bank Installations	0.1
150422	136M9 Feeder Extension Castlemore Rd, Goreway Dr to McVean Dr	0.1
150125	Aurora MS6 (AMS6) Transformer and Bus Protection Upgrade	0.1
150410	42M66 OH Feeder Egress Mississauga Rd, Bovaird to CNR	0.1
151022	New Three Sector WiMAX Node - MS305	0.1
150411	42M64 Feeder Extension Mississauga Rd, Williams Pkwy to Queen / Embleton	0.1
150694	Cityview microgrid enhancements	0.1
150096	Vaughan TS#2 T1/T2 "B" Differential Protections Upgrade	0.1
150235	Greenwood Expansion Station Service Supply Backup	0.0
	Total System Service	109.3

Table 4 – General Plant Projects in M-Factor ($MM)

Project Number	Project Name	Total DSP 2020-2024 ($MM)
150467	CIS CC&B upgrade	13.3
151124	Goreway TS Expansion (CCRA) - 10 Yr True-Up Payment, Brampton	5.6
102263	Work Force Management / Mobile Dispatch	4.7
151125	Connection Cost Recovery Agreement (CCRA) – Midhurst TS – 15th Anniversary True-up	3.2
151117	Vansickle TS True-up Payment (CCRA), St.Catharines	1.6
150978	Fleet East Vehicle replacement - Cube Vans	0.7
151168	Fleet_Central South Vehicle Replacement-Step Vans	0.7
150975	Fleet East Unit # 75 83' Double Bucket	0.7

150945	Fleet_ Central North Vehicle Replacement_Reel Carriers	0.7
150967	Fleet East Unit # 125, 83' Double Bucket	0.7
150758	Facilities_Reno_Staff Relocation from Jane St	0.6
150803	Fleet_Central South Vehicle Replacement- Material Handler	0.6
151118	Nebo TS 27.6kV True-up Payment (CCRA)	0.5
150942	Fleet_ Central North Vehicle Replacement_S/Bucket	0.5
150807	Fleet_Central South Vehicle Replacement-209-09 S/bucket	0.5
150896	Fleet_ Central North Vehicle Replacement S/Bucket 8910	0.5
150818	Fleet_Central South Vehicle Replacement-236-10 S/bucket	0.5
150793	Fleet_Central South Vehicle Replacement-210-09 S/bucket	0.5
150962	Fleet East Unit # 61 Digger truck replacement	0.4
150666	Facilities_John_Roof Deck – Rooftop Renovation	0.4
151013	Fleet_West_Vehicle_Replacement_Bucket Truck_1-354	0.4
150846	Fleet_West_Vehicle Replacement_Step Vans	0.4
151200	Alectra Single Platform Website ongoing	0.3
150464	Fieldworker Upgrade - IT/OT Infrastructure	0.3
150868	Fleet_Central North Vehicle Replacement-180 Loader	0.3
150938	Fleet_ Central North Vehicle Replacement_Stake Trucks	0.3
150876	Fleet_Central North Vehicle Replacement_ Step Vans 6310	0.3
150979	Fleet East Vehicle replacement - Extended Vans	0.2
150810	Fleet_Central South Vehicle Replacement-Step Vans	0.2
150853	Fleet_Central South Vehicle Replacement-Vans	0.2
150582	Back-end Automation (Orchestration Tool\Setup)	0.2
150871	Fleet_Central North Vehicle Replacement-Step Van 8108	0.2
150782	Fleet_Central South Vehicle Replacement-Step Van	0.2
150796	Fleet_Central South Vehicle Replacement- Vans	0.2
150547	Business Support	0.2
150854	Fleet_Central South Vehicle Replacement-Trailers	0.2
151029	Fleet_West_Vehicle_Replacement_Pickups	0.2
151167	Fleet_Central South Vehicle Replacement-Pick ups	0.2
150811	Fleet_Central South Vehicle Replacement-Pick ups	0.2
150831	Fleet_West_Vehicle Replacement_SUVs_1-268,1-226,1-227	0.1
150944	Fleet_ Central North Vehicle Replacement_Trailer	0.1
150812	Fleet_Central South Vehicle Replacement-Vans	0.1
151018	Fleet_West_Vehicle_Replacement_Trailer	0.1
151016	Fleet_West_Vehicle_Replacement_Pickups	0.1
150873	Fleet_Central North Vehicle Replacement_Vans	0.1
150813	Fleet_Central South Vehicle Replacement-SUV	0.1
150797	Fleet_Central South Vehicle Replacement- SUV	0.1

150958	Fleet_West_Vehicle Replacement_Forklift	0.1
151158	Fleet_Central South_Vehicle Replacement -Vans	0.1
151160	Fleet_West_Vehicle Replacement_ Pole Trailer_1-405	0.1
150980	Fleet East Vehicle replacement - Work Van	0.1
151155	Fleet_Central South Vehicle Replacement-Pick ups	0.1
151007	Fleet_West_Vehicle_Replacement_Trailers	0.1
150968	Fleet East Vehicle replacement Pickup truck 2500	0.1
150821	Fleet_Central South Vehicle Replacement-Van	0.1
151166	Fleet_ Central North Vehicle Replacement pick ups	0.1
150897	Fleet_ Central North Vehicle Replacement pick ups	0.1
150884	Fleet_Central North Vehicle Replacement Pick up 9514	0.1
150870	Fleet_Central North Vehicle Replacement-Van 5910	0.1
150787	Fleet_Central South Vehicle Replacement- Van	0.1
150951	Fleet East Vehicle addition - Van pool van	0.0
150920	Fleet East Vehicle addition - Van pool van	0.0
151150	Fleet East Vehicle replacement - SUV	0.0
150953	Fleet_ Central North Vehicle Replacement_Trailer 11510	0.0
150800	Fleet_Central South Vehicle Replacement- trailer	0.0
150888	Fleet_ Central North Vehicle Replacement SUVs	0.0
150891	Fleet_ Central North Vehicle Replacement Car	0.0
150786	Fleet_Central South Vehicle Replacement-SUV	0.0
150843	Fleet_Central South Vehicle Replacement-Bocat	0.0
150798	Fleet_Central South Vehicle Replacement- Arrowboard	0.0
	Total General Plant	43.6

1

J2.1

Reference:

To provide a blue-page update with respect to the particular table, as well as to the appendix on G-Staff-8. Also to provide a copy of the excel spreadsheet G-Staff-8.

Response:

Further to the oral update included in the preliminary matter on Day 2 of the Oral Hearing (Transcript, October 17, 2019, pp.2-6) please find attached an update to G-Staff-8 Attachment 5, which is the ICM Model that includes the threshold calculation for the Guelph Rate Zone. Further, in response to J3.2, Alectra Utilities provided an updated ICM Model for the Horizon Utilities and PowerStream Rate Zones, and in response to J3.1, Alectra Utilities proposed the use of a 5-year historical inflation factor to be used in the calculation of the materiality threshold. The update to the Guelph RZ ICM model is provided as Attachment 1.

Based on the above updates, Alectra Utilities provides a blue-page update of the relief sought with respect its M-factor request. This is provided as Attachment 2.

J2.1

ATTACHMENT 1 – G-Staff-8 2020 ACM ICM Model GRZ - Revised

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Note: Depending on the selections made below, certain worksheets in this workbook will be hidden.

Version 5.00

Utility Name	Alectra Utilities Corporation-Guelph Rate Zone
Assigned EB Number	
Name of Contact and Title	
Phone Number	
Email Address	
Is this Capital Module being filed in a CoS or Price-Cap IR Application?	**Price-Cap IR**
Rate Year	**2020**
Indicate the Price-Cap IR Year (1, 2, 3, 4, etc) in which Alectra Utilities Corporation-Guelph Rate Zone is applying:	**4**
Next OEB Scheduled Rebasing Year	**2027**
Alectra Utilities Corporation-Guelph Rate Zone is applying for:	**ICM Approval**
Last Rebasing Year:	**2016**
The most recent complete year for which actual billing and load data exists	**2018**
Current IPI	**1.50%**
Strech Factor Assigned to Middle Cohort*	**III**
Stretch Factor Value	**0.30%**
Price Cap Index	**1.20%**

Based on the inputs above, the growth factor utilized in the Materiality Threshold Calculation will be determined by:

Revenues Based on 2018 Actual Distribution Demand

Revenues Based on 2016 Board-Approved Distribution Demand

Notes

Pale green cells represent input cells.

Pale blue cells represent drop-down lists. The applicant should select the appropriate item from the drop-down list.

White cells contain fixed values, automatically generated values or formulae.

While this model has been provided in Excel format and is required to be filed with the applications, the onus remains on the applicant to ensure the accuracy of the data and the results.

**As per ACM/ICM policy, the middle cohort stretch factor is applied to all ACM/ICM applications.*

OEB policies regarding rate-setting and rebasing following distributor consolidations could allow a distributor to not rebase rates for up to ten years. A distributor could also apply for and receive OEB approval to defer rebasing. If a distributor is under Price Cap IR for more than four years after rebasing and applies for an ICM, this spreadsheet will need to be adapted to accommodate those circumstances. The distributor should contact OEB staff to discuss the circumstances so that a customized model can be provided.

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Alectra Utilities Corporation-Guelph Rate Zone

Select the appropriate rate classes as they appear on your most recent Board-Approved Tariff of Rates and Charges, excluding the MicroFit Class.

How many classes are on your most recent Board-Approved Tariff of Rates and Charges? **8**

Select Your Rate Classes from the **Blue Cells** below. Please ensure that a rate class is assigned to **each shaded cell.**

	Rate Class Classification
1	RESIDENTIAL
2	GENERAL SERVICE LESS THAN 50 kW
3	GENERAL SERVICE 50 TO 999 kW
4	GENERAL SERVICE 1,000 TO 4,999 kW
5	LARGE USE
6	UNMETERED SCATTERED LOAD
7	SENTINEL LIGHTING
8	STREET LIGHTING

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Alectra Utilities Corporation-Guelph Rate Zone

Input the billing determinants associated with Alectra Utilities Corporation-Guelph Rate Zone's Revenues Based on 2018 Actual Distribution Demand. Input the current approved distribution rates. Sheets 4 & 5 calculate the NUMERATOR portion of the growth factor calculation.

		2018 Actual Distribution Demand			Current Approved Distribution Rates		
Rate Class	**Units**	**Billed Customers or Connections**	**Billed kWh**	**Billed kW (if applicable)**	**Monthly Service Charge**	**Distribution Volumetric Rate kWh**	**Distribution Volumetric Rate kW**
RESIDENTIAL	$/kWh	50,914	384,041,745		29.22	0.0000	0.0000
GENERAL SERVICE LESS THAN 50 kW	$/kWh	4,134	142,209,076		16.94	0.0142	0.0000
GENERAL SERVICE 50 TO 999 kW	$/kW	578	402,350,218	1,097,499	183.66	0.0000	2.7982
GENERAL SERVICE 1,000 TO 4,999 kW	$/kW	43	540,417,878	1,135,425	580.97	0.0000	3.1063
LARGE USE	$/kW	4	197,428,962	423,180	1116.83	0.0000	2.7908
UNMETERED SCATTERED LOAD	$/kWh	559	1,810,678		4.96	0.0226	0.0000
SENTINEL LIGHTING	$/kW	35	18,189	51	7.67	0.0000	8.4893
STREET LIGHTING	$/kW	14,152	10,182,750	28,425	0.44	0.0000	10.4080

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Alectra Utilities Corporation-Guelph Rate Zone

Calculation of pro forma 2016 Revenues. No input required.

Rate Class	2018 Actual Distribution Demand			Current Approved Distribution Rates										
	Billed Customers or Connections	Billed kWh	Billed kW (if applicable)	Monthly Service Charge	Distribution Volumetric Rate kWh	Distribution Volumetric Rate kW	Service Charge Revenue	Distribution Volumetric Rate Revenue kWh	Distribution Volumetric Rate Revenue kW	Revenues from Rates	Service Charge % Revenue	Distribution Volumetric Rate % Revenue kWh	Distribution Volumetric Rate % Revenue kW	Total % Revenue
	A	B	C	D	E	F	G	H	I	J	K = G / J	L = H / J	M = I / J	N
RESIDENTIAL	50,914	384,041,745		29.22	0.0000	0.0000	17,852,485	0	0	17,852,485	100.0%	0.0%	0.0%	58.4%
GENERAL SERVICE LESS THAN 50 kW	4,134	142,209,076		16.94	0.0142	0.0000	840,360	2,019,369	0	2,859,728	29.4%	70.6%	0.0%	9.4%
GENERAL SERVICE 50 TO 999 kW	578	402,350,218	1,097,499	183.66	0.0000	2.7982	1,273,866	0	3,071,022	4,344,887	29.3%	0.0%	70.7%	14.2%
GENERAL SERVICE 1,000 TO 4,999 kW	43	540,417,878	1,135,425	580.97	0.0000	3.1063	299,781	0	3,526,971	3,826,751	7.8%	0.0%	92.2%	12.5%
LARGE USE	4	197,428,962	423,180	1,116.83	0.0000	2.7908	53,608	0	1,181,011	1,234,619	4.3%	0.0%	95.7%	4.0%
UNMETERED SCATTERED LOAD	559	1,810,678		4.96	0.0226	0.0000	33,272	40,921	0	74,193	44.8%	55.2%	0.0%	0.2%
SENTINEL LIGHTING	35	18,189	51	7.67	0.0000	8.4893	3,221	0	433	3,654	88.2%	0.0%	11.8%	0.0%
STREET LIGHTING	14,152	10,182,750	28,425	0.44	0.0000	10.4080	74,723	0	295,847	370,570	20.2%	0.0%	79.8%	1.2%
Total	**70,419**	**1,678,459,496**	**2,684,580**				**20,431,314**	**2,060,290**	**8,075,283**	**30,566,888**				**100.0%**

Ontario Energy Board

Capital Module

Applicable to ACM and ICM

Alectra Utilities Corporation-Guelph Rate Zone

Applicants Rate Base				Last COS Rebasing: 2016	
Average Net Fixed Assets					
Gross Fixed Assets - Re-based Opening	$ 163,625,735	A			
Add: CWIP Re-based Opening		B			
Re-based Capital Additions	$ 11,363,000	C			
Re-based Capital Disposals		D			
Re-based Capital Retirements		E			
Deduct: CWIP Re-based Closing		F			
Gross Fixed Assets - Re-based Closing	$ 174,988,735	G			
Average Gross Fixed Assets			$	169,307,235	H = (A + G) / 2
Accumulated Depreciation - Re-based Opening	$ 32,529,814	I			
Re-based Depreciation Expense	$ 6,295,624	J			
Re-based Disposals		K			
Re-based Retirements		L			
Accumulated Depreciation - Re-based Closing	$ 38,825,438	M			
Average Accumulated Depreciation			$	35,677,626	N = (I + M) / 2
Average Net Fixed Assets			**$**	**133,629,609**	O = H - N
Working Capital Allowance					
Working Capital Allowance Base	$ 236,828,275	P			
Working Capital Allowance Rate	7.5%	Q			
Working Capital Allowance			**$**	**17,762,121**	R = P * Q
Rate Base			**$**	**151,391,730**	S = O + R
Return on Rate Base					
Deemed ShortTerm Debt %	4.00%	T	$	6,055,669	W = S * T
Deemed Long Term Debt %	56.00%	U	$	84,779,369	X = S * U
Deemed Equity %	40.00%	V	$	60,556,692	Y = S * V
Short Term Interest	1.65%	Z	$	99,919	AC = W * Z
Long Term Interest	4.91%	AA	$	4,166,751	AD = X * AA
Return on Equity	9.19%	AB	$	5,565,160	AE = Y * AB
Return on Rate Base			**$**	**9,831,829**	AF = AC + AD + AE
Distribution Expenses					
OM&A Expenses	$ 15,137,002	AG			
Amortization	$ 5,745,184	AH			
Ontario Capital Tax	$ 335,074	AI			
Grossed Up Taxes/PILs	$ 692,577	AJ			
Low Voltage	$ 29,301	AK			
Transformer Allowance	$ 64,558	AL			
		AM			
		AN			
		AO			
			$	**22,003,696**	AP = SUM (AG : AO)
Revenue Offsets					
Specific Service Charges	-$ 426,370	AQ			
Late Payment Charges	-$ 120,000	AR			
Other Distribution Income	-$ 710,833	AS			
Other Income and Deductions	-$ 1,049,998	AT	**-$**	**2,307,201**	AU = SUM (AQ : AT)
Revenue Requirement from Distribution Rates			**$**	**29,528,324**	AV = AF + AP + AU
Rate Classes Revenue					
Rate Classes Revenue - Total (Sheet 4)			$	30,566,888	AW

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Alectra Utilities Corporation-Guelph Rate Zone

Input the billing determinants associated with Alectra Utilities Corporation-Guelph Rate Zone's Revenues Based on 2016 Board-Approved Distribution Demand. This sheet calculates the DENOMINATOR portion of the growth factor calculation. Pro forma Revenue Calculation.

	2016 Board-Approved Distribution Demand			Current Approved Distribution Rates										
Rate Class	Billed Customers or Connections	Billed kWh	Billed kW	Monthly Service Charge	Distribution Volumetric Rate kWh	Distribution Volumetric Rate kW	Service Charge Revenue	Distribution Volumetric Rate Revenue kWh	Distribution Volumetric Rate Revenue kW	Total Revenue By Rate Class	Service Charge % Revenue	Distribution Volumetric Rate % Revenue kWh	Distribution Volumetric Rate % Revenue kW	Total % Revenue
	A	B	C	D	E	F	G	H	I	J	$K = G / J_{total}$	$L = H / J_{total}$	$M = I / J_{total}$	N
RESIDENTIAL	50,242	386,643,528		29.22	0.0000	0.0000	17,616,855	0	0	17,616,855	57.4%	0.0%	0.0%	57.4%
GENERAL SERVICE LESS THAN 50 kW	4,101	152,157,763		16.94	0.0142	0.0000	833,651	2,160,640	0	2,994,292	2.7%	7.0%	0.0%	9.8%
GENERAL SERVICE 50 TO 999 kW	567	401,243,062	1,046,605	183.66	0.0000	2.7982	1,249,623	0	2,928,610	4,178,233	4.1%	0.0%	9.5%	13.6%
GENERAL SERVICE 1,000 TO 4,999 kW	42	564,253,257	1,196,727	580.97	0.0000	3.1063	292,809	0	3,717,393	4,010,202	1.0%	0.0%	12.1%	13.1%
LARGE USE	5	278,656,832	499,880	1,116.83	0.0000	2.7908	67,010	0	1,395,065	1,462,075	0.2%	0.0%	4.5%	4.8%
UNMETERED SCATTERED LOAD	545	1,700,939		4.96	0.0226	0.0000	32,438	38,441	0	70,880	0.1%	0.1%	0.0%	0.2%
SENTINEL LIGHTING	6	21,457	60	7.67	0.0000	8.4893	552	0	509	1,062	0.0%	0.0%	0.0%	0.0%
STREET LIGHTING	14,172	9,628,070	26,693	0.44	0.0000	10.4080	74,828	0	277,821	352,649	0.2%	0.0%	0.9%	1.1%
Total	**69,680**	**1,794,304,908**	**2,769,965**				**20,167,766**	**2,199,081**	**8,319,398**	**30,686,246**				**100.0%**

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Alectra Utilities Corporation-Guelph Rate Zone

Current Revenue from Rates

This sheet is used to determine the applicant's most current allocation of revenues (after the most recent revenue to cost ratio adjustment, if applicable) to appropriately allocate the incremental revenue requirement to the classes.

	Current OEB-Approved Base Rates			2018 Actual Distribution Demand										
Rate Class	Monthly Service Charge	Distribution Volumetric Rate kWh	Distribution Volumetric Rate kW	Re-based Billed Customers or Connections	Re-based Billed kWh	Re-based Billed kW	Current Base Service Charge Revenue	Current Base Distribution Volumetric Rate kWh Revenue	Current Base Distribution Volumetric Rate kW Revenue	Total Current Base Revenue	Service Charge % Total Revenue	Distribution Volumetric Rate % Total Revenue	Distribution Volumetric Rate % Total Revenue	Total % Revenue
	A	B	C	D	E	F	G	H	I	J	L = G / J_{total}	M = H / J_{total}	N = I / J_{total}	O
RESIDENTIAL	29.22	0	0	50,914	384,041,745	0	17,852,485	0	0	17,852,485	58.40%	0.00%	0.00%	58.4%
GENERAL SERVICE LESS THAN 50 kW	16.94	0.0142	0	4,134	142,209,076	0	840,360	2,019,369	0	2,859,728	2.75%	6.61%	0.00%	9.4%
GENERAL SERVICE 50 TO 999 kW	183.66	0	2.7982	578	402,350,218	1,097,499	1,273,866	0	3,071,022	4,344,887	4.17%	0.00%	10.05%	14.2%
GENERAL SERVICE 1,000 TO 4,999 kW	580.97	0	3.1063	43	540,417,878	1,135,425	299,781	0	3,526,971	3,826,751	0.98%	0.00%	11.54%	12.5%
LARGE USE	1116.83	0	2.7908	4	197,428,962	423,180	53,608	0	1,181,011	1,234,619	0.18%	0.00%	3.86%	4.0%
UNMETERED SCATTERED LOAD	4.96	0.0226	0	559	1,810,678	0	33,272	40,921	0	74,193	0.11%	0.13%	0.00%	0.2%
SENTINEL LIGHTING	7.67	0	8.4893	35	18,189	51	3,221	0	433	3,654	0.01%	0.00%	0.00%	0.0%
STREET LIGHTING	0.44	0	10.408	14,152	10,182,750	28,425	74,723	0	295,847	370,570	0.24%	0.00%	0.97%	1.2%
Total							**20,431,314**	**2,060,290**	**8,075,283**	**30,566,888**				**100.0%**

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Alectra Utilities Corporation-Guelph Rate Zone

No Input Required.

Final Materiality Threshold Calculation

$$Threshold\ Value\ (\%) = 1 + \left[\left(\frac{RB}{d}\right) \times (g + PCI \times (1 + g))\right] \times \left((1 + g) \times (1 + PCI)\right)^{n-1} + 10\%$$

Cost of Service Rebasing Year		**2016**	
Price Cap IR Year in which Application is made		**4**	n
Price Cap Index		**1.20%**	PCI
Growth Factor Calculation			
Revenues Based on 2018 Actual Distribution Demand		**$30,566,888**	
Revenues Based on 2016 Board-Approved Distribution Demand		**$30,686,246**	
Growth Factor		**-0.19%**	$g\ (Note\ 1)$
Dead Band		**10%**	
Average Net Fixed Assets			
Gross Fixed Assets Opening	$	163,625,735	
Add: CWIP Opening	$	-	
Capital Additions	$	11,363,000	
Capital Disposals	$	-	
Capital Retirements	$	-	
Deduct: CWIP Closing	$	-	
Gross Fixed Assets - Closing	$	174,988,735	
Average Gross Fixed Assets	$	169,307,235	
Accumulated Depreciation - Opening	$	32,529,814	
Depreciation Expense	$	6,295,624	
Disposals	$	-	
Retirements	$	-	
Accumulated Depreciation - Closing	$	38,825,438	
Average Accumulated Depreciation	$	35,677,626	
Average Net Fixed Assets	$	133,629,609	
Working Capital Allowance			
Working Capital Allowance Base	$	236,828,275	
Working Capital Allowance Rate		8%	
Working Capital Allowance	$	17,762,121	
Rate Base	**$**	**151,391,730**	RB
Depreciation	**$**	**6,295,624**	d

Threshold Value (varies by Price Cap IR Year subsequent to CoS rebasing)

Price Cap IR Year 2017	**134%**
Price Cap IR Year 2018	**134%**
Price Cap IR Year 2019	**135%**
Price Cap IR Year 2020	**135%**
Price Cap IR Year 2021	**135%**
Price Cap IR Year 2022	**135%**
Price Cap IR Year 2023	**136%**
Price Cap IR Year 2024	**136%**
Price Cap IR Year 2025	**136%**
Price Cap IR Year 2026	**136%**

Threshold CAPEX $Threshold\ Value\ \times d$

Price Cap IR Year 2017	**$ 8,443,925**
Price Cap IR Year 2018	**$ 8,459,160**
Price Cap IR Year 2019	**$ 8,474,549**
Price Cap IR Year 2020	**$ 8,490,092**
Price Cap IR Year 2021	**$ 8,505,791**
Price Cap IR Year 2022	**$ 8,521,647**
Price Cap IR Year 2023	**$ 8,537,663**
Price Cap IR Year 2024	**$ 8,553,839**
Price Cap IR Year 2025	**$ 8,570,177**
Price Cap IR Year 2026	**$ 8,586,679**

Note 1: The growth factor g is annualized, depending on the number of years between the numerator and denominator for the calculation. Typically, for ACM review in a cost of service and in the fourth year of Price Cap IR, the ratio is divided by 2 to annualize it. No division is normally required for the first three years under Price Cap IR.

J2.1

ATTACHMENT 2 – M-factor Blue Page Update

CAPITAL FUNDING MECHANISM ("M-factor")

Alectra Utilities is requesting approval for capital funding based on a rate-adjustment mechanism that reconciles the capital needs set out in the DSP with the capital-related revenue in rates, and associated 2020 to 2024 capital riders for each RZ, as follows.

Overview

Underlying the OEB MAADs Policy and Handbook is the notion that amalgamations are in the public interest because they lead to efficiencies and future rates that are lower than otherwise would occur with no amalgamation. The OEB has expressed that it is in the public interest to have amalgamated utilities operate as one as soon as possible:

> "The OEB remains of the view that having consolidating entities operate as one entity as soon as possible after the transaction is in the best interest of consumers." [Handbook, p. 13]

Having amalgamated in 2017, Alectra Utilities is in transition and moving from individual utilities to an integrated utility operating as one company both from an OM&A and capital planning basis.

Through the rebasing deferral period, there is an integration of operations to achieve efficiencies and OM&A savings, which is part of the underlying regulatory and policy rationale for consolidation and the deferred rebasing period of 10 years. The other key element of the transition from separate utilities to consolidated operations is capital planning integration. Alectra Utilities, as a newly formed company, has moved to integrate capital planning across its company and service territory, to use one planning platform and to allocate resources and personnel in the execution of the capital plan across the company.

Alectra Utilities is in the unique circumstance of being the first utility arising from a consolidation of multiple utilities to file a five-year DSP in the midst of its rebasing deferral period rather than at its conclusion, as required by the OEB in Alectra Utilities' 2019 EDR Application Decision.[1] This circumstance is unique not just because Alectra Utilities is the first utility to do so, but also

[1] Decision and Order, April 6, 2018, EB-2017-0024, p. 2.

because of the rate making implications of presenting such a plan during the rebasing deferral period. While the DSP is based on a system wide consideration of Alectra Utilities' capital investment needs, rates during the rebasing deferral period are set on an individual rate zone basis. Also, whereas typically a DSP is filed as part of a rebasing enabling capital needs to form part of the rebasing year and potentially the IRM years as part of a custom approach, these aspects are not readily apparent in the filing of a DSP in the midst of the rebasing deferral period. It is in this unique circumstance that Alectra Utilities has proposed the rate approach below in order to fund the five-year capital plan contemplated in its consolidated DSP.

In order to address the factors described above, and to reconcile the investments set out in its DSP with the funding available in rates, Alectra Utilities has developed a new capital funding mechanism for post-merger utilities, which it calls an "M-factor."

The M-factor

Consistent with the Chapter 5 Filing Requirements, Alectra Utilities' DSP considers customer needs, priorities and preferences, system reliability, capital expenditures and resource deployment on a system-wide basis. This is in contrast with the previous plans filed by the company and the predecessor utilities. For example, Alectra Utilities' filing in EB-2017-0024 included the Enersource RZ DSP as a stand-alone plan, based on the needs of that operating area and the historically invested capital in that region. By definition, such stand-alone planning cannot be the planning basis of a consolidated DSP.

The M-factor complements the objectives and the capital funding mechanisms that are contemplated by the OEB in the 2015 Report, specifically the availability of capital funding of normal, expected investments during the rebasing deferral period. The M-factor also offers an envelope of capital funding that is substantiated by a five-year DSP. The ICM does not provide the flexibility or the longer-term availability of funding needed to execute a DSP. The DSP in this application spans Alectra Utilities' entire service territory and was developed on that basis. Accordingly, the investments in the DSP must be reviewed as a whole; it would not be meaningful for the OEB to review them in "slices" based on the historical zones on which the IRM rates and ICM riders are set. The OEB's Advanced Capital Module ("ACM") does not address this because of the need for flexibility between years and within years to execute a

comprehensive capital plan. In addition, distributors may request ACM within the context of a cost of service application filing[2]; this is incongruent with Alectra Utilities' current circumstances.

The nature of the investments set out in the DSP has informed Alectra Utilities' request for capital funding in this Application. As identified above, Alectra Utilities consulted with customers in order to understand their needs and priorities. The five-year DSP was developed to be responsive to the views of Alectra Utilities' customers. Alectra Utilities assessed customers' preferences between specific capital investment options and incorporated that feedback into the final DSP. In order for Alectra Utilities to deliver the outcomes that customers expect from the DSP, Alectra Utilities requires the flexibility to potentially accelerate some projects from later to earlier years or defer projects or split new projects into segments. As a result, Alectra Utilities proposes a capital rider based on an "M-factor", as described below, in every year of the five year planning period to reflect the execution of the entire consolidated DSP.

The purpose of the M-factor is to bridge the gap, during Alectra Utilities' rebasing deferral period, between the level of investment funded through base rates and the level of investment that needs to be funded to address system priorities and outcomes consistent with customer needs and preferences, and which thereby enables Alectra Utilities to fully execute its DSP. The utility's base rates will support an average annual capital expenditure of approximately $236MM during the DSP period. The DSP contemplates annual expenditures of approximately $291MM. Therefore, Alectra Utilities cannot execute $55MM of unfunded capital expenditures in each year, for a total of approximately $275MM of unfunded capital expenditures over the five-year DSP period. Without the funding provided by the M-factor, Alectra Utilities will not be able to execute the DSP and will not be able to achieve the outcomes that its customers expect.

If Alectra Utilities is unable to execute a capital plan at the level contemplated in the DSP, there will be significant, long-term negative consequences for the utility's distribution system and its customers. As summarized above and demonstrated in detail in the DSP, significant investments are needed to address declining reliability that is largely driven by deteriorated assets. The single largest example of this trend is the large population of direct-buried cable. As

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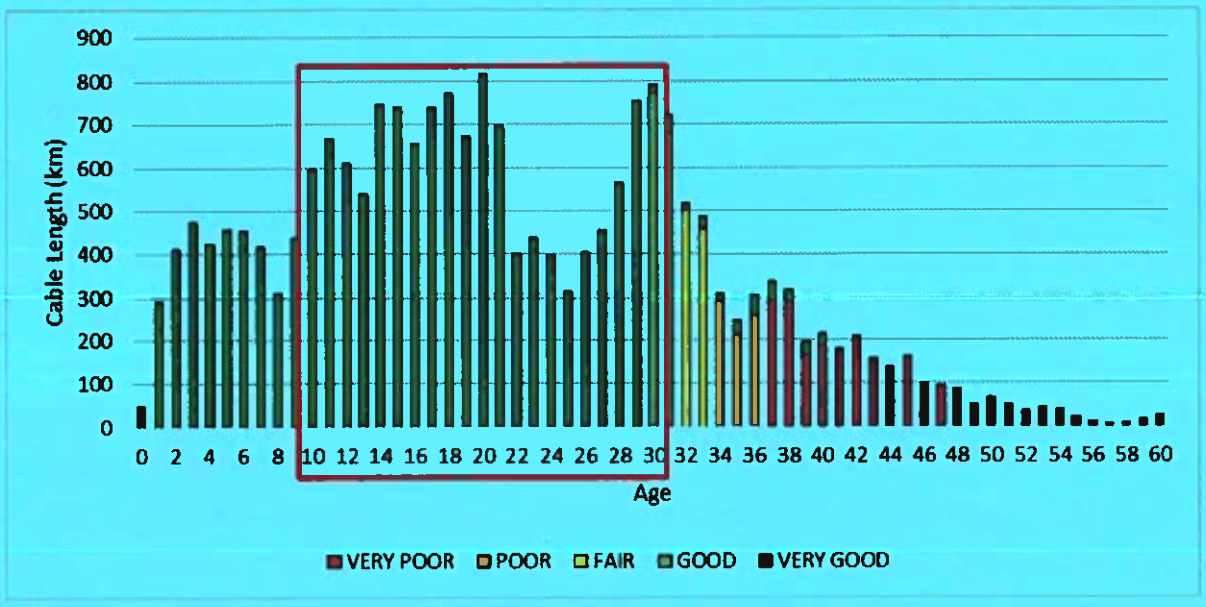
[2] EB-2014-0219 *Report of the Board - New Policy Options for the Funding of Capital Investments: the Advanced Capital Module*, September 18, 2014, p.3

shown in Figure 5 below, there is currently a large population of deteriorated underground in the system, but there is a much larger wave of cable that will deteriorate over the next twenty years (highlighted in the red box).

Figure 5: XLPE Cable by Condition



Failing underground cable has been a major driver of declining reliability for Alectra Utilities customers. The significant expenditures in Underground Asset Renewal during the DSP period are intended to maintain reliability by addressing cable that will be in very poor condition during the 2020-2024 period.[3]

While the potential backlog in underground cable is significant, it is only a component of a larger capital investment backlog that Alectra Utilities forecasts to develop if it is unable to execute the level of system of renewal investment set out in the DSP. If Alectra Utilities is unable to invest in system renewal at the level set out in the DSP, the result will be an increasing population of deteriorated assets, leading to a "snowplow" of capital costs for future customers. Figure 2 in the Executive Summary to the Application (Exhibit 1, Tab 1, Schedule 1) identifies Alectra Utilities' proposed system renewal investment in the DSP, as compared to the significant

[3] Planned Underground Asset Renewal investments are filed in DSP Appendix A10.

increase in renewal investments required over the long term particularly if the proposed investment continues to go unfunded. The outcome is very likely a continued decline in reliability and an increase in expensive reactive capital expenditure.

The M-factor will provide Alectra Utilities with multi-year funding intended to address its planned capital expenditure for the next five years corresponding to its DSP, at a stable and predictable rate pursuant to a framework that adheres as closely as possible to OEB-policy and accords with past precedent. As elaborated in further detail in the section entitled Regulatory- and Cost-Efficiency, below, the M-Factor will also create significant efficiencies and avoid material costs for Alectra Utilities and the OEB over the five-year term. Further, it will allow Alectra Utilities to focus resources on executing the DSP and delivering the outcomes that customers expect.

Alectra Utilities has capital expenditure needs materially in excess of the level that which is presently funded in existing rates. As described above, the DSP identifies capital funding needs that exceed base rates by approximately $55MM per year. These spending levels are the product of the extensive asset management and investment planning processes described in the DSP, which align with the OEB's principles and expectations. In the OEB's *Renewed Regulatory Framework for Electricity Distributors: a Performance Based Approach* (the "RRF") released on October 18, 2012, the OEB set out alternative forms of rate making "*to accommodate differences in the operations of distributors, some of which have capital programs that are expected to be significant.*" The OEB noted that the custom option in particular "*will be most appropriate for distributors with significant large multi-year…investment commitments that exceed historical levels*," whereas 4th Generation IR is more suitable for utilities with "some" incremental needs.

Custom IR is not a rate setting option available to Alectra Utilities during the rebasing deferral period. Further, the RRF framework was set several years prior to the update to the MAADs framework and related rate making in that context. However, the company's evolving capital needs are analogous to those distributors whose capital programs have been funded through Custom IR frameworks, accepted by the OEB. Like those other distributors, Alectra Utilities has significant, multi-year investment requirements supported by a five-year DSP. The fact that Alectra Utilities is operating during a rebasing deferral period does not vary this core fact. The OEB's MAADs policy recognizes that to promote consolidation distributors could elect a longer rebasing deferral period of up to 10 years and must also have access to capital funding that

includes normal and expected capital investments.[4] Alectra Utilities' customers expect it to invest in capital during the rebasing deferral period, like other distributors. The 2015 Report does not exclude the possibility of the implementation of capital funding mechanisms other than ICM in order to permit prudent investments during the rebasing deferral period. Recognizing the unique circumstance presented by Alectra Utilities, the proposed M-factor is limited in scope to apply only to post-consolidation utilities that must execute a consolidated DSP during a rebasing deferral period.

Accordingly, Alectra Utilities applies for capital funding for all of its rate zones in the form of an annual rider calculated based on the M-factor. Alectra Utilities makes this request in accordance with:

- the OEB's *Filing Requirements for Electricity Distribution Rate Applications – Chapter 3 Incentive Rate-Setting Applications* issued July 12, 2018 ("Chapter 3 Filing Requirements");
- the MAADs Handbook;
- the OEB's *Handbook for Utility Rate Applications* (the "Rate Handbook"), dated October 13, 2016; and
- the Decisions and Orders of the OEB in Alectra Utilities' 2018 and 2019 EDR Applications (EB-2017-0024 and EB-2018-0016).

Summary of the M-factor Approach

Table 1 below summarizes the main elements of the M-factor and the purpose of each.

[4] EB-2014-0138 Report of the Board – Rate Making Associated with Distributor Consolidation, March 26, 2015, p.9.

1 **Table 1: M-factor Elements**

M-Factor Element	Purpose	Comparison to ICM
Materiality The M-factor includes a materiality threshold and 10% dead band, consistent with the OEB's ICM materiality threshold. The M-Factor would not include a project-specific materiality threshold.	To ensure that the M-factor only provides funding for capital investments that are materially above the level funded in base rates. As shown in Table 3, the maximum M-factor eligible capital is calculated on a five-year basis, spanning the entire DSP period.	Dead band is consistent with ICM methodology. By calculating maximum M-factor eligible capital on a five-year basis, the M-factor reflects the material cost of recurring, moderate-scale projects across the longer timeframe of the deferred rebasing period.
Flexibility Capital investments are funded on an envelope basis, allowing specific projects to be replaced, modified or shifted between years depending on system needs and priorities.	Flexibility is critical to allow Alectra Utilities to address evolving needs and priorities over the course of the DSP period.	ICM funding is typically tied to specific projects and years, making it poorly suited to a capital plan spanning multiple years and investments.
Capital Investment Variance Account As set out further below in the Section titled "Proposed Variance Accounts", funding provided through the M-factor is subject to reconciliation through a symmetric variance account.	To ensure that any under-investment relative to the level of capital funded through the M-factor is refunded to customers, and any prudent spending above those levels will be recovered by the utility.	Consistent with the function of the ICM true-up process, where any over- or under-collection may be refunded or recovered from a distributor's ratepayers.
Riders by Rate Zone Consistent with the OEB's decision in the MAADs Application, a rate rider will be established for each RZ, based on the investments planned in each of Alectra Utilities' operational areas.	Setting rate riders by rate zone is consistent with the MAADs Application. The MAADs Application confirmed that the rates will not be harmonized until rate differences are immaterial.	No change.
Means Test The M-factor includes a Means Test consistent with the OEB's ICM policy.	The means test ensures that Alectra Utilities would not receive M-factor funding for a year in which its regulated return exceeds its deemed return on equity by 300 basis points.	No change.

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3

Advantages of the M-factor Approach to Post-Merger Capital Funding

The proposed M-factor is a well-reasoned mechanism for funding Alectra Utilities' capital expenditures in the 2020-2024 period in a manner that aligns to its corresponding DSP. In this regard, the M-factor has several advantages:

1. Consistency with Capital Planning Basis

The M-factor provides funding consistent with the consolidated basis on which Alectra Utilities' capital work is planned and on which the DSP has been prepared. The MAADs Handbook states that "having consolidated entities operate as one entity as soon as possible after the [MAADs] transaction is in the best interest of consumers."[5] Planning capital work on a consolidated basis is an important milestone in the utility's progress toward operating as a single entity. However, unless funding is available on a basis that is consistent with that consolidated investment plan, Alectra Utilities will be increasingly challenged to operate on that basis or deliver the outcomes that could otherwise result from the work set out in the DSP.

As described above and in Section 5.2.1 of the DSP, as of 2020, Alectra Utilities plans and prioritizes capital investments across the entirety of its service territory. The CopperLeaf C55 process prioritizes the projects that deliver the best value for Alectra Utilities' system, not for individual rate zones. The M-factor is consistent with this unified approach to investment planning. Rather than planning around eligibility for funding based on the historic investments of utilities that no longer exist, the M-factor would allow Alectra Utilities to invest in the equipment that delivers the best value for its customers, as a whole.

Under the MAADs policy, the default capital funding mechanism for post-merger utilities is the ICM. However, the OEB's prior decisions on Alectra Utilities' ICM requests have confirmed that the ICM is not able to accommodate many of the investments that Alectra Utilities must make during the DSP period. In its Decision and Order on Alectra Utilities' first ICM application (EB-2017-0024), the OEB found as follows:

> The OEB agrees that it is important for a distributor to have programs to address aging infrastructure to ensure assets are replaced on a paced and prioritized

[5] Handbook to Electricity Distributor and Transmitter Consolidations, January 19, 2016, p. 13.

> schedule. Nevertheless, this application is about whether incremental funding for capital will be provided during the IRM term. ICM funding is not available for typical annual capital programs. It is also not available for projects that are not significant to the operations of the distributor. Where the OEB has not approved a project for incremental funding, this should not be interpreted as the OEB saying that it is not prudent to complete the project.[6]

Over the five-year term of the DSP, Alectra Utilities plans to invest approximately $768MM in System Renewal. These investments are needed to be responsive to customer expectations that Alectra Utilities maintain the reliability of its system. The DSP provides detailed evidence on the prudence of the planned investments, including the need to execute them over the 2020 to 2024 period, in order to prevent reliability from declining further. These investments cannot be funded under the current ICM. The funding deficiency is not sustainable over time and is to the detriment of Alectra Utilities' customers.

In recent years, Alectra Utilities has been required to defer a significant amount of System Renewal investments to accommodate other mandatory expenditures. In particular, the utility has been required to defer renewal investments to accommodate large System Access projects. In 2015, System Access investments comprised 18% of the overall capital investments made by the company's predecessor utilities. This increased to 30% as of 2019 as a result of significant investments required in road authority projects. Decreasing reliability in that same period is due in part to the deferral of renewal investments. The M-factor will provide Alectra Utilities with the flexible funding basis necessary to execute both mandatory work and critical system renewal during the 2020 to 2024 period. The M-factor will allow Alectra Utilities to renew the assets that are leading to declining reliability, safety and other performance issues, while continuing to provide the utility with a reasonable opportunity to realize the synergies that underpinned its creation.

2. Regulatory- and Cost-Efficiency

Funding capital investments through the M-factor creates significant efficiencies for the OEB and for the utility. By establishing a mechanism to fund prudent capital expenditures based on a DSP over a five-year period, annual incremental capital proceedings are avoided. There would

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[6] EB-2017-0024, Decision and Order, April 6, 2018, p. 30.

be a cost saving and OEB resources could be redirected to address other matters before the Board. Without an M-factor, Alectra Utilities will need to continue to file significant applications with the OEB each year. The cost of these annual applications and the time they consume both in development and adjudication is substantial for Alectra Utilities and the regulator.

Table 2 below provides the cost of Alectra Utilities past two applications as well as the forecast costs of this application.

Table 2 – Alectra Utilities Annual Rate Application Costs

Application Year	Costs $MM
2018 EDR Application	$1.4
2019 EDR Application	$0.5
2020 EDR Application (forecasted)	$2.2
Total Application Costs	**$4.1**

A significant proportion of the past two ICM applications focused on different phases of the same projects. In effect, parties were required to re-litigate the same issues on the same projects, one year apart. The cost of filing and adjudicating these additional serial applications will be significant, without contributing additional value for customers or for the OEB. Over a five-year period, this approach could result in the OEB spending more time and resources on Alectra Utilities' recurring ICM applications than it would on a single Custom IR application for another utility.

The regulatory efficiency gains produced by the M-factor are also consistent with public policy. In particular, section 4.3(11) of the recently enacted *Fixing the Hydro Mess Act, 2019* requires that the chief commissioner "ensure the efficiency, timeliness and dependability of the hearing and determination of matters over which the Board has jurisdiction."

The M-factor would enable Alectra Utilities to focus its resources on delivering the outcomes that customers expect. The cost and resources required to prepare and support a rate-setting application are significant. By providing a reliable level of funding over a multi-year period and avoiding annual rate-setting applications, Alectra Utilities will be able to focus its resources on delivering the investments that customers need, and executing that work in an effective, cost-efficient manner.

3. Rate certainty

The M-factor would provide the benefit of rate-certainty over the 2020-2024 period. Customers would be aware of bill impacts over a five-year period. Commercial and industrial customers in particular would benefit from the ability to budget and plan their operations in a longer period of relative rate-certainty. Alectra Utilities would benefit from the ability to plan its capital work based on the optimal pacing of the investments, rather than the outcomes of a series of annual rate-setting applications.

Objective of the M-factor Approach

The objective of the M-factor is to provide Alectra Utilities with capital funding for prudent capital investments on a basis that is consistent with the capital-related revenue requirement associated with the 2020-2024 DSP in the same period. Accordingly, Alectra Utilities sought to develop a mechanism that satisfies three criteria:

1. Consistency with existing OEB policy;
2. Provides flexible funding for prudent capital investments across the DSP period; and
3. Protects customers from potential under-investment relative to funding in rates.

Each criterion is discussed below, followed by the proposed calculation of the M-factor.

1. Consistency with Existing OEB Policy

While the M-factor is a new proposal based on Alectra Utilities' specific circumstances, the utility's goal is that the M-factor should reflect and augment existing OEB rate-setting mechanisms to the greatest extent possible (while providing sufficient funding to enable the investments and outcomes in the DSP). In this regard, the utility proposes that (i) the M-factor riders be calculated based on the materiality threshold calculation (including the dead band) from the OEB's ICM methodology, and (ii) that the need for M-factor funding be assessed relative to the means test set out in the OEB's ICM policy. Both of these elements of the M-factor are described below.

i. Materiality

As described above, the annual nature of the ICM does not address the needs of Alectra Utilities' distribution system or its customers in the context of a five-year DSP. However, the

ICM materiality threshold remains an appropriate method to calculate the level of capital funding that a utility should be expected to absorb within its funding from base rates outside of a rebasing application. Accordingly, Alectra Utilities proposes to adopt the materiality threshold in the M-factor to determine the level of funding that is provided by base rates, including a deadband of 10%. Alectra Utilities would only be eligible for funding through the M-factor to the extent that its capital expenditures in a given year fit within the total eligible capital envelope derived from the materiality threshold for that year (i.e., the difference between the total capital budget for the year and the materiality threshold calculation).

Accordingly, Alectra Utilities proposes that the M-factor materiality threshold be calculated as follows:[7]

$$\textit{Threshold Value}\,(\%) = 1 + [(\frac{RB}{d}) \times (g + PCI \times (1 + g))]) \times ((1 + g) \times (1 + PCI)^{n} + 10\%$$

RB = rate base from the distributor's last cost of service

d = depreciation from the distributor's last cost of service

g = growth calculated based on the percentage difference in distribution revenues between the most recent complete year and the distribution revenues from the most recent approved test year in a cost of service application

PCI = Price Cap Index (IPI-stretch factor) from the distributor's most recent Price Cap IR application as a placeholder for the initial application filing to be updated when new information becomes available

n = number of years since the last rebasing

As the threshold value is anchored on each predecessor utility's last rebasing application, the materiality threshold for Alectra Utilities has been calculated as the sum of the threshold values for each predecessor utility.

The PCI of 1.2% is a placeholder to be updated with the OEB's approved PCI for 2020 when it is available. Alectra Utilities has used a PCI of 1.36%. It is based on a five-year historical average inflation growth rate of 1.66% ~~inflation of 1.50%~~ less a productivity factor of 0.00% and a stretch factor of 0.30% as identified in Table 3 below.

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[7] Consistent with the methodology set out in the *Report of the Board – New Policy Options for the Funding of Capital Investments: The Advanced Capital Module* (EB-2014-0219) issued on September 18, 2014 ("the ACM Report").

The growth rates have been calculated in accordance with the ACM Report and are equal to the change in revenue based on each predecessor's last OEB approved billing determinants divided by 2018 actual billing determinants, using 2019 approved rates. The growth rate calculation is identified in Table 3 below.

Table 3 below summarizes the calculation of the threshold capital expenditure amount using the Board's formula approved in the ACM Report. The threshold capital expenditure value over the 2020 to 2024 DSP period is $1.086B ~~$1.182B~~

Table 3 – Threshold Capital Expenditure Calculation ($MM)

Description	ERZ	BRZ	GRZ	PRZ	HRZ	ALECTRA
Inflation	1.66%	1.66%	1.66%	1.66%	1.66%	1.66%
Less: Productivity Factor	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Less: Stretch Factor	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%
Price Cap Index	1.36%	1.36%	1.36%	1.36%	1.36%	1.36%
Growth Factor	-0.06%	1.84%	-0.19%	0.89%	2.93%	
Rebasing Year	2013	2015	2016	2017	2019	
# Years since rebasing	7	5	4	3	1	
Price Cap Index	1.36%	1.36%	1.36%	1.36%	1.36%	
Growth Factor	-0.06%	1.84%	-0.19%	0.89%	2.93%	
Dead Band	10%	10%	10%	10%	10%	
Rate Base	$610.5	$404.6	$151.4	$1,082.8	$555.7	$2,805.0
Depreciation	$28.7	$15.2	$6.3	$52.3	$22.7	$125.2
Threshold Capital Expenditure 2020	**$40.18**	**$31.59**	**$8.75**	**$83.06**	**$49.02**	$212.6
Threshold Capital Expenditure 2021	**$40.29**	**$32.07**	**$8.77**	**$83.64**	**$50.06**	$214.8
Threshold Capital Expenditure 2022	**$40.41**	**$32.56**	**$8.79**	**$84.23**	**$51.15**	$217.1
Threshold Capital Expenditure 2023	**$40.52**	**$33.07**	**$8.81**	**$84.83**	**$52.29**	$219.5
Threshold Capital Expenditure 2024	**$40.64**	**$33.60**	**$8.83**	**$85.45**	**$53.47**	$222.0
Threshold Capital Expenditure 2020-2024	**$202.0**	**$162.9**	**$44.0**	**$421.2**	**$256.0**	**$1,086.1**

Description	ERZ	BRZ	GRZ	PRZ	HRZ	ALECTRA
Inflation	1.50%	1.50%	1.50%	1.50%	1.50%	1.50%
Less: Productivity Factor	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Less: Stretch Factor	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%
Price Cap Index	1.20%	1.20%	1.20%	1.20%	1.20%	1.20%
Growth Factor	-0.05%	1.84%	1.60%	2.31%	3.04%	
Rebasing Year	2013	2015	2016	2017	2019	
# Years since rebasing	7	5	4	3	1	
Price Cap Index	1.20%	1.20%	1.20%	1.20%	1.20%	
Growth Factor	-0.05%	1.84%	1.60%	2.31%	3.04%	
Dead Band	10%	10%	10%	10%	10%	
Rate Base	$610.5	$404.6	$151.4	$1,082.8	$555.7	$2,805.0
Depreciation	$28.7	$15.2	$6.3	$52.3	$23.9	$126.4
Threshold Capital Expenditure 2020	$39.1	$30.7	$11.6	$98.5	$50.0	**$230.0**
Threshold Capital Expenditure 2021	$39.2	$31.2	$11.7	$100.0	$51.1	**$233.1**
Threshold Capital Expenditure 2022	$39.3	$31.6	$11.8	$101.5	$52.1	**$236.3**
Threshold Capital Expenditure 2023	$39.4	$32.1	$12.0	$103.0	$53.2	**$239.7**
Threshold Capital Expenditure 2024	$39.4	$32.5	$12.1	$104.7	$54.4	**$243.1**
Threshold Capital Expenditure 2020-2024	**$196.3**	**$158.2**	**$59.2**	**$507.7**	**$260.9**	**$1,182.2**

Table 4 below compares the 2020 to 2024 capital forecast for Alectra Utilities to the Threshold Capital Expenditure to calculate the maximum M-factor eligible capital of $370.4MM. ~~$274MM.~~

Table 4 – M-factor Maximum Eligible Incremental Capital ($MM)

Eligible Incremental Capital	Capital Expenditures
2020 - 2024 DSP Capital Forecast	$1,456.5
Less: Materiality Threshold	$1,086.1
Maximum M-factor Eligible Capital	**$370.4**

Eligible Incremental Capital	Capital Expenditures
2020 - 2024 DSP Capital Forecast	$1,456.5
Less: Materiality Threshold	$1,182.2
Maximum M-factor Eligible Capital	**$274.3**

Table 5 below presents the M-factor capital investments, after Customer Engagement, based on the priority needs of Alectra Utilities, as identified in the DSP. The second phase of the customer engagement process focused on projects where Alectra Utilities would be more likely be able to make changes in response to customer preferences. Specifically, the engagement focused on a subset of projects that offered greater potential for pacing adjustments in response to customer preferences, alongside some exceptional projects that are distinct from the utility's typical capital investment categories. Although all of the projects included in the asset management process are necessary and provide value, Alectra Utilities generally has a greater ability to control the pace of the projects included in the second phase of customer engagement.

The projects addressed in the second phase of customer engagement were the same projects on which Alectra Utilities proposes to calculate the M-factor. By aligning customer engagement with the proposed capital funding mechanism, any changes to the proposed expenditures in response to customer preferences would be directly captured by the M-factor and, ultimately, reflected in customer bill impacts. In effect, this approach allowed Alectra Utilities to direct customer attention investments with a greater potential to present meaningful "trade-offs" between outcomes that matter to customers.

Table 5 – 2020 - 2024 M-factor Capital Projects by Investment Need ($MM)

DSP Priority Needs	2020-2024 M-Factor Capital Expenditures
Enhancing the resilience of its overhead system to adverse weather events	$62.4
Mitigating the need to rebuild or construct new stations by enhancing the use of monitoring technologies, investing in environmental protection measures and strategically managing inventory on a consolidated basis	$43.9
Preventing further decline in reliability due to deteriorating underground assets	$35.2
Responding to anticipated needs in areas of new greenfield development and urban redevelopment/intensification	$123.6
Total M-factor Capital Expenditure	**$265.0**

ii. Need

In addition to the materiality criteria, Alectra Utilities proposes that the M-factor include a Means Test consistent with the calculation defined in the ACM Report. Alectra Utilities must satisfy this Means Test in order to qualify for funding through the M-factor.

If Alectra Utilities' regulated return, as calculated in its most recent calculation (Reporting and Record Keeping Requirements ("RRR") 2.1.5.6), exceeds 300 basis points above the deemed return on equity ("ROE") embedded in its rates, M-factor funding will not be available in that year.

Alectra Utilities filed its 2018 annual Reporting and Record Keeping Requirements ("RRRs") on April 30, 2019. RRR data for all measures were filed for Alectra Utilities, and not individually, by rate zone. The 2018 RRR filing excludes the Guelph RZ which became part of Alectra Utilities effective January 1, 2019. Alectra Utilities' 2018 ROE was calculated to be 7.66%, 128 basis points below a calculated ROE for Alectra of 8.94%. Alectra Utilities calculated a consolidated deemed ROE percentage using the weighted average of the OEB-approved rate base amounts for each rate zone, from the most recent OEB-approved rebasing application for each of the predecessor companies. Alectra Utilities' ROE calculation for 2018, filed in RRR 2.1.5.6, is filed as Attachment 1.

The 2018 ROE for Alectra Utilities' predecessor, Guelph Hydro, was calculated to be 8.18%, 101 basis points below its approved 2018 ROE of 9.19%. The ROE calculation for Guelph Hydro, included in RRR 2.1.5.6, is filed as Attachment 2.

Alectra Utilities, including in respect of its predecessor Guelph Hydro, therefore satisfies the Means Test for 2020.

2. Provides flexible funding for prudent capital investments

As set out above, Alectra Utilities 2020-2024 DSP is a single, harmonized plan comprised of a wide range of different investments. The DSP is not organized around RZs, nor is it driven by specific large projects. In order to effectively implement this plan, and achieve the outcomes that customers require and expect, Alectra Utilities must be able to execute all of the work in the DSP, while simultaneously accommodating changing circumstances that may require acceleration of some work and deferral of other work. Accordingly, the M-factor must be able to fund the range of capital work that comprises the DSP, not just a particular large project or subset of projects.

While the M-factor riders are calculated based on the specific investments contemplated by the DSP, they are not tied to those specific investments. Unlike other funding mechanisms during an IRM term, the M-factor provides an envelope of capital funding to fund prudent investments during the 2020-2024 period and is comparable in its approach to Custom IR treatment made in conjunction with a five year DSP.

3. Protects Customers from Under-Investment

Alectra Utilities understands that customers need to know that any additional capital funding provided in rates is, in fact, invested in the distribution system. Accordingly, Alectra Utilities proposes that the funding provided through M-factor riders be subject to reconciliation with actual capital investments during the DSP period. As set out below, at Exhibit 2, Tab 1, Schedule 4, the utility has proposed that a Capital Investment Variance Account ("CIVA") be established to track the difference between the capital funding provided through M-factor riders and the utility's actual capital investments during the term of the DSP. This account will operate symmetrically, such that customers will be refunded for overall under-investment and any prudent spending above the level funded through M-factor riders will be recovered by Alectra Utilities. Such a mechanism was previously implemented for the first time by an Alectra Utilities' predecessor, Horizon Utilities, with support from intervenors and the OEB. Further details on the CIVA are provided in the Proposed Variance Accounts section, below.

Calculation of M-Factor Funding and Riders

This section sets out Alectra Utilities' proposal for how the M-factor and resulting riders should be calculated during the 2020-2024 DSP period.

The cumulative 5-year capital revenue requirement associated with the M-factor funding request of $265.0MM is $21.8MM.~~$286,036,835 is $27,891,068.~~ Table 6 below summarizes the M-factor capital revenue requirement for 2020 through 2024.

Table 6 – M-factor Capital Revenue Requirement ($MM)

M-factor Revenue Requirement	2020	2021	2022	2023	2024	Total
Return on Rate base - Total	$3.2	$2.6	$3.2	$3.0	$3.9	$15.8
Amortization	$1.9	$2.0	$2.1	$2.8	$2.4	$11.2
Incremental Grossed Up PILs	($0.4)	($2.3)	($1.3)	($0.3)	($0.9)	($5.1)
Total	**$4.7**	**$2.3**	**$3.9**	**$5.6**	**$5.4**	**$21.8**

Alectra Utilities has calculated capital revenue requirement by rate zone based on the projects to be completed in each of the service areas. In the MAADs Application, Alectra Utilities identified that rates will not be harmonized until rate differences are immaterial.

The Rate of Return has been calculated using the cost of capital parameters approved by the OEB in the predecessor utility's last rebasing application[8].

A full year of depreciation has been recovered which is consistent with the OEB's policy in the *Report of the Board: New Policy Options for the Funding of Capital Investments: The Advanced Capital Module* (EB-2014-0219), issued September 18, 2014. Similarly, PILs have been calculated using a full year of Capital Cost Allowance ("CCA").

The detailed calculation of M-factor capital revenue requirement is filed as Attachment 3.

Rate Riders

Alectra Utilities is seeking OEB approval for the M-factor rate riders identified in Attachment 3. The M-factor capital revenue requirement has been allocated to rate classes based on the current allocation of revenue using the current Revenue Proportions for each rate zone as identified in the M-factor Model, filed as Attachment 3. The M-factor capital revenue requirement for the residential class will be recovered via a fixed rate rider as directed by the OEB at p.8 of the Filing Requirements for Electricity Distribution Rate Applications – Chapter 3 Incentive Rate-Setting Applications, issued July 12, 2018 (the "Chapter 3 Filing Requirements). Rate riders for all other rate classes are based on the current fixed/variable revenue split identified in the M-factor Model. Tables 7 to 11 identify the M-factor rider, inclusive of HST, based on the average consumption and demand billing determinants for each rate zone.

[8] The exception to this is the HRZ-related cost of capital parameters that were updated in 2019, per the Horizon Utilities Settlement Agreement (EB-2014-0002) and as approved by the OEB in the Decision and Order in Alectra Utilities 2019 EDR Application (EB-2018-0016)

Table 7 – M-factor Capital Funding Rate Riders, Including HST - ERZ

ERZ - M-factor Rate Rider Incl HST	Unit	kWh	kW	2020	2021	2022	2023	2024	Total
Residential	kWh	750		$ 0.13	$ 0.06	$ 0.17	$ 0.20	$ 0.39	$ 0.95
General Service < 50 kW	kWh	2,000		$ 0.37	$ 0.17	$ 0.50	$ 0.59	$ 1.15	$ 2.77
General Service 50 to 499 kW	kW	100,000	230	$ 6.53	$ 3.01	$ 8.83	$ 10.48	$ 20.38	$ 49.23
General Service 500 to 4999 kW	kW	400,000	2,250	$ 40.70	$ 18.74	$ 54.98	$ 65.30	$ 126.93	$ 306.65
Large Use	kW	3,000,000	5,000	$ 163.63	$ 75.35	$ 221.08	$ 262.57	$ 510.39	$ 1,233.03
Unmetered	kWh	300		$ 0.08	$ 0.04	$ 0.11	$ 0.13	$ 0.25	$ 0.60
Street Lighting	kW	33	0	$ 0.02	$ 0.01	$ 0.02	$ 0.02	$ 0.05	$ 0.12

Table 8 – M-factor Capital Funding Rate Riders, Including HST – BRZ

BRZ - M-factor Rate Rider Incl HST	Unit	kWh	kW	2020	2021	2022	2023	2024	Total
Residential	kWh	750		$ 0.32	$ 0.04	$ 0.23	$ 0.20	$ 0.12	$ 0.92
General Service < 50 kW	kWh	2,000		$ 0.80	$ 0.11	$ 0.56	$ 0.50	$ 0.30	$ 2.26
General Service 50 to 699 kW	kW	182,500	500	$ 22.58	$ 3.02	$ 15.88	$ 14.16	$ 8.46	$ 64.10
General Service 700 to 4999 kW	kW	627,216	1,432	$ 85.50	$ 11.45	$ 60.12	$ 53.63	$ 32.03	$ 242.74
Large Use	kW	10,220,000	20,000	$ 798.09	$ 106.92	$ 561.20	$ 500.59	$ 299.01	$ 2,265.82
Unmetered	kWh	21,296		$ 6.17	$ 0.83	$ 4.34	$ 3.87	$ 2.31	$ 17.53
Street Lighting	kW	2,787,508	7,922	$ 1,336.07	$ 178.99	$ 939.50	$ 838.03	$ 500.57	$ 3,793.17
Embedded Distributor	kWh	1,417,701	4,000	$ 60.80	$ 8.15	$ 42.75	$ 38.14	$ 22.78	$ 172.61
Distributed Generation	kWh	156		$ 1.52	$ 0.20	$ 1.07	$ 0.95	$ 0.57	$ 4.31

Table 9 – M-factor Capital Funding Rate Riders, Including HST – HRZ

HRZ - M-factor Rate Rider Incl HST	Unit	kWh	kW	2020	2021	2022	2023	2024	Total
Residential	kWh	750		$ 0.23	$ 0.16	$ 0.19	$ 0.15	$ 0.23	$ 0.98
General Service Less Than 50 Kw	kWh	2,000		$ 0.56	$ 0.39	$ 0.47	$ 0.36	$ 0.56	$ 2.34
General Service 50 To 4,999 Kw	kW	110,000	250	$ 9.76	$ 6.91	$ 8.16	$ 6.35	$ 9.83	$ 41.01
Large Use	kW	2,555,000	5,000	$ 294.17	$ 208.28	$ 245.81	$ 191.47	$ 296.35	$ 1,236.09
Large Use With Dedicated Assets	kW	10,220,000	20,000	$ 117.40	$ 83.12	$ 98.10	$ 76.41	$ 118.27	$ 493.30
Unmetered Scattered Load	kWh	250		$ 0.11	$ 0.08	$ 0.09	$ 0.07	$ 0.11	$ 0.47
Sentinel Lighting	kW	97,008	216	$ 31.26	$ 22.13	$ 26.12	$ 20.35	$ 31.49	$ 131.35
Street Lighting	kW	1,782,038	4,974	$ 240.86	$ 170.54	$ 201.26	$ 156.77	$ 242.64	$ 1,012.07

Table 10 – M-factor Capital Funding Rate Riders, Including HST – PRZ

PRZ - M-factor Rate Rider Incl HST	Unit	kWh	kW	2020	2021	2022	2023	2024	Total
Residential	kWh	750		$ 0.32	$ 0.18	$ 0.22	$ 0.49	$ 0.29	$ 1.50
General Service Less Than 50 Kw	kWh	2,000		$ 0.68	$ 0.38	$ 0.46	$ 1.04	$ 0.62	$ 3.19
General Service 50 To 4,999 Kw	kW	80,000	250	$ 13.34	$ 7.42	$ 9.05	$ 20.47	$ 12.21	$ 62.50
Large Use	kW	2,800,000	7,350	$ 252.45	$ 140.45	$ 171.34	$ 387.40	$ 231.07	$ 1,182.70
Unmetered Scattered Load	kWh	150	0	$ 0.13	$ 0.07	$ 0.09	$ 0.20	$ 0.12	$ 0.60
Sentinel Lighting	kW	180	1	$ 0.16	$ 0.09	$ 0.11	$ 0.24	$ 0.14	$ 0.74
Street Lighting	kW	280	1	$ 0.08	$ 0.05	$ 0.06	$ 0.13	$ 0.08	$ 0.39

Table 11 – M-factor Capital Funding Rate Riders, Including HST – GRZ

GRZ - M-factor Rate Rider Incl HST	Unit	kWh	kW	2020	2021	2022	2023	2024	Total
Residential	kWh	750		$ 0.03	$ 0.07	$ 0.15	$ 0.15	$ 0.09	$ 0.49
General Service Less Than 50 Kw	kWh	2,000		$ 0.05	$ 0.11	$ 0.23	$ 0.24	$ 0.14	$ 0.76
General Service 50 To 999 Kw	kW	189,800	500	$ 1.85	$ 4.02	$ 8.54	$ 8.89	$ 5.11	$ 28.39
General Service 1,000 To 4,999 Kw	kW	489,100	1,000	$ 4.31	$ 9.35	$ 19.89	$ 20.70	$ 11.89	$ 66.14
Large Use	kW	4,215,750	7,500	$ 25.76	$ 55.93	$ 118.91	$ 123.79	$ 71.12	$ 395.51
Unmetered Scattered Load	kWh	750		$ 0.03	$ 0.06	$ 0.12	$ 0.12	$ 0.07	$ 0.39
Sentinel Lighting	kW	140	2	$ 0.03	$ 0.06	$ 0.13	$ 0.14	$ 0.08	$ 0.44
Street Lighting	kW	800,000	2,200	$ 26.75	$ 58.09	$ 123.49	$ 128.56	$ 73.86	$ 410.76

Impact of the M-factor

The following tables provide the average annual bill impact of the M-factor, for each rate class in each of the rate zones. The average annual total bill impact for a typical residential customer ranges from 0.09% to 0.28%. The bill impacts are indeed minimal and but provide customers with the assurance that necessary investments are funded, while providing customers with both certainty and stability. The annual bill impacts for each rate class in each of the rate zones is included in the M-factor model, filed as Attachment 3.

Bill Impacts

Tables 12 to 16 below identify the average annual bill impact by rate class as a result of the addition of the 2020 to 2024 M-factor rate riders.

Table 12– M-factor Bill Impacts (Total Bill) – ERZ

ERZ - M-factor bill impact	Unit	kWh	kW	Avg. Annual Rider	Avg. Annual % Increase vs. Total Bill
Residential	kWh	750		$ 0.19	0.18%
General Service < 50 kW	kWh	2,000		$ 0.55	0.19%
General Service 50 to 499 kW	kW	100,000	230	$ 9.85	0.06%
General Service 500 to 4999 kW	kW	400,000	2,250	$ 61.33	0.08%
Large Use	kW	3,000,000	5,000	$ 246.61	0.05%
Unmetered	kWh	300		$ 0.12	0.23%
Street Lighting	kW	33	0	$ 0.02	0.57%

Table 13 – M-factor Bill Impacts (Total Bill) – BRZ

BRZ - M-factor bill impact	Unit	kWh	kW	Avg. Annual Rider	Avg. Annual % Increase vs. Total Bill
Residential	kWh	750		$ 0.18	0.17%
General Service < 50 kW	kWh	2,000		$ 0.45	0.17%
General Service 50 to 699 kW	kW	182,500	500	$ 12.82	0.05%
General Service 700 to 4999 kW	kW	627,216	1,432	$ 48.55	0.05%
Large Use	kW	10,220,000	20,000	$ 453.16	0.03%
Unmetered	kWh	21,296		$ 3.51	0.09%
Street Lighting	kW	2,787,508	7,922	$ 758.63	0.14%
Embedded Distributor	kWh	1,417,701	4,000	$ 34.52	0.02%
Distributed Generation	kWh	156		$ 0.86	0.60%

Table 14 – M-factor Bill Impacts (Total Bill) – HRZ

HRZ - M-factor bill impact	Unit	kWh	kW	Avg. Annual Rider	Avg. Annual % Increase vs. Total Bill
Residential	kWh	750		$ 0.20	0.18%
General Service Less Than 50 Kw	kWh	2,000		$ 0.47	0.17%
General Service 50 To 4,999 Kw	kW	110,000	250	$ 8.20	0.05%
Large Use	kW	2,555,000	5,000	$ 247.22	0.06%
Large Use With Dedicated Assets	kW	10,220,000	20,000	$ 98.66	0.01%
Unmetered Scattered Load	kWh	250		$ 0.09	0.24%
Sentinel Lighting	kW	97,008	216	$ 26.27	0.12%
Street Lighting	kW	1,782,038	4,974	$ 202.41	0.05%

Table 15 – M-factor Bill Impacts (Total Bill) – PRZ

PRZ - M-factor bill impact	Unit	kWh	kW	Avg. Annual Rider	Avg. Annual % Increase vs. Total Bill
Residential	kWh	750		$ 0.30	0.28%
General Service Less Than 50 Kw	kWh	2,000		$ 0.64	0.23%
General Service 50 To 4,999 Kw	kW	80,000	250	$ 12.50	0.10%
Large Use	kW	2,800,000	7,350	$ 236.54	0.06%
Unmetered Scattered Load	kWh	150	0	$ 0.12	0.41%
Sentinel Lighting	kW	180	1	$ 0.15	0.41%
Street Lighting	kW	280	1	$ 0.08	0.15%

Table 16 – M-factor Bill Impacts (Total Bill) – GRZ

GRZ - M-factor bill impact	Unit	kWh	kW	Avg. Annual Rider	Avg. Annual % Increase vs. Total Bill
Residential	kWh	750		$ 0.10	0.09%
General Service Less Than 50 Kw	kWh	2,000		$ 0.15	0.06%
General Service 50 To 999 Kw	kW	189,800	500	$ 5.68	0.02%
General Service 1,000 To 4,999 Kw	kW	489,100	1,000	$ 13.23	0.02%
Large Use	kW	4,215,750	7,500	$ 79.10	0.01%
Unmetered Scattered Load	kWh	750		$ 0.08	0.04%
Sentinel Lighting	kW	140	2	$ 0.09	0.13%
Street Lighting	kW	800,000	2,200	$ 82.15	0.05%

J2.2

Reference:

To update Tables 1 and 2 by taking out Major Event Days.

Response:

Alectra Utilities has updated Tables 1 and 2 initially provided in response to JT2.6, as Table 1a and Table 2a, below. Table 1a provides Defective Equipment in Customer Hours of Interruption and Table 2a provides Defective Equipment in Customer Interruptions both with Major Event Days ("MEDs") included and excluded.

Table 1a - Defective Equipment - Customer Hours of Interruption (2014-2018)

Defective Equipment – Customer Hours of Interruption	2014	2015	2016	2017	2018
With MEDs	455,522	447675	456,610	387,250	531,219
Without MEDs	395,473	439,620	383,898	377,280	523,816

Table 2a - Defective Equipment - Customer Interruptions (2014-2018)

Defective Equipment – Customer Interruptions	2014	2015	2016	2017	2018
With MEDs	490,089	389,254	434,934	422,621	518,395
Without MEDs	464,003	388,392	398,365	419,701	510,399

J2.3

Reference:

To file the background of the derivation of the $38.4 million.

Response:

On October 16, 2019, Alectra Utilities filed a redacted version of its 2019-2023 Financial Plan, including a summary Report to the Board of Directors and a PowerPoint presentation to the Board of Directors, dated December 14, 2018. At slide 8 of the presentation, Alectra Utilities identified that key assumptions/risks in the 2019 Plan included ICM revenue of $6.9MM in 2019 and $38.4MM from 2019 to 2023 based on 50% recovery of eligible ICM projects consistent with the 2018 ICM decision.

Table 4 of the 2019-2023 Financial Plan provides a summary of ICM revenue. Table 4 is reproduced, below. Alectra Utilities clarifies that total ICM revenue in the 2019 Plan of $38.4MM is comprised of $6.9MM in 2019; $8.7MM in 2020; $10.5MM in 2021; and $12.3MM in 2022, as provided in the 'Total ICM – 2019 Plan' line item in the table below.

Table 4: ICM per Rate Zone by Year ($MMs)

ICM Revenue	2018	2019	2020	2021	2022	Total	2023
Prior Year ICM Recovery	**4.9**	**5.7**	**8.1**	**11.7**	**15.3**	**45.7**	**18.9**
Incremental ICM Relief Sought:							
PowerStream RZ	—	1.5	1.2	1.2	1.2	5.1	1.2
Enersource RZ	—	0.9	1.2	1.2	1.2	4.5	1.2
Horizon Utilities RZ	—	—	1.2	1.2	1.2	3.6	1.2
Brampton Hydro RZ	—	—	—	—	—	—	—
Total Incremental Relief	—	**2.4**	**3.6**	**3.6**	**3.6**	**13.2**	**3.6**
Total ICM Revenue	**4.9**	**8.1**	**11.7**	**15.3**	**18.9**	**58.9**	**22.5**
Less: 50% Recovery Assumption	—	(1.2)	(3.0)	(4.8)	(6.6)	(15.6)	(8.4)
Total ICM - 2019 Plan	**4.9**	**6.9**	**8.7**	**10.5**	**12.3**	**43.3**	**14.1**
Total ICM - 2018 Plan	7.0	10.3	16.0	20.3	23.6	77.2	N/A
Difference	**(2.1)**	**(3.4)**	**(7.3)**	**(9.8)**	**(11.3)**	**(33.9)**	**N/A**

The $38.4MM of ICM revenue over the 2019 to 2022 period is derived as follows:

- $22.8MM of ICMs previously approved in Enersource's 2016 Electricity Distribution Rate ("EDR") Application ($3.3MM) and Alectra Utilities' 2018 EDR Application ($2.4MM). The $22.8MM is calculated as follows: ($3.3MM+$2.4MM) * 4 = $22.8MM;
- $4.8MM of ICM based on 50% recovery of ICM revenue included in Alectra Utilities' 2019 EDR Application. Alectra Utilities' 2019 EDR Application included $2.4MM of ICM revenue. The 2019 Financial Plan assumes that 50% or $1.2MM of 2019 ICM revenue over the 2019 to 2022 period (i.e. $1.2MM * 4 = $4.8MM);
- $10.8MM of ICM revenue over the 2019 to 2022 period based on a 50% recovery assumption.

The calculation of the $38.4MM is summarized in Table 1, below.

Table 1 – 2019-2022 ICM Revenue (2019 Financial Plan)

2019-2022 ICM Revenue (2019 Financial Plan)	2019	2020	2021	2022	2019-2022
ICM Revenue - Prior Approved Decisions	$5.7	$5.7	$5.7	$5.7	$22.8
ICM Revenue_2019 Incremental @ 50% recovery	$1.2	$1.2	$1.2	$1.2	$4.8
ICM Revenue_2020 Incremental @ 50% recovery		$1.8	$1.8	$1.8	$5.4
ICM Revenue_2021 Incremental @ 50% recovery			$1.8	$1.8	$3.6
ICM Revenue_2022 Incremental @ 50% recovery				$1.8	$1.8
Total 2019-2022	**$6.9**	**$8.7**	**$10.5**	**$12.3**	**$38.4**

As identified above, 2019 ICM revenue was based on Alectra Utilities' 2019 EDR Application. In that application, Alectra Utilities requested ICM funding for 5 projects in the Enersource and PowerStream rate zones, in the amount of $31.6MM, with a corresponding revenue requirement of $2.4MM. As the OEB's Decision in the 2019 Application was subsequent to the Financial Plan, Alectra Utilities relied on the 2018 Decision as the basis for the 50% recovery assumption. As a result, the 2019 ICM projection in the Financial Plan was based on 50% of the as-filed ICM revenue of $2.4MM, or $1.2MM.

For the 2020 to 2022 period, Alectra Utilities determined ICM revenue based on the level of capital and corresponding revenue included in the 2019 Application. For example, the 2019 Application included ICM revenue of $2.4MM across 2 rate zones, or approximately $1.2MM per rate zone. This was the basis for the determination of ICM revenue in the Financial Plan.

Therefore, as identified in the extract of Table 4, above, Alectra Utilities assumed ICM revenue of $1.2MM in 3 rate zones for the 2020 to 2022 period.

J2.4

Reference:

To provide a list of the 884 projects that comprise the distribution system plan in that list; to include a short comment to provide some context of what the investment is expected; to provide clarification as to whether it is included in base rates or incremental; to sort the list by the score and by the year.

Response:

Alectra Utilities provides a spreadsheet of projects as J2.4 Attachment 1. The spreadsheet contains a list of 884 projects including a brief comment for context, and the score for each project. This list can be filtered by funding (M-Factor versus Base), rate zone, or investment category as required. In addition, there is a tab to show the spending in each year sorted by the ranking within that year. The list has been provided by year to identify that if a project has a lower value when compared to all 884 projects across the five years, it may have a higher value in the year that the investment occurs. Further, projects which span over multiple years will appear in multiple tabs.

J2.4

ATTACHMENT 1 – DSP Project Listing

Project List for Oral Hearing Undertakings

Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150404	Base	Kenilworth TS Power Factor Correction	0.1	0.9	0.6	-	-	1.6	184,357	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of capacitor bank installation at Kenilworth TS to improve PF and to comply with IESO market rules.
150725	Base	Lines Central-North - Reactive Renewal	1.2	1.2	1.2	1.3	1.3	6.2	181,454	System Renewal	Reactive Capital	Brampton	Replacement of assets which have failured and requires replacement in order to restore power to customers
150690	Base	Lines Central-South - Reactive Renewal	3.1	3.1	3.2	3.3	3.3	16.0	171,818	System Renewal	Reactive Capital	Enersource	Replacement of assets which have failured and requires replacement in order to restore power to customers
150682	Base	Remote Fault Indicator Deployment	0.4	0.4	0.4	0.5	0.1	1.9	164,221	System Service	System Control, Comm'ns & Performance	Multiple	This project consists of remote fault indictor deployment which will result improved outage response, operational efficiency, and reliability
150217	Base	Build double 27.6kV ccts on Teston Rd and Pine Valley Dr to supply Block 40/47	1.4	-	-	-	-	1.4	151,265	System Service	Capacity (Lines)	Powerstream	This project is to rebuild existing 8.32 kV poleline on teston road (Pine Valley drive to Weston road) as it does not have sufficent capacity for new developments.
150587	Base	Kenilworth TS Upgrade	0.6	-	-	-	-	0.6	134,984	System Access	Transmitter Related Upgrades	Horizon	HONI will be replacing transformers at Kenilworth TS which is at physical end-of-life, as well as switchgear. Alectra Utilities role in the project will be to coordinate planned outages and disconnect and reconnect feeder egress connections
150259	Base	Barrie TS Upgrade Feeders and Metering	-	2.2	-	-	-	2.2	127,868	System Access	Transmitter Related Upgrades	Powerstream	Hydro One will be rebuilding and reconfiguring its Barrie TS. As part of this upgrade, Hydro One plans to increase the capacity from 55/92 MVA to 75/125MVA and upgrade the E/4B transmission line from 115KV to 230KV. The feeder egress relocation and additional feeder will require integration reconfiguration for the six Alectra Utilities feeders (13M3 to 13M8) emanating from the station
102247	Base	Interest Capitalization	1.1	1.2	1.2	1.2	1.3	5.9	104,304	General Plant	Other General Plant	Powerstream	
150596	Base	Meter Renewal - all types but Suite - PowerStream RZ	0.1	0.1	0.1	0.1	0.1	0.4	94,470	System Access	Metering	Powerstream	Multi-year project to renew existing residential (except suite) metering equipment.
101871	Base	Services (New and Upgrades) - Layouts – East North - Commercial Services	0.0	0.0	0.0	0.0	0.0	0.1	94,398	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
151180	Base	Central-North - Capitalization of Locates	-	-	0.0	0.0	0.0	0.1	94,387	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
150600	Base	Firmware Upgrades for Smart Meters - East	0.0	0.0	0.0	0.0	0.0	0.1	94,363	System Access	Metering	Powerstream	Multi-year project to renew residential Smart meter firmware to improve communication performance.
151169	Base	Central-South - Capitalization of Locates	0.0	0.0	0.0	0.0	0.0	0.1	94,345	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
151174	Base	West Lines - Capitalization locates	0.0	0.0	0.0	0.0	0.0	0.2	94,319	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150631	Base	Transformer Station Metering - Central North	0.1	0.1	0.1	0.1	0.1	0.3	94,246	System Access	Metering	Brampton	Multi-year project to purchase, install and renew wholesale metering equipment.
101696	Base	Subdivision - North Underground Residential Distribution System Final Close out and Inspection.	0.0	0.0	0.0	0.0	0.1	0.2	94,197	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
103381	Base	East Lines - Capitalization locates	0.1	0.1	0.1	0.1	0.1	0.3	94,145	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101870	Base	Services (New and Upgrades) - Layouts – East South - Commercial Services	0.1	0.1	0.1	0.1	0.1	0.4	94,022	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101869	Base	Services (New and Upgrades) - Layouts – East North - New Residential	0.1	0.1	0.1	0.1	0.1	0.4	93,989	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150650	Base	Replace PCB Risk PT's - Enersource RZ	0.1	0.1	0.1	0.1	0.1	0.5	93,977	System Access	Metering	Enersource	Multi-year project to replace metering transformers identified with unacceptable levels of PCB's, to prevent hazardous spills.
101919	Base	New Services (new and upgrades) - Commercial, Industrial and Institutional (ICI) Projects - NORTH	0.1	0.1	0.1	0.1	0.1	0.4	93,955	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150647	Base	Transformer Station Metering - Enersource RZ	0.1	0.3	0.1	0.1	0.1	0.7	93,884	System Access	Metering	Enersource	Multi-year project to purchase, install and renew wholesale metering equipment.
151049	Base	Commercial, Industrial, Institutional, Apartment Connections	0.1	0.1	0.1	0.1	0.1	0.7	93,830	System Access	Customer Connections	Guelph	Mandatory - System Access Related Project
101685	Base	Subdivision - South Underground Residential Distribution System Final Close out and Inspection.	0.1	0.1	0.1	0.1	0.1	0.6	93,778	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150457	Base	Services (New and Upgrades) - Layouts – St Catharines	0.2	0.2	0.2	0.2	0.2	1.0	93,519	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
151162	Base	Non Recoverable replacement of Distribution Equipment due to accident/vandalism	0.2	0.2	0.3	0.3	0.3	1.3	93,457	System Renewal	Reactive Capital	Horizon	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
101924	Base	Mulit Unit Metering for New Buildings NORTH - PowerStream RZ	0.1	0.2	0.2	0.2	0.2	0.8	93,421	System Access	Metering	Powerstream	Multi-year project to purchase and install suite metering in new buildings in northern area of territory.
150588	Base	New Residential Subdivision Development - Alectra West	0.3	0.3	0.2	0.2	0.2	1.2	93,266	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
101791	Base	New Services - new and upgrades - COMMERCIAL, INDUSTRIAL, INSTITUTIONAL (ICI) SERVICES - SOUTH	0.2	0.2	0.2	0.3	0.3	1.3	92,878	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101812	Base	Reactive Capital, Alectra East - LIS	0.3	0.3	0.3	0.3	0.3	1.4	92,710	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
150754	Base	Lines Central-North - Non-Recoverable Replacements	0.3	0.4	0.4	0.4	0.4	1.8	92,705	System Renewal	Reactive Capital	Brampton	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
150726	Base	Lines Central-South - Non-Recoverable Replacements	0.3	0.4	0.4	0.4	0.4	1.8	92,705	System Renewal	Reactive Capital	Enersource	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
101820	Base	Reactive Capital, Alectra East - Non-Recoverable Replacement	0.3	0.3	0.3	0.3	0.3	1.5	92,583	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
150389	Base	Services (New and Upgrades) - Layouts – Central North	0.4	0.4	0.4	0.4	0.4	2.0	92,563	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
150651	Base	C & I Metering - Renewal- Brampton RZ	0.6	0.1	0.1	0.6	0.8	2.2	92,561	System Access	Metering	Brampton	Multi-year project to renew existing ICI metering equipment.

Project List for Oral Hearing Undertakings

Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150386	Base	New Service (new and upgrades) - Commercial and Institutional (ICI) Projects - Central North	0.4	0.4	0.4	0.5	0.5	2.1	92,424	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
150453	Base	CIS CC&B Modifications(Regulatory Enhancements)	0.9	0.9	0.9	0.9	1.8	5.5	92,261	General Plant	Information Technology	Multiple	Enhancements to the CIS (CC&B) application needed to meet any regulatory requirements Such requirements in the past have been Ontario Energy Savings Program (OESP) as well as the Monthly Billing projects.
150649	Base	Suite Metering - Enersource RZ	0.5	0.5	0.6	0.6	0.6	2.6	91,838	System Access	Metering	Enersource	Multi-year project to purchase, install and renew suite metering equipment.
150654	Base	C & I Metering - New Services - Brampton RZ	0.6	0.5	0.6	0.6	0.6	2.9	91,553	System Access	Metering	Brampton	Multi-year project to purchase and install ICI metering equipment on new services.
150595	Base	C & I and Wholesale Metering - PowerStream RZ	0.5	0.5	0.6	0.6	0.6	2.8	91,530	System Access	Metering	Powerstream	Multi-year project to purchase, install, and renew ICI and wholesale metering equipment.
101868	Base	Services (New and Upgrades) - Layouts – East South - New Residential	0.4	0.4	0.5	0.5	0.5	2.3	91,488	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101795	Base	Multi Unit Metering for New Buildings SOUTH - PowerStream RZ	0.4	0.5	0.5	0.5	0.6	2.5	91,273	System Access	Metering	Powerstream	Multi-year project to purchase and install suite metering in new buildings in southern area of territory.
101873	Base	Services (New and Upgrades) - Layouts – East North - Residential Upgrades	0.5	0.5	0.6	0.6	0.6	2.8	91,023	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
151051	Base	System Relocations Road Authorities	1.0	0.7	0.7	0.7	0.7	3.8	91,002	System Access	Road Authority	Guelph	Mandatory - System Access Related Project
150652	Base	New Residential Subdivision Development - Alectra Central South	0.6	1.0	1.1	0.5	0.5	3.7	90,948	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
150388	Base	Services (New and Upgrades) - Layouts – Central South	0.7	0.7	0.8	0.8	0.9	3.8	90,774	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
150692	Base	New Feeder in Residential Subdivision Development - Alectra Central North	0.9	0.8	0.7	0.7	0.8	3.9	90,609	System Service	Capacity (Lines)	Brampton	This expenditure is required to meet the needs of the development community that construct municipal approved residential subdivisions in Alectra Utilities' Central North service territory
150599	Base	Suite Meter - Reverification - PowerStream RZ	0.9	0.1	0.1	1.0	0.5	2.6	90,368	System Access	Metering	Powerstream	Multi-year project to renew Measurement Canada seal dates on existing suite metering equipment.
150455	Base	Services (New and Upgrades) - Commercial, Industrial and Institutional (ICI) Projects - St Catharines	0.9	0.9	0.9	0.9	0.9	4.4	90,201	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150659	Base	Residential Meters - by Metering - Brampton RZ	1.0	0.9	0.9	0.9	0.9	4.5	90,096	System Access	Metering	Brampton	Multi-year project to purchase, install and renew residential metering equipment. Work carried out by Metering.
150456	Base	Services (New and Upgrades) - Layouts – Hamilton	0.9	0.9	0.9	0.9	0.9	4.5	89,962	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150630	Base	New Residential Subdivision Development - Alectra Central North	0.7	0.7	1.1	1.2	1.2	4.9	89,952	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
101828	Base	Reactive Capital, Alectra East - Recoverable Replacement	0.7	0.7	0.7	0.8	0.8	3.7	89,766	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover some costs for (i.e. pole hit, vehicle at scene of accicent, Alectra Utilities obtains most of costs (near $0 impact too budget))
101896	Base	New Institutional/Commercial/Industrial Subdivision Development - Alectra East	0.9	0.9	0.9	0.9	1.0	4.7	89,347	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101872	Base	Services (New and Upgrades) - Layouts – East South - Residential Upgrades	0.7	0.8	0.8	0.9	0.9	4.1	89,345	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101800	Base	Reactive Capital, Alectra East - Storm Damage	1.2	1.2	1.2	1.3	1.3	6.2	86,549	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
151047	Base	Subdivisions	0.7	0.7	0.4	0.5	0.5	2.7	85,393	System Access	Customer Connections	Guelph	Mandatory - System Access Related Project
150620	Base	Metering Renewal - all types - Horizon RZ	1.9	2.0	2.1	2.1	2.2	10.3	84,064	System Access	Metering	Horizon	Multi-year project to purchase, install, and renew residential, ICI and wholesale metering equipment.
101808	Base	Reactive Capital, Alectra East - Switchgears	1.8	1.8	1.8	1.8	1.7	8.8	83,304	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
150648	Base	Metering Renewal - all types but Suite - Enersource RZ	2.3	2.3	2.3	2.3	2.4	11.6	82,569	System Access	Metering	Enersource	Multi-year project to purchase, install and renew residential (except suite) and ICI metering equipment.
101892	Base	New Subdivision Development - Secondary Service Lateral - Alectra East	2.6	2.7	2.8	2.9	3.1	14.1	80,776	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
151125	M-Factor	Connection Cost Recovery Agreement (CCRA) – Midhurst TS – 15th Anniversary True-up	3.2	-	-	-	-	3.2	78,172	General Plant	Connection and Cost Recovery Agreements	Powerstream	In accordance with the Connection Cost Recovery Agreement, a 15-year true-up is required for Midhurst TS.
150384	Base	New Service (new and upgrades) - Commercial and Institutional (ICI) Projects - Central South	3.0	3.2	3.4	3.6	3.8	17.0	77,904	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
151124	M-Factor	Goreway TS Expansion (CCRA) - 10 Yr True-Up Payment, Brampton	5.6	-	-	-	-	5.6	76,026	General Plant	Connection and Cost Recovery Agreements	Brampton	In accordance with the Connection Cost Recovery Agreement, a 10-year true-up is required for Goreway TS.
150449	Base	Services (New and Upgrades) - Commercial, Industrial and Institutional (ICI) Projects - Hamilton	5.0	5.0	5.2	5.3	5.5	26.0	69,328	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
151095	Base	Reactive Restoration	1.0	1.0	1.0	1.1	1.1	5.2	63,547	System Renewal	Reactive Capital	Guelph	Replacement of assets which have failured and requires replacement in order to restore power to customers
151301	Base	Cable Replacement Project - (HAM) - Rymal - Mud - Upper Centennial - Upper Red Hill Valley	-	-	-	-	3.3	3.3	61,747	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 8 failures, or 14 failures per 100km. This area includes the 331X & 341X feeders which were identified as a Worst Performing Feeder in 2018. The average cable installation year is 1968 in this project scope.
150465	Base	LPSS Upgrade - IT Infrastructure	0.5	-	-	-	-	0.5	59,940	General Plant	Information Technology	Multiple	Enhancement to LPSS Alectra market settlement system LPSS is the Alectra settlement system. This is one of the core applications of the organization, operational enhancements come in from a number of venues and thereby feedback into the other downstream systems. These enhancements are considered for the overall customer and organizational benefits.

Project List for Oral Hearing Undertakings

Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
101824	Base	Reactive Capital, Alectra East - Distribution Equipment	5.2	5.3	5.4	5.5	5.7	27.1	58,190	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
151161	Base	Joint Use Pole Removal	0.1	0.1	0.1	0.1	0.1	0.6	57,200	System Renewal	Overhead Asset Renewal	Horizon	This project is for the removal of poles in the field after third party (joint use) attachements have been removed or transferred for projects already closed by Alectra Utilities.
150463	Base	Customer Self Service Portal Enhancements	0.9	0.3	-	-	-	1.1	56,341	General Plant	Information Technology	Multiple	Enhancement to CIS (CC&B) self service portal application to support process improvement requirements.The self service portal is the means by which Alecra customers can obtain their customer related information, interact with a CSR, post questions. The enhancements will allow Alectra customers a better experience when interacting with Alectra through the web portal channel.
151050	Base	Metering - all types - Guelph RZ	0.6	0.4	0.4	0.4	0.4	2.3	55,986	System Access	Metering	Guelph	Multi-year project to purchase, install, and renew residential, ICI and wholesale metering equipment in Guelph RZ.
150469	Base	ERP JD Edwards Enhancements	2.0	1.1	1.8	1.8	1.4	8.2	55,715	General Plant	Information Technology	Multiple	Allocation of capital funds to provide 3rd party assistance on capital work, along with creating system enhancements to the JD Edwards ERP and supporting Systems.
150325	Base	CIS CC&B Enhancements	1.3	0.8	-	1.3	1.6	4.9	55,520	General Plant	Information Technology	Multiple	Enhancement to CIS (CC&B) application to support process improvement requirements.As the CIS (CC&B) system is one of the core applications of the organization, operational enhancements come in from a number of venues and thereby feedback into the other downstream systems. These enhancements are considered for the overall customer and organizational benefits.
103637	Base	GS>50 MIST Meter Multi-year initiative Implementation	0.6	-	-	-	-	0.6	55,000	System Access	Metering	Powerstream	Multi-year project to install MIST meters on GS>50 accounts, as required by the Distribution System Code.
101832	Base	Joint Use Pole Removal	0.6	0.6	0.6	0.6	0.6	2.9	54,024	System Renewal	Overhead Asset Renewal	Powerstream	This project is for the removal of poles in the field after third party (joint use) attachements have been removed or transferred for projects already closed by Alectra Utilities.
100159	M-Factor	Hydro One Asset Purchase - Alliston	-	-	0.5	-	-	0.5	52,601	System Service	Capacity (Lines)	Powerstream	Purchase the 44 kV pole line along Industrial Parkway (approx 4.5 km's). The pole line is required for the new Alliston 10MVA substation 13.8kV integration (101571).
101570	Base	New Alliston 10MVA Substation - 44 kV Supply	-	-	-	0.0	0.3	0.4	50,413	System Service	Capacity (Stations)	Powerstream	This project is the 44KV feeder extension to supply Alliston MS (101569)
101571	Base	New Alliston 10MVA Substation - 13.8 kV Feeder Integration	-	-	-	0.0	0.6	0.7	50,184	System Service	Capacity (Stations)	Powerstream	This project is the 13.8KV feeder integration for Alliston MS (101569)
150344	Base	HaLRT_New Lake Feeder for TPSS#8 area capacity	0.6	-	-	-	-	0.6	48,091	System Service	Capacity (Lines)	Horizon	The TPSS#8 location has supply constraints on the 13.8kV system. This project is to bring a new feeder out of Lake TS to the area to reinforce the supply and allow for switching to free up capacity to accommodate the new load request.
151236	Base	Edinburgh Rd (Paisley to Willow) Extension	0.7	-	-	-	-	0.7	48,011	System Service	Capacity (Lines)	Guelph	Replace existing pole line to accommodate two 13.8kV circuits in order to provide capacity and contingency for the new developments on Edinburgh Road North and also act as an inter-tie between Campbell TS and Cedar TS
101887	Base	New Residential Subdivision Development - Alectra East	9.0	9.4	10.2	11.0	11.4	51.0	44,864	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101569	M-Factor	New Alliston 10MVA Substation - Industrial Parkway	-	-	-	0.8	1.1	1.9	44,830	System Service	Capacity (Stations)	Powerstream	The project entails the purchase of a station site in the vicinity of Dufferin St and Industrial Pkwy in Alliston, and constructing a new 10MVA, 44/13.8 kV, dual-stage fan, 4-feeder municipal substation
100859	Base	Switchgear Renewal - East	2.6	2.7	2.8	2.9	3.1	14.1	43,705	System Renewal	Underground Asset Renewal	Powerstream	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
151117	M-Factor	Vansickle TS True-up Payment (CCRA), St.Catharines	-	1.6	-	-	-	1.6	43,573	General Plant	Connection and Cost Recovery Agreements	Horizon	In accordance with the Connection Cost Recovery Agreement, a 10 year true-up is required for Vansickle TS.
151089	Base	Overhead Rebuilds	1.2	1.2	1.2	1.3	1.3	6.2	39,246	System Renewal	Overhead Asset Renewal	Guelph	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
150471	Base	ERP JD Edwards Hardware Upgrades	-	-	0.6	-	-	0.6	38,646	General Plant	Information Technology	Multiple	Hardware upgrade to support ERP refresh cycle.
151241	M-Factor	Arlen MTS - New Feeder	-	-	-	0.5	-	0.5	37,817	System Service	Capacity (Lines)	Guelph	New Distribution feeder from Arlen MTS to support the load growth in the south Guelph and to meet continengency requirement.
150369	M-Factor	New build - 44kV Feeder Extension York/Meadowpine, Mississauga	-	1.8	-	-	-	1.8	37,795	System Service	Capacity (Lines)	Enersource	There is no 44KV circuit on Meadowpine Blvd. and it is expected that the large customers will be connecting to the 44KV circuit. In addition 16MVA of connected load is on radial supply. This project will address the capacity constraints as well as eliminatethe current radial supply configuration for 16MVA of load.
151118	M-Factor	Nebo TS 27.6kV True-up Payment (CCRA)	-	-	-	0.5	-	0.5	37,750	General Plant	Connection and Cost Recovery Agreements	Horizon	In accordance with the Connection Cost Recovery Agreement, a 10 year true-up is required for Nebo TS.
101508	Base	Transformer Renewal - East	2.2	2.5	2.9	3.1	3.2	13.9	37,474	System Renewal	Transformer Renewal	Powerstream	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.

Project List for Oral Hearing Undertakings

Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
101003	M-Factor	Richmond Hill TS#2 Upgrade Bus, Line & Transformer Protections	0.1	-	-	-	-	0.1	36,020	System Service	System Control, Comm'ns & Performance	Powerstream	This project entails upgrade of Bus, Line and Transformer Protection relays at Richmond Hill TS#2 (Lazenby TS#2) with new relays having fault recording capabilities. This project will also address the communications protocol at this station whihch is obsolete and is incompatible with that of the rest of the system.
150673	Base	Road Authority Central (Mississauga)	3.7	3.9	4.2	4.5	4.7	21.0	35,001	System Access	Road Authority	Enersource	Mandatory - System Access Related Project
150134	Base	Cable Injection Project - (V37) - Langstaff and Weston, Vaughan	1.5	1.6	1.7	-	-	4.8	34,877	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 20 failures.
151240	M-Factor	Southgate Dr to Maltby Rd O/H Extension	-	-	-	-	0.6	0.6	34,668	System Service	Capacity (Lines)	Guelph	The road extension from COG and potential developments on Southgate requires two 13.8kV circuit expanded in order to provide capacity and contingency supply.
102387	M-Factor	Install 44kV & 13.8kV Bryne Drive	-	1.1	-	-	-	1.1	34,654	System Service	Capacity (Lines)	Powerstream	The City of Barrie has identified 64 acres north of Harvie Road along Bryne Drive for development of industrial/commercial/residential. Another 34 acres south of Harvie Road along Bryne Drive has been identified for industrial/commercial development. The developable areas will result in 4MVA of new load north of Harvie Road and 2.2MVA of load south of Harvie Road. There is currently no existing 44kV or 13.8kV supply along Bryne Drive between P6231 and SC13487.
151238	Base	New Feeder Maltby Rd W (Crawley to Gordon)	-	-	-	-	0.9	0.9	34,423	System Service	Capacity (Lines)	Guelph	Build new pole line on Maltby Rd between Crawley Rd and Gordon St to back-up radially fed loads on Gordon St south of Clair Rd/Gordon St intersection with 556ASC OH Conductor to replace 3/0ACSR to act a feeder inter-tie.
150073	M-Factor	Vaughan TS#1 Bus Differential & Overcurrent Protections Upgrades	-	-	0.3	0.2	-	0.4	34,014	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the Vaughan TS#1 Bus Differential & Overcurrent Protections Upgrades with new relays having fault recording capabilities.
150405	Base	25M9 Jim Yarrow TS Extensions	0.3	0.3	-	-	-	0.6	33,741	System Service	Capacity (Lines)	Brampton	Jim Yarrow TS extension with new underground line extending 25M9 from Winston Churchill Blvd utility corridor to Steeles Ave in order to back up 25M8 & 25M10 to accomodate future load growth in Churchill Business Community Park and residential developments between Steeles Ave & Embleton Rd
150645	Base	Road Authority Central (Brampton)	4.4	4.7	5.0	5.3	5.6	24.9	31,814	System Access	Road Authority	Brampton	Mandatory - System Access Related Project
150828	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-West	0.9	0.9	0.9	0.9	1.0	4.6	31,592	System Renewal	Overhead Asset Renewal	Horizon	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151452	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-West	0.9	0.9	0.9	0.9	1.0	4.6	31,590	System Renewal	Underground Asset Renewal	Horizon	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
101762	Base	Road Authority Expenditure PS South	4.0	4.1	4.1	4.1	4.3	20.6	31,544	System Access	Road Authority	Powerstream	Mandatory - System Access Related Project
101355	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-East	0.9	0.9	1.0	1.0	1.0	4.8	31,425	System Renewal	Overhead Asset Renewal	Powerstream	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151450	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-East	0.9	0.9	1.0	1.0	1.0	4.8	31,425	System Renewal	Underground Asset Renewal	Powerstream	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
103633	M-Factor	Install Two 27.6kV Ccts on 16th Ave from Hwy 404 to Woodbine Ave	-	5.5	-	-	-	5.5	30,531	System Service	Capacity (Lines)	Powerstream	This project is to reroute two 27.6kV feeders along 16th Ave from Woodbine Ave in Markham to Leslie St Richmond Hill to supply new load in Richmond Hill. The customers on Leslie St north of 16th Ave in Richmond Hill are supplied by feeder 12M5, 12M7, and 12M12. There is only 290A or 14 MVA capacity left on these feeders for future development.
150074	M-Factor	Vaughan TS#2 Bus Differential and Overcurrent Protections Upgrade	-	-	-	-	0.3	0.3	28,628	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the Vaughan TS#2 Bus Differential & Overcurrent Protections Upgrades with new relays having fault recording capabilities.
100340	M-Factor	Vaughan TS#4 Feeder Integration - Part 3	-	-	-	5.2	3.6	8.8	28,489	System Service	Capacity (Lines)	Powerstream	This project is the third part of a multi-part project to construct and integrate new feeders from VTS#4. This project is to integrate four 27.6kV feeders (25M5/25M6/25M7/25M8) from VTS4 to the distribution system.
151363	Base	Cable Injection Project - (M25) - 14th - McCowan - Steeles - Old Kennedy, Markham	-	0.8	0.8	0.8	1.6	4.1	27,519	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 14 failures.
150072	M-Factor	Markham TS#3 Bus Differential & Overcurrent Protections Upgrades	0.2	0.1	-	-	-	0.3	27,028	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the Markham TS#3 Bus Differential & Overcurrent Protections Upgrades with new relays having fault recording capabilities.
150364	M-Factor	New build - Port Credit Village East (Marina) 27.6kV Feeders, Mississauga	-	-	4.4	-	-	4.4	25,989	System Service	Capacity (Lines)	Enersource	The Port Credit East development requires a 27.6kV circuit expansion in order to provide capacity and contingency for the Mid-rise mixed residential/commercial development.
100867	Base	Pole Renewal - East	4.4	5.0	5.3	5.5	5.8	25.9	25,595	System Renewal	Overhead Asset Renewal	Powerstream	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
151074	Base	Reactive renewal	3.2	3.3	3.3	3.4	3.5	16.7	25,136	System Renewal	Reactive Capital	Horizon	Replacement of assets which have failured and requires replacement in order to restore power to customers
150571	Base	Cable Injection Project - (J3-K3-N2-O2), Brampton	2.3	-	-	-	-	2.3	24,484	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 32 outages due to cable failures from 2007 to 2018 with average duration of 104 minutes.

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Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151362	Base	Cable Injection Project - (M39) - 16th - Warden - Hwy 7 - Woodbine, Markham	-	0.7	1.3	1.3	0.9	4.2	23,714	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 8 failures.
151360	Base	Cable Injection Project - (M31) - 14th - Old Kennedy - Steeles - Warden, Markham	-	0.8	0.8	0.8	0.8	3.4	23,641	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 38 failures.
150070	M-Factor	Markham TS#1 Bus Differential & Overcurrent Protections Upgrades	-	0.2	0.1	-	-	0.4	22,500	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the Markham TS#1 Bus Differential & Overcurrent Protections Upgrades with new relays having fault recording capabilities.
150375	Base	New Build - 136M10 Goreway TS Extensions, Brampton	1.6	-	-	-	-	1.6	22,413	System Service	Capacity (Lines)	Brampton	The 136M10 feeder egress project will install a new feeder from the Goreway TS to provide relief to the 136M44 circuit which is over the planning limit
100015	Base	Transformer Temperature Monitoring - Aurora MS, King & Concord	0.1	-	-	-	-	0.1	22,040	System Service	System Control, Comm'ns & Performance	Powerstream	This project consist of transformer temperature monitoring and telemetry at Aurora MS - King and Concord which will improve system reliability and enables controlled emergency loading beyond the nameplate rating.
151043	Base	Transformer Renewal - Central South	1.9	1.9	1.9	2.0	2.0	9.7	21,870	System Renewal	Transformer Renewal	Enersource	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
102545	Base	Install a New 27.6kV Pole Line on 19th Ave from Leslie St to Woodbine Ave	1.4	-	-	-	-	1.4	21,590	System Service	Capacity (Lines)	Powerstream	This is to remediate radial supply on Leslie St north of Elgin Mills Rd (supplying Leslie North development in Richmond Hill) and radial supply on Woodbine Ave north of Elgin Mills Rd (supplying future urban area in Markham).
150467	M-Factor	CIS CC&B upgrade	-	6.5	6.8	-	-	13.3	21,392	General Plant	Information Technology	Multiple	Aligns with Alectra customer experience plan requirements and enhanced services and emerging channels. Comprised of third party integration support, hardware, resources, testing to support existing Alectra platform as the current version 2.5 support ends in 2022. Project ensures enhanced functionality, compatibility with ancillary systems, security upgrades, automation and rate billing engine to support future utility DER integration.
150071	M-Factor	Markham TS#2 Bus Differential & Overcurrent Protections Upgrades	-	-	-	0.3	0.1	0.3	21,087	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the Markham TS#2 Bus Differential & Overcurrent Protections Upgrades with new relays having fault recording capabilities.
101480	M-Factor	Build double ccts 27.6kV pole line on 19th Ave between Leslie St and Bayview Ave	-	-	1.3	-	-	1.3	20,987	System Service	Capacity (Lines)	Powerstream	This project is to build 2 ccts pole line on 19th Ave from Leslie St to Bayview Ave to supply the new subdivision in Leslie North that is bounded by Elgin Mills Rd., Leslie St., 19th Avenue and Bayview Avenue. There will be new houses along 19th Ave between Bayview Ave and Leslie St as the subdivision secondary plan, however, there is no pole line now.
150688	Base	Station Sustainment & Protection & Control CASCADE Expansion	0.1	0.0	-	-	-	0.1	20,717	General Plant	Information Technology	Multiple	Expand the use of the CASCADE system to be used by the Protection and Control asset in addition to the Station assets
101593	Base	Station Ground Grid Refurbishments	0.1	-	-	-	-	0.1	20,602	System Service	Safety & Security	Powerstream	This project consists of refurbishment of station ground grid in East. The project would be to design and implement ground grid improvements to meet step and touch potential requirements.
150371	M-Factor	New build - 27.6kV Feeder Extension Traders, Mississauga	-	2.8	2.8	-	-	5.5	19,792	System Service	Capacity (Lines)	Enersource	Install new feeders in the Traders area between Hurontario St and Kennedy Rd from Matheson Blvd to Britannia Rd required to meet demand due to intensification and to ensure the reliability of current customers.
151303	Base	Cable Replacement Project - (HAM) - Stone Church - Garth - Lincoln M. Alexander	-	-	2.4	3.2	0.9	6.6	19,665	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 5 failures, or 18 failures per 100km. The average cable installation year is 1976 in this project scope.
150664	Base	Residential Meters - by Lines - Brampton RZ	0.7	0.7	0.6	0.6	1.4	4.0	18,167	System Access	Metering	Brampton	Multi-year project to purchase, install and renew residential metering equipment. Work carried out by Lines.
151109	Base	Switch Replacement	0.2	0.2	0.2	0.2	0.2	0.9	18,145	System Renewal	Overhead Asset Renewal	Guelph	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacment units
102455	Base	Melbourne MS322 Land Purchase & TX Upgrade - Bradford	-	-	-	0.4	0.9	1.4	17,824	System Service	Capacity (Stations)	Powerstream	This project consists of transformer upgrade to increase the capacity at Melbourne MS to meet the load growth the contingency condition for Bradford area.
151367	Base	Cable Injection Project - (M21) - Hwy 7 - Markham - 16th - McCowan, Markham	-	-	-	1.1	1.8	2.8	17,675	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 6 failures.
150319	M-Factor	New MS - Duke MS 20 MVA Substation, Mississauga	-	-	-	2.0	4.2	6.2	17,541	System Service	Capacity (Stations)	Enersource	The Downtown21 plan forecasts a total population of 56,565 residents and 34,247 jobs in the Mississauga downtown core. The current capacity available for the downtown core is approximately 140 MVA ONAN rating. Based on growth projected and the land parcels available, Alectra Utilities estimates that, upon completion of Downtown21 the combined transformation load requirement will increase approximately by 300 MVA. This station will provide 20MVA ONAN capacity.

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150458	Base	MAS upgrade - IT Infrastructure	0.1	0.1	0.1	-	-	0.2	17,426	General Plant	Information Technology	Multiple	Metering Automation System for smart grid Upgrade to be implemented in a phased approach over the next 4 years as smart grid continues to evolve work in conjunction with the metering team to analyze and implement leverage new technologies to provide better more accurate meter readings be responsive to the issues first not reactive when a customer calls
151104	Base	Distribution Automation - Central North	0.4	0.5	0.5	0.5	0.5	2.4	17,389	System Service	SCADA and Automation	Brampton	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151366	Base	Cable Injection Project - (M19) - Markham - Steeles - McCowan - 14th, Markham	-	-	-	1.4	1.4	2.7	17,259	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 7 failures.
102352	Base	Vaughan TS#4 Feeder Integration - Part 2	4.0	-	-	-	-	4.0	16,373	System Service	Capacity (Lines)	Powerstream	This project is the second part of VTS4 feeder integration plan. The purposes is to integrate two new 27.6kV feeders (25M9 to 25M10) from VTS4 into Alectra's distribution system to increase distribution capacity by 40 MVA, off load existing feeders and stations with the new feeders and increase supply capacity to Vaughan West.
151318	Base	Cable Injection Project - (I3) -Bovaird - Dixie - Queen - Hwy 410, Brampton	0.5	0.4	0.3	0.6	0.5	2.2	16,119	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 6 outages due to cable failures from 2014 to 2015 with average duration of 71 minutes.
151046	Base	Addiscott Court Security Fence Improvement	0.3	-	-	-	-	0.3	16,097	General Plant	Facilities Management	Powerstream	To improve the fencing to secure the capital inventory within the operational yard in Markham
151216	Base	Purchase & Installation of Station DC System Monitoring - South West	-	0.0	-	-	-	0.0	15,958	System Renewal	Substation Renewal	Guelph	This project involves the installation of real-time monitoring at Arlen TS in the South West Operating Area (Guelph) that eliminates required on-site maintenance activities such as routine manual battery testing. By the addition of DC System monitoring, it will ensure that any potential problems will be immediately reported via SCADA/PI System Notification and help to avoid a station outage due to DC system failure as occurred at Vaughan TS#3. It will also reduce the human interaction with the dangerous DC Equipment and dramatically reduce the hazard/risk to the worker by eliminating the need to perform battery testing.
150639	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-CENTRAL	0.0	0.0	0.0	0.0	0.0	0.2	15,736	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of DC charging system for Central South Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
150638	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-East	0.0	0.0	0.0	0.0	0.0	0.2	15,736	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of DC charging system for Central North Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
150636	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-North & TS	0.0	0.0	0.0	0.0	0.0	0.2	15,736	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of installation of DC charging system for East Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
150640	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-WEST	0.0	0.0	0.0	0.0	0.0	0.2	15,736	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of installation of DC charging system for West Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
151460	M-Factor	Cable Injection Project - (V17) - Langstaff - Keele - Rutherford - Dufferin, Vaughan	-	-	0.6	0.6	1.7	2.8	15,317	System Renewal	Underground Asset Renewal	Powerstream	From 2017-2019 YTD customers in this area experienced 3 failures. From 2015-2019 YTD customers in this area experienced 4 failures.
150749	M-Factor	New WiMAX Communication Network - Central South	0.4	-	-	-	-	0.4	15,089	System Service	System Control, Comm'ns & Performance	Enersource	This project is required to implement the WiMax Network for Central South for secure data transfer of monitoring sensors.
100337	M-Factor	Markham TS #4 Feeder Egress Part 3	-	-	-	4.9	-	4.9	14,795	System Service	Capacity (Lines)	Powerstream	This project is to install four 27.6kV feeders from MTS4 along Rodick Rd to 14th Ave. These feeders will be connected to existing feeders on 14th Ave and Miller Ave. It is MTS4 Feeder Integration Plan Part 3. This project will increase supply capacity by 80 MVA to support growth and development in Markham
150285	Base	Transformer Renewal - Central North	0.6	0.8	1.0	1.3	1.5	5.1	14,492	System Renewal	Transformer Renewal	Brampton	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
150025	Base	Cable Injection Project - (V18) - Major Mackenzie and Keele, Vaughan	1.1	-	-	-	-	1.1	14,485	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2017 customers in this area experienced 2 failures.

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Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150559	Base	Rathburn Rd Duct Extension (LRT Betterment)	0.4	-	-	-	-	0.4	14,448	System Service	Capacity (Lines)	Enersource	A duct installation to connect existing ducts west and east on Rathburn Rd. A 5 year moratorium is proposed due to streetscaping and this project should be completed with other work.
101027	Base	Switch Renewal - East	0.6	0.7	0.7	0.7	0.7	3.4	14,309	System Renewal	Overhead Asset Renewal	Powerstream	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacment units
150505	Base	Purchase and Install 11 Self Recharging Transformer Air Breathers - TS and MS - Multi-year initiative - EAST	0.0	-	-	-	-	0.0	14,277	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of transformer air breather at TS and MS stations in West. Moisture in transformer oil is a major cause of acceleration of transformer ageing and internal failure of transformers. By elimination of moisture ingress through the transformer breather, and having the breather perform this task automatically without human intervention ensures that the transformer oil moisture is minimal.
100913	M-Factor	Pole Line Installation Double Cct on Major Mack - Huntington Rd to Hwy 50	-	-	-	-	1.4	1.4	14,223	System Service	Capacity (Lines)	Powerstream	This project is to build two ccts on Major Mack Dr between Huntington Rd and Hwy 50 in conjunction with the road widening project to supply new customers on both side of Major Mack, as well as customers along Hwy 50.
102062	Base	Purchase & Installation of 10 Self Recharging Transformer Air Breathers on TS transformers-Multi-year initiative-North & TS	0.1	-	-	-	-	0.1	14,211	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of installation of transformer air breather at TS and MS stations in East. Moisture in transformer oil is a major cause of acceleration of transformer ageing and internal failure of transformers. By elimination of moisture ingress through the transformer breather, and having the breather perform this task automatically without human intervention ensures that the transformer oil moisture is minimal.
150506	Base	Purchase and Installation of 15 Self Recharging Transformer Air Breathers on MS Transformers - Multi-year initiative-CENTRAL	0.1	-	-	-	-	0.1	14,155	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of transformer air breather at TS and MS stations in Central South. Moisture in transformer oil is a major cause of acceleration of transformer ageing and internal failure of transformers. By elimination of moisture ingress through the transformer breather, and having the breather perform this task automatically without human intervention ensures that the transformer oil moisture is minimal.
150504	Base	Purchase and Installation of 10 Self Recharging Transformer Air Breathers on TS and MS Transformers - Multi-year initiative-WEST	0.1	0.1	0.1	-	-	0.2	14,105	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of installation of transformer air breather at TS and MS stations in East .Moisture in transformer oil is a major cause of acceleration of transformer ageing and internal failure of transformers. By elimination of moisture ingress through the transformer breather, and having the breather perform this task automatically without human intervention ensures that the transformer oil moisture is minimal.
151066	Base	Cable Replacement Project - Hamilton Mountain URD	3.8	-	-	-	-	3.8	14,040	System Renewal	Underground Asset Renewal	Horizon	Recent underground cable failures in this area are unknown at this time. The average cable installation year is 1971 in this project scope. The cables are 23 years over the TUL.
102098	Base	Client - IT Infrastructure	1.1	1.2	1.2	1.3	0.6	5.4	13,761	General Plant	Information Technology	Multiple	To upgrade desktop/laptop/mobile devices that are 5 years or older (Approximately 20% of our equipment). Net new equipment for mobile computing as well as upgrades and replacements for damaged devices. Request made by various business units. This budget also includes RSA tokens\Licenses, monitors, mice, keyboards, docking stations, tablets and small non-MFP printers. Out of Scope: Large MFP Printers
150014	Base	Cable Injection Project - (V01) - Yonge - Steeles - Bathurst - Center, Vaughan	0.8	-	-	-	-	0.8	13,574	System Renewal	Underground Asset Renewal	Powerstream	From 2014-2016 customers in this area experienced 13 failures.
151214	Base	Purchase & Install Self Re-Charging Transformer Air Breathers	-	0.0	-	-	-	0.0	13,524	System Service	System Control, Comm'ns & Performance	Guelph	This project consists of installation of transformer air breather at TS and MS stations in Guelph. Moisture in transformer oil is a major cause of acceleration of transformer ageing and internal failure of transformers. By elimination of moisture ingress through the transformer breather, and having the breather perform this task automatically without human intervention ensures that the transformer oil moisture is minimal.
151247	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-Guelph	0.6	0.6	0.6	0.6	0.7	3.0	13,414	System Renewal	Overhead Asset Renewal	Guelph	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
102232	Base	Capital Funds for Emergency P&C Purchases - East	0.0	0.0	0.0	0.0	0.0	0.2	13,271	System Renewal	Substation Renewal	Powerstream	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the East Operating Area (former PowerStream). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.

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Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150683	Base	Capital Funds for Emergency P&C Purchases - Central North	0.0	0.0	0.0	0.0	0.0	0.2	13,185	System Renewal	Substation Renewal	Brampton	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the Central North Operating Area (Brampton). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.
150685	Base	Capital Funds for Emergency P&C Purchases - West	0.0	0.0	0.0	0.0	0.0	0.2	13,185	System Renewal	Substation Renewal	Horizon	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the West Operating Area (former Horizon). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.
150684	Base	Capital Funds for Emergency P&C Purchases - Central South	0.0	0.0	0.0	0.0	0.0	0.2	13,185	System Renewal	Substation Renewal	Enersource	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the Central South Operating Area (former Mississauga). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.
150360	M-Factor	New build - Extend 44kV feeder Centre View Dr, Mississauga	-	-	-	0.9	5.6	6.5	13,005	System Service	Capacity (Lines)	Enersource	A new 44 kV overhead/underground feeder extension is needed to provide supply to downtown Mississauga area on Centre View Drive as well as provide primary supply for Duke Municipal Station (MS).
150784	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-Central North	0.7	0.7	0.7	0.7	0.8	3.5	12,968	System Renewal	Overhead Asset Renewal	Brampton	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151453	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-Guelph	0.6	0.6	0.7	0.8	0.8	3.5	12,922	System Renewal	Underground Asset Renewal	Guelph	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
150823	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-Central South	0.7	0.7	0.7	0.8	0.8	3.8	12,655	System Renewal	Overhead Asset Renewal	Enersource	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
102099	Base	Printer & Copier Fleet Replacement	0.0	0.0	0.0	0.1	0.0	0.2	12,636	General Plant	Information Technology	Multiple	Replacement of existing fleet of printers/copiers that are 5 or more years old. This will include non-MFP printers. Replacement to be determined by an evaluation of evolving needs and corporate requirements as well as age of equipment.
151449	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-Central North	0.8	0.9	0.9	0.9	0.9	4.4	12,176	System Renewal	Underground Asset Renewal	Brampton	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
103211	Base	Misc Software Upgrades (FormScape, AutoCAD, etc.) - IT/OT Infrastructure	0.1	0.0	0.1	0.0	0.0	0.3	12,021	General Plant	Information Technology	Multiple	Upgrade/ acquire software as required / requested by business.
151451	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-Central South	0.8	0.9	0.9	0.9	1.0	4.5	11,936	System Renewal	Underground Asset Renewal	Enersource	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151233	M-Factor	New Construction - Campbell TS 36M63 Feeder PHASE 1 & 2, Guelph	-	1.2	1.2	-	-	2.3	11,851	System Service	Capacity (Lines)	Guelph	This project identifies a new 13.8kV feeder required from Campbell TS to bring additional load support to NW section of the city as the existing 13.8kV feeders in the area are unable to accommodate the additional load growth
150007	Base	Extend 153M10 to Transfer MS322	1.7	-	-	-	-	1.7	11,505	System Service	Capacity (Lines)	Powerstream	This project consists of extenstion of 153M10 to transfer MS322. Back-up capability lines project extending the 153M10 circuit along Holland Street from Bridge Street , south along Morris Road, west along Centre Street to Thomas Street, north on Drury Street, west along Holland Street to Miller Park Avenue (approximately 2 km's)
150579	Base	New build - Extend Bunting M81 Feeder, St.Catharines	1.5	1.5	-	-	-	3.1	11,461	System Service	Capacity (Lines)	Horizon	This project is to extend M81 feeder to supply new development and meet contigency condition in St. Catharines. This project will deal with ongoing capacity constraints in the North end of St.Catharines by bringing available supply from Bunting and Carlton TS's
103180	Base	Citrix Xen Virtualization Expansion - IT Infrastructure	0.1	0.1	0.1	0.3	0.2	0.7	11,299	General Plant	Information Technology	Multiple	Client computing virtualization (Citrix) is currently the standard delivery method for applications and desktops at Alectra. This system has had a tremendous uptake in the organization and requires an upgrade in back-end infrastructure to support the additional demand from the business.

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Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150693	M-Factor	Blockchain	0.3	0.4	0.6	0.6	0.6	2.4	11,192	System Service	Distributed Energy Resources (DER)	Multiple	The project will prepare Alectra Utilities to engage with customers in a real-time and transparent process to record the flow of electricity to and from DERs, enabling the efficient procurement of distribution benefits, such as demand response and frequency regulation. The project will provide a robust settlement mechanism between Alectra and customers, backed by timely and efficient financial transactions, to enable overall trust and customer value delivery and leading to increased customer satisfaction.
151302	Base	Cable Injection Project - (HAM) - Rymal - Mud - Upper Centennial - Upper Red Hill Valley	0.6	0.9	0.5	-	-	2.0	11,132	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 8 failures, or 14 failures per 100km. This area includes the 331X & 341X feeders which were identified as a Worst Performing Feeder in 2018. The average cable installation year is 1989 in this project scope.
151314	Base	Cable Injection Project - (G2) -Wanless - Kennedy - Bovaird - Main, Brampton	-	0.3	0.2	0.3	0.7	1.5	11,046	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 4 outages due to cable failures from 2013 to 2017 with average duration of 125 minutes.
151409	Base	Cable Replacement Project- Central Parkway & Bloor (29), Mississauga	-	-	10.9	-	-	10.9	10,937	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there are 9 outages, the length is 12,462 m, and the average cable age is 48 years old. There are 35 backlot transformers that we are also replacing.
150740	Base	Facilities_Nebo_ Roof Replacement	-	-	0.0	-	-	0.0	10,933	General Plant	Facilities Management	Horizon	2019 Project and to be completed by Dec 2019. Not sure why we have $9K in 2022.
150342	M-Factor	HaLRT_New Stirton Feeder for TPSS#4 and 8852X load shedding, Hamilton	4.8	-	-	-	-	4.8	10,907	System Service	Capacity (Lines)	Horizon	The 8852X is the only 13.8kV feeder in the vicinity of the HaLRT TPSS#4 location and is at its utilization limit. To accommodate the new TPSS a new feeder from Stirton is to be built, and part of the 8852X load will also be transferred to this new feeder
150665	Base	Emerging Customer Initiated Work (West)	1.5	1.5	1.6	1.7	1.8	8.2	10,905	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
151465	M-Factor	Cable Replacement - Mississauga Left Behind Cable	-	0.4	-	0.6	1.8	2.7	10,857	System Renewal	Underground Asset Renewal	Enersource	This project is to address cables which were part of a cable injection project but were ultimately not injectable at the time of project execution. These 'left behind' segments must be addressed, if they are left in the system they could cause a failure. Customers would not only experience an outage, but question the utilities work practices as we would have addressed only a portion of the cables instead of all the cables which could cause an outage.
101562	Base	Arc Flash Mitigation Projects	0.0	0.0	0.0	0.0	0.0	0.2	10,619	System Service	Safety & Security	Powerstream	This project is to mitigate arc flash risk at East stations.
151307	Base	Cable Injection Project - (HAM) - Upper Sherman - Stone Church - Nebo - Rymal	-	-	-	0.3	0.7	1.0	10,595	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 2 failures, or 5 failures per 100km. The average cable installation year is 1989 in this project scope.
151429	Base	Cable Injection- 003- AREA36 -Matheson & Kennedy, Mississauga	-	-	-	-	1.3	1.3	10,395	System Renewal	Underground Asset Renewal	Enersource	There are 2 outages, we are injecting a total of 14,907 m of cable for this project, and the average age of the cable is 31 years.
151299	Base	Cable Replacement Project - (HAM) - Millen - Barton - Fruitland	-	1.1	1.6	1.3	-	4.0	10,342	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 16 failures, or 44 failures per 100km. The average cable installation year is 1970 in this project scope.
150653	Base	Road Authority West (St. Catharines)	0.8	0.9	1.0	1.1	1.2	4.8	10,217	System Access	Road Authority	Horizon	Mandatory - System Access Related Project
150615	Base	Metering Tools & Equipment - Central North	0.0	0.0	0.0	0.0	0.0	0.2	9,947	General Plant	Tools, Shop and Garage Equipment	Brampton	Replacement of Capital tools required to perform work
150616	Base	Metering Tools & Equipment - Central South	0.0	0.0	0.0	0.0	0.0	0.2	9,947	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
150613	Base	Metering Tools & Equipment - East	0.0	0.0	0.0	0.0	0.0	0.2	9,947	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
150614	Base	Metering Tools & Equipment - West	0.0	0.0	0.0	0.0	0.0	0.2	9,947	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of Capital tools required to perform work
151402	Base	Cable Replacement Project- Montevideo & Treviso (19a), Mississauga	-	5.2	-	-	-	5.2	9,918	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 10 outages, the length is 14,151 m, and the average cable age is 34 years old.
102263	M-Factor	Work Force Management / Mobile Dispatch	-	-	2.4	2.4	-	4.7	9,762	General Plant	Information Technology	Multiple	Enterprise wide field crew management system that will enable more efficient use of crews and improve visibility to job progress enabling better communication of expectations to customers
151315	Base	Cable Injection Project - (G5) - Steeles - Kennedy - Hwy 407 - Main, Brampton	-	-	-	-	1.6	1.6	9,695	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 7 outages due to cable failures from 2010 to 2019 with average duration of 109 minutes.
151439	Base	2020 GUELPH - Remotely Controlled Switches	0.4	-	-	-	-	0.4	9,307	System Service	SCADA and Automation	Guelph	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151456	M-Factor	Cable Injection Project - (V50) - Hwy 7 - Kipling - Steeles - Hwy 27, Vaughan	-	0.9	0.4	0.2	-	1.5	9,188	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 3 failures in 2018.
150261	Base	Cable Injection Project - (V38) - Rutherford and Weston, Vaughan	1.4	-	-	-	-	1.4	9,110	System Renewal	Underground Asset Renewal	Powerstream	From 2015-2018 customers in this area experienced 5 failures.
151063	Base	Pole Renewal - Central South	3.7	3.9	3.5	3.1	2.7	17.0	9,065	System Renewal	Overhead Asset Renewal	Enersource	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced

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100886	Base	Distribution Automation - East	1.2	1.3	1.4	1.4	2.0	7.3	9,041	System Service	SCADA and Automation	Powerstream	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151275	Base	Cable Injection Project - (SCH) - QEW - Highway 406 - Martindale Road	-	0.6	0.8	0.8	-	2.1	8,905	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 3 failures, or 11 failures per 100km. The average cable installation year is 1988 in this project scope.
151298	Base	Cable Injection Project - (HAM) - Govenors - Old Ancaster	-	-	0.4	0.9	0.6	1.9	8,842	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 3 failures, or 10 failures per 100km. The average cable installation year is 1989 in this project scope.
150808	Base	Implementation of Doble - Enoserv PowerBase and Enoserv RTS applications for Protection and Control Department	0.0	0.0	-	-	-	0.1	8,798	General Plant	Information Technology	Multiple	PowerBase is the premier application to manage and report on protection assets maintenance and engineering records. It manages workflow and connect with maintenance management systems such as Cascade. RTS is a vendor neutral software which allows connection to a variety of test sets. It offers an extensive relay test plan library.
151300	Base	Cable Injection Project - (HAM) - Millen - Barton - Fruitland	0.9	0.7	-	-	-	1.6	8,690	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 16 failures, or 44 failures per 100km. The average cable installation year is 1987 in this project scope.
151389	Base	2021 GUELPH - Remotely Controlled Switches	-	0.4	-	-	-	0.4	8,628	System Service	SCADA and Automation	Guelph	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
150097	M-Factor	Line Protections and HMI Upgrade - KDU-10 Replacement - Markham TS#2	0.5	-	-	-	-	0.5	8,506	System Renewal	Substation Renewal	Powerstream	KDU-10 protection relay malfunction can cause an outage on the 230 kV supply of the station, resulting in a major power interruption. Replacement of this obsolete equipment is expected to provide improved reliability and will provide fault and event record information which will enable accurate diagnosis of system events and outage duration reductions.
150418	Base	42M62 Extension Bovaird Dr, Mississauga Rd to Heritage Rd	-	0.4	-	-	-	0.4	8,351	System Service	Capacity (Lines)	Brampton	This project consists of 42M62 extension on Bovaird drive from Mississauga Road to Heritage Road. The 42M62 circuit extension will supply industrial on Heritage Road, as well as new residential developments
101804	Base	Purchase of Major Tools	0.3	0.4	0.4	0.4	0.4	1.8	8,158	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
151424	Base	Cable Replacement Project-Miss. Valley & Bloor (15) Mississauga	-	-	-	-	9.9	9.9	8,141	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 6 outages, the length is 10,780 m, and the average cable age is 34 years old. There are 32 backlot transformers that we are also replacing.
101488	Base	Markham TS #5	-	-	-	0.3	0.4	0.7	8,117	System Service	Capacity (Stations)	Powerstream	This project is to perform Class EA and purchase land for Markham TS#5 which has been recommended as per the York Region IRRP
151390	Base	2022 GUELPH - Remotely Controlled Switches	-	-	0.4	-	-	0.4	8,052	System Service	SCADA and Automation	Guelph	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151213	Base	Installation of Transformer Bushing Monitoring	-	-	0.1	-	-	0.1	8,001	System Service	System Control, Comm'ns & Performance	Guelph	This project consists of installation of Transformer bushing monitoring system in Guelph. bushing monitoring unit provides real time condition monitoring of the transformer bushings.
150773	M-Factor	New WiMAX Communications System - Central North	0.3	-	-	-	-	0.3	8,000	System Service	System Control, Comm'ns & Performance	Brampton	This project is to provide WiMax for Central North for secure data transfer of monitoring devices.
150509	Base	Installation of Transformer Bushing Monitoring Yarrow TS and MS txmrs-Multi Year -EAST	0.1	0.1	-	-	-	0.2	7,885	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of Transformer bushing monitoring system in Central North. Bushing monitoring unit provides real time condition monitoring of the transformer bushings.
150709	Base	Spare Station Transformer Bushing Conversion from PILC to XLPE - West	0.1	0.1	-	-	-	0.2	7,848	System Renewal	Substation Renewal	Horizon	This project involves converting the spare station transformer primary and secondary bushings/compartments from PILC to XLPE in the West Operating Area (former Horizon). The spare transformers are used when a failure occurs on a station transformer. The PILC cable will be replaced with XLPE at the station in order to improve station reliability and worker and equipment safety. The conversion of bushings is critical as primary bushing compartments have ruptured on multiple occasions in 2017 in the West Operating Area - causing oil spills larger than 200 liters.
151313	Base	Cable Injection Project - (F5) - Steeles - Main - Hwy 407 - McLaughlin, Brampton	-	0.3	0.2	0.3	0.1	0.9	7,751	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 5 outages due to cable failures from 2007 to 2016 with average duration of 80 minutes.
102038	Base	Installation of Transformer Bushing Monitoring on TS and MS txmrs-Multi Year	0.1	0.1	-	-	-	0.2	7,735	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of installation of Transformer bushing monitoring system in East. bushing monitoring unit provides real time condition monitoring of the transformer bushings.

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150785	M-Factor	New WiMAX Communications System - West	0.5	-	-	-	-	0.5	7,655	System Service	System Control, Comm'ns & Performance	Horizon	This project is to provide WiMax for West for secure data transfer of monitoring device.
151349	Base	Cable Injection Project - (V16) - Langstaff - Dufferin - Steeles - Jane, Vaughan	-	0.9	-	-	-	0.9	7,572	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 23 failures.
151352	Base	Cable Injection Project - (M38) - Hwy 7 - Warden - 14th - Woodbine, Markham	-	-	1.0	-	-	1.0	7,548	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 18 failures.
150282	Base	Switchgear Renewal - Central North	0.5	0.5	0.5	0.5	0.5	2.5	7,521	System Renewal	Underground Asset Renewal	Brampton	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
150508	Base	Installation of Transformer Bushing Monitoring on MS txmrs-Multi Year -CENTRAL	0.2	0.2	0.2	0.2	-	0.7	7,509	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of Transformer bushing monitoring system in Central South. bushing monitoring unit provides real time condition monitoring of the transformer bushings.
151062	Base	Cable Replacement - (279) - 201 Silvercreek Pky N Subdivision, Guelph	0.7	-	-	-	-	0.7	7,505	System Renewal	Underground Asset Renewal	Guelph	
151391	Base	2023 GUELPH - Remotely Controlled Switches	-	-	-	0.4	-	0.4	7,488	System Service	SCADA and Automation	Guelph	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151361	Base	Cable Injection Project - (V26) - Teston - Keele - Major Mackenzie - Jane, Vaughan	-	-	-	-	1.2	1.2	7,473	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 8 failures.
151407	Base	Cable Replacement Project- Glen Erin & Burnhamthorpe (12), Mississauga	-	-	7.3	-	-	7.3	7,414	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 10 outages, the length is 22,109 m, and the average cable age is 34 years old.
151325	Base	Cable Replacement Project - (M31) - 14th - Old Kennedy - Steeles - Warden, Markham	-	3.5	3.5	3.5	1.2	11.7	7,412	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 38 failures.
151457	M-Factor	Cable Injection Project - (V25) - Major Mackenzie - Keele - Rutherford - Jane, Vaughan	-	-	0.9	0.4	-	1.3	7,410	System Renewal	Underground Asset Renewal	Powerstream	From 2017-2019 YTD customers in this area experienced 2 failures. From 2015-2019 YTD customers in this area experienced 3 failures.
151339	Base	Cable Replacement Project - (BA19) - Letitia - Anne - Edgehill - Ferndale, Barrie	-	-	7.3	4.4	-	11.8	7,397	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 2 failures in 2018.
150370	M-Factor	New build - 27.6kV New Feeders Lakeview Development, Mississauga	-	-	-	1.9	-	1.9	7,391	System Service	Capacity (Lines)	Enersource	Two 27.6kV feeders are to be extended in order to provide for additional capacity in the Lakeview area for the brownfield development and intesification
151316	Base	Cable Injection Project - (H2) - Wanless - Heart Lake - Bovaird - Kennedy, Brampton	-	0.3	0.2	0.4	-	0.9	7,371	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 4 outages due to cable failures from 2009 to 2017 with average duration of 107 minutes.
151121	Base	Cable Injection Project - (V43) - Hwy 7 and Pine Valley Dr, Vaughan	1.0	-	-	-	-	1.0	7,357	System Renewal	Underground Asset Renewal	Powerstream	From 2015-2016 customers in this area experienced 3 failures.
150284	Base	Pole Renewal - Central North	0.9	2.1	2.8	2.9	3.0	11.7	7,305	System Renewal	Overhead Asset Renewal	Brampton	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
150484	Base	25M8 27.6kV Feeder Extension Heritage Rd, South of Embleton Rd	0.4	-	-	-	-	0.4	7,282	System Service	Capacity (Lines)	Brampton	This project consists of 25M8 feeder extension to Hertitage road to supply new developments
102017	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear initiative-North & TS	0.3	0.3	0.3	0.3	0.3	1.7	7,275	System Service	Safety & Security	Powerstream	This project consists of Sorbweb Oil containment system in East. Protects the environment in the event of a transformer tank rupture
100924	M-Factor	Install two additional 27.6 kV ccts on Hwy 7 from Jane St to Weston Rd	-	-	-	2.6	-	2.6	7,256	System Service	Capacity (Lines)	Powerstream	This project is to reroute two 27.6kV feeders (21M3 & 21M4) to supply new load in Vaughan Metro Center (VMC). Vaughan Metro Center (VMC) is supplied by two feeders 21M5 and 21M11 from VTS2. There is limited capacity on VTS2 left before it reaches the 10 day Limited Time Rating (LTR) of 153 MW. VTS4 was completed in 2017 and is in service and will off load VTS2 so that will have extra capacity to supply new loads in the VMC development (approx. 80MW).
151351	Base	Cable Injection Project - (M32) - Hwy 7 - Main - 14th - Warden, Markham	-	-	0.9	-	-	0.9	6,971	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 17 failures.
151392	Base	2024 GUELPH - Remotely Controlled Switches	-	-	-	-	0.4	0.4	6,957	System Service	SCADA and Automation	Guelph	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
150026	Base	Cable Injection Project - (M43) - John and Woodbine, Markham	1.0	-	-	-	-	1.0	6,955	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 38 years old and will be 39 when project starts (2020).
150343	M-Factor	Bathurst Street Widening	3.4	-	-	-	-	3.4	6,905	System Access	Road Authority	Powerstream	2020 portion of scope of the Bathurst Street road widening as per requirements of PSWHA.
150021	Base	Cable Injection Project - (V36) - Steeles and Pine Valley, Vaughan	0.6	-	-	-	-	0.6	6,822	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2017 customers in this area experienced 9 failures.
150714	Base	MS Transformer Tank and Radiator Reconditioning- Multi-year initiative - Central	0.1	0.1	0.1	0.1	0.1	0.4	6,819	System Renewal	Substation Renewal	Enersource	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the Central South Operating Area (former Enersource). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.

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Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150713	Base	MS Transformer Tank and Radiator Reconditioning- Multi-year initiative - East	0.1	0.1	0.1	0.1	0.1	0.4	6,819	System Renewal	Substation Renewal	Brampton	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the Central North Operating Area (Brampton). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150715	Base	MS Transformer Tank and Radiator Reconditioning- Multi-year initiative - West	0.1	0.1	0.1	0.1	0.1	0.4	6,819	System Renewal	Substation Renewal	Horizon	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the West Operating Area (former Horizon). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150644	Base	Road Authority West (Hamilton)	1.4	1.5	1.7	1.9	2.1	8.7	6,689	System Access	Road Authority	Horizon	Mandatory - System Access Related Project
151355	Base	Cable Injection Project - (M26) - Hwy 7 -McCowan - 14th - Old Kennedy, Markham	-	-	-	0.9	-	0.9	6,566	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 14 failures.
150507	Base	230kV TS Transformer Primary Bushing Monitoring Enablement-BPD Elimination - 4 TS Transformers-Multi-year initiative-TS	0.2	0.5	0.5	0.5	-	1.7	6,521	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to install primary bushing monitoring at TS in EAST
151459	M-Factor	Cable Injection Project - (V24) - Langstaff - Jane - Rutherford - Keele, Vaughan	-	-	-	0.5	0.7	1.3	6,509	System Renewal	Underground Asset Renewal	Powerstream	From 2015-2019 YTD customers in this area experienced 0 failures. From 2013-2019 YTD customers in this area experienced 2 failures.
150352	Base	Voltage Conversion - Central MS, Hamilton	1.7	1.5	1.8	-	-	5.0	6,498	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 23 outages and had 1,060,300 customer minutes of interruption (75 mins per customer per year). The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail. Specifically Central MS is the only station remaining in service with oil breakers which are functionally obsolete with no spare parts readily available.
150468	Base	Meter to Cash auxiliary systems ongoing upgrades - IT/OT Infrastructure	-	-	-	0.2	0.2	0.3	6,495	General Plant	Information Technology	Multiple	Enhancement to CIS (CC&B) Meter to Cash ancillary systems to support process improvement requirements. Ancillary systems but not limited to upgrading FW, MV90, LPSS. These enhancements are considered for the overall customer and organizational benefits.
151418	Base	Cable Replacement Project- Innovator & Courtney Park E (4), Mississauga	-	-	-	2.9	-	2.9	6,467	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 7 outages, the length is 7,263 m, and the average cable age is 22 years old. This is a commerical/industrial (3-phase) area.
151310	Base	Cable Injection Project - (E4) - Queen - McLaughlin - Steeles - Chinguacousy, Brampton	-	0.3	0.2	0.2	-	0.8	6,421	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 4 outages due to cable failures from 2008 to 2016 with average duration of 104 minutes.
150357	Base	New build - 25M9 Extension to Derry Rd, Mississauga	0.5	1.7	-	-	-	2.1	6,401	System Service	Capacity (Lines)	Enersource	This project consists of 25M9 extension into Mississauga to provide additional 27.6KV capacity. It will offload Erindale TS in Mississauga and avoid building Mini-Britannia MS and also provides capacity back to Brampton using a link along Derry Rd.
151044	Base	Switch Renewal - Central South	0.3	0.3	0.3	0.3	0.3	1.4	6,319	System Renewal	Overhead Asset Renewal	Enersource	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacement units
150065	Base	Basement Flood Risk Mitigation - Richmond Hill TS#2	0.2	-	-	-	-	0.2	6,280	System Renewal	Substation Renewal	Powerstream	This project involves mitigating the flood risk at the Richmond Hill TS#2 where there is equipment installed in the basement by relocating or repositioning this equipment. This critical equipment includes DC system, AC and DC panels, feeder switches, UPS, ATS located in the basement of this station. Damage to this equipment due to flooding would cause extensive power interruptions to many customers.
103659	Base	Storm Hardening - Four-Circuit Poles	1.8	1.9	2.0	2.1	2.2	9.9	6,255	System Renewal	Overhead Asset Renewal	Powerstream	
100459	Base	New Barrie 20MVA Substation - Harvie - 44 kV Supply	-	-	-	-	0.0	0.0	6,215	System Service	Capacity (Stations)	Powerstream	This project consists of 44KV feeder extension to supply for Harvie MS project (101452)
150514	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear Initiative-WEST	0.3	0.3	0.3	0.3	0.4	1.7	6,213	System Service	Safety & Security	Horizon	This project consists of Sorbweb Oil containment system in West. Protects the environment in the event of a transformer tank rupture
151336	Base	Cable Replacement Project - (BA22) - Sunnidale and Anne, Barrie	1.0	1.9	1.5	1.5	3.9	9.8	6,208	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 2 failures in 2019.
151305	Base	Cable Injection Project - (HAM) - Stone Church - Upper Sherman - Rymal - Upper Wellington	-	-	-	-	0.7	0.7	6,019	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 1 failure, or 3 failures per 100km. The average cable installation year is 1989 in this project scope.
151086	Base	Insulator Replacements	0.1	0.1	0.1	0.1	0.1	0.4	5,949	System Renewal	Overhead Asset Renewal	Guelph	Replacement of non-polymer insulators (Areas are prioritized by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.
102128	M-Factor	Aurora MS6 Expansion	-	0.8	1.1	-	-	2.0	5,910	System Service	Capacity (Lines)	Powerstream	2C land is currently supplied by a 13.8kV feeder 5F2. It had a peak of 269A in 2018 and does not have sufficient capacity to supply future growth in the 2C lands. New feeder capacity is required to supply the additional load.

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Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150066	Base	Basement Flood Risk Mitigation - Vaughan TS#2	0.1	0.1	-	-	-	0.2	5,867	System Renewal	Substation Renewal	Powerstream	This project involves mitigating the flood risk at the Vaughan TS#2 where there is equipment installed in the basement by relocating or repositioning this equipment. This critical equipment includes DC system, AC and DC panels, feeder switches, UPS, ATS located in the basement of this station. Damage to this equipment due to flooding would cause extensive power interruptions to many customers.
100461	Base	New Barrie 20MVA Substation - Harvie - 13.8kV Feeder Integration	-	-	-	-	0.0	0.0	5,856	System Service	Capacity (Stations)	Powerstream	This project consist of 13.8KV feeder integration for Harvie MS project (101542)
151176	Base	Cable Replacement Project - MS Argentia distribution feeder(s) upgrade	1.6	-	-	-	-	1.6	5,705	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 11 outages, the length is 1,587 m, and the average cable age is 30 years old.
150351	M-Factor	Voltage Conversion - Aberdeen MS, Hamilton	-	2.1	1.3	-	-	3.3	5,675	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 16 outages and had 500,475 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
151404	Base	Cable Replacement Project- Central Pk E & Miss. Valley (28)	-	8.4	-	-	-	8.4	5,611	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 11 outages, the length is 7,100 m, and the average cable age is 42 years old. There are 27 backlot transformers that we are also replacing.
151463	M-Factor	Cable Injection Project - (F4-G4) - Main - Steeles - Chinguacousy - Queen, Brampton	-	-	-	0.3	0.7	1.1	5,560	System Renewal	Underground Asset Renewal	Brampton	From 2000-2018 customers in this area experienced 86 failures. Exact number of failures in recent years is unknown at this moment.
150637	Base	Station Switchgear Replacement - MS10	2.6	-	-	-	-	2.6	5,499	System Renewal	Substation Renewal	Brampton	The existing switchgear at MS10 in Brampton is no longer suitable for service. The main project driver for replacement is the condition of the metal-clad switchgear housing the feeder breakers and bus-tie breakers. The manufacturer no longer supports this type of equipment and the design of the switchgear does not meet Alectra Utilities' current safety standards and presents a potential risk to its employees. An increasing failure risk will have a negative impact on Alectra Utilities' customers, and safety. Additionally, failure of the existing switchgear would warrant emergency replacement resulting in non-budgeted funding requirements and could result in lengthy customer interruptions.
150337	Base	Switch Renewal - West	0.4	0.4	0.4	0.5	0.5	2.2	5,476	System Renewal	Overhead Asset Renewal	Horizon	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacement units
151055	Base	Major Tools	0.1	0.1	0.1	0.1	0.1	0.4	5,432	General Plant	Tools, Shop and Garage Equipment	Guelph	Replacement of Capital tools required to perform work
150067	Base	Basement Flood Risk Mitigation - Markham TS#4	-	0.1	0.1	-	-	0.3	5,410	System Renewal	Substation Renewal	Powerstream	This project involves mitigating the flood risk at the Markham TS#4 where there is equipment installed in the basement by relocating or repositioning this equipment. This critical equipment includes DC system, AC and DC panels, feeder switches, UPS, ATS located in the basement of this station. Damage to this equipment due to flooding would cause extensive power interruptions to many customers.
150598	Base	Suite Metering - Renewals & Retrofits - PowerStream RZ	0.4	0.4	0.4	0.4	0.4	1.8	5,394	System Access	Metering	Powerstream	Multi-year project to purchase and install suite metering equipment in existing buildings upgraded from bulk metering.
150515	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear initiative-CENTRAL	0.3	0.3	0.3	0.3	0.4	1.7	5,352	System Service	Safety & Security	Enersource	This project consists of Sorbweb Oil containment system in Central South. Protects the environment in the event of a transformer tank rupture
150516	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear initiative-EAST	0.3	0.3	0.3	0.3	0.4	1.7	5,352	System Service	Safety & Security	Brampton	This project consists of Sorbweb Oil containment system in Central North. Protects the environment in the event of a transformer tank rupture
150744	Base	John Street underground parking renewal	0.3	-	-	-	-	0.3	5,343	General Plant	Facilities Management	Horizon	Repairs to the undergrown parking level that is in poor condition impacting builsing system below that support the building operations and craeting saftey risks. The building was built in 1950 and many of the building infrastructure is still original.
150336	Base	Transformer Renewal - West	0.6	0.7	0.7	0.7	0.7	3.3	5,294	System Renewal	Transformer Renewal	Horizon	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
151306	Base	Cable Injection Project - (HAM) - Upper Wentworth - Lincoln M. Alexander - Upper Ottawa - Stone Church	-	-	-	0.5	0.5	1.0	5,237	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 2 failures, or 8 failures per 100km. The average cable installation year is 1988 in this project scope.
150750	Base	Lines Central-North - Major Tools	0.1	0.1	0.1	0.1	0.1	0.5	5,234	General Plant	Tools, Shop and Garage Equipment	Brampton	Replacement of Capital tools required to perform work
151432	Base	Cable Injection- 007- AREA 43 & 51- Hurontario & Derry Rd W, Mississauga	-	-	-	-	1.4	1.4	5,149	System Renewal	Underground Asset Renewal	Enersource	There are 3 outages, we are injecting a total of 16,419 m of cable for this project, and the average age of the cable is 28 years.

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Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150009	Base	Insulator Renewal - East	0.2	0.2	0.2	0.2	0.3	1.2	5,108	System Renewal	Overhead Asset Renewal	Powerstream	Replacement of non-polymer insulators (Areas are prioritized by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.
100909	M-Factor	Rebuild 27.6 kV pole line for 4 Ccts on Warden Ave from Major Mack to Elgin Mills	-	-	2.2	-	-	2.2	4,927	System Service	Capacity (Lines)	Powerstream	This project is the third part of a multiple year project of rerouting two feeders 12M10/12M11 to Markham Future Urban Area. This project provide 40 MVA capacity.
151203	Base	Capital Corrective Equipment Replacement - Stations South West	0.1	0.1	0.1	0.1	0.1	0.3	4,921	System Renewal	Substation Renewal	Guelph	This project is intended to provide capital for all unplanned station equipment replacements in the South West Operating Area (Guelph) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
102042	Base	Purchase and Installation of Animal Guards at Various Stations-Annual Multi-year initiative-North & TS	0.0	0.0	0.0	0.0	0.0	0.1	4,894	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of animal guard installation in East
150716	M-Factor	New build - 42M69 Feeder Extension Williams Pkwy - Main St to Kennedy Rd, Brampton	-	-	1.1	-	-	1.1	4,866	System Service	Capacity (Lines)	Brampton	27.6kV UG Feeder Extension along Williams Pkwy from Main St to Kennedy Rd OH to meet contingency conditions
150605	M-Factor	Residential "ICON F" Meter Replacement - PowerStream RZ	3.0	4.2	-	-	-	7.3	4,853	System Access	Metering	Powerstream	Multi-year project to replace Icon-F smart meters with secure encryption, last gasp and tamper detection capabilities.
151403	Base	Cable Replacement Project- Montevideo & Battleford (19b), Mississauga	-	1.7	-	-	-	1.7	4,849	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 12 outages, the length is 5,013 m, and the average cable age is 39 years old.
151359	Base	Cable Injection Project - (M16) - Major Mackenzie - 9th - 16th - Hwy 48, Markham	-	-	-	0.7	-	0.7	4,782	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 7 failures.
151464	M-Factor	Cable Injection Project - (F3-G3-H3) - Phase 2, Brampton	-	-	0.4	0.5	-	0.8	4,697	System Renewal	Underground Asset Renewal	Brampton	From 2000-2018 customers in this area experienced 103 failures. Exact number of failures in recent years is unknown at this moment.
151328	Base	Cable Replacement Project- (21a) Darcel & Brandon Gate, Mississauga	-	1.4	-	-	-	1.4	4,689	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 6 outages, the length is 4,087 m, and the average cable age is 46 years old.
151083	Base	Switchgear Renewal - West	0.4	0.4	0.4	0.4	0.4	2.2	4,684	System Renewal	Underground Asset Renewal	Horizon	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
151010	Base	Switch Renewal - Central North	0.6	0.6	0.7	0.7	0.7	3.3	4,604	System Renewal	Overhead Asset Renewal	Brampton	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacement units
150720	Base	Lines Central-South - Major Tools	0.2	0.2	0.2	0.2	0.2	1.1	4,591	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
151461	M-Factor	Cable Injection Project - (V51) - Langstaff - Kipling - Hwy 7 - Hwy 27, Vaughan	-	-	-	-	0.7	0.7	4,537	System Renewal	Underground Asset Renewal	Powerstream	From 2017-2019 YTD customers in this area experienced 1 failure. From 2015-2019 YTD customers in this area experienced 5 failures.
151022	M-Factor	New Three Sector WiMAX Node - MS305	0.1	-	-	-	-	0.1	4,525	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to install three sector WiMax node at MS305. The node would provide last mile broadband connectivity to field devices such as intelligent overhead reclosers and padmounted switchgears, FIT monitoring data concentrators and Ethernet enabled revenue meters. The node would provide Transfer Trip capability to FIT generators.
151420	Base	Cable Replacement Project-Eglinton & Credit Valley (5), Mississauga	-	-	-	10.2	-	10.2	4,486	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 6 outages, the length is 27,821 m, and the average cable age is 35 years old.
150411	M-Factor	42M64 Feeder Extension Mississauga Rd, Williams Pkwy to Queen / Embleton	0.1	-	-	-	-	0.1	4,471	System Service	Capacity (Lines)	Brampton	42M64 Feeder Extension from Mississauga Rd from Queen St. to Embleton Rd to supply new developments on Embleton and provide relief to the existing feeder 25M8
151433	Base	Cable Injection- 008- AREA46 - Glen Erin & Aquitane, Mississauga	0.6	0.6	-	-	-	1.2	4,471	System Renewal	Underground Asset Renewal	Enersource	There are 6 outages, we are injecting a total of 19,827 m of cable for this project, and the average age of the cable is 33 years.
150677	Base	Station Switchgear Replacement - Aquitaine MS59 LV1	1.7	-	-	-	-	1.7	4,470	System Renewal	Substation Renewal	Enersource	The existing LV1 switchgear at Aquitaine MS59 station houses gas circuit breakers that utilize vintage technology to provide short circuit protection against faults. These circuit breakers are technically obsolete and are prone to failure. Also the switchgear is non-arc-resistant and poses a potential safety hazard to Alectra personnel and even to the general public who happen to be in the vicinity of the station during a failure event. Failure of the existing switchgear and breakers would warrant emergency replacement resulting in non-budgeted funding requirements and could result in lengthy customer interruptions. Therefore, proactive replacement of the existing switchgear and associated equipment is a prudent strategy as the restoration of the system could take 8-10 months due to long equipment lead times in the event of a failure.
151364	Base	Cable Injection Project - (V23) - Hwy 7 - Keele - Langstaff - Jane, Vaughan	-	-	-	-	0.7	0.7	4,381	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 2 failures.
151401	Base	Cable Replacement Project- (21b) Sigsbee & Morning Star, Mississauga	-	1.0	-	-	-	1.0	4,296	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 7 outages, the length is 2,956 m, and the average cable age is 46 years old.

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Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151021	Base	Insulator Renewal - Central North	0.3	0.4	0.4	0.4	0.4	1.8	4,236	System Renewal	Overhead Asset Renewal	Brampton	Replacement of non-polymer insulators (Areas are prioritiezed by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.
150536	Base	Implement database security - IT Infrastructure	-	0.1	-	-	-	0.1	4,195	General Plant	Information Technology	Multiple	This project will address security risks related to data-at-rest.
150674	Base	Emerging Customer Initiated Work Central (Brampton)	0.1	0.2	0.2	0.2	0.2	0.8	4,184	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
101763	Base	Unforeseen Projects Initiated by the customer PS North	0.1	0.1	0.1	0.1	0.1	0.6	4,161	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150125	M-Factor	Aurora MS6 (AMS6) Transformer and Bus Protection Upgrade	0.1	-	-	-	-	0.1	4,156	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade transformer and bus protection at Aurora MS6 station from the current electromechnical KBCH relay.
150745	Base	John Street VAV Updating - Facilities	0.5	-	-	-	-	0.5	4,034	General Plant	Facilities Management	Horizon	Update main building ventilation systems that have surpass end of life and replacement aprsrt ca no longer be obatined that support the main Alectra control room, customer services group and communications systesm.
150520	Base	Security Additions & Enhancements	0.2	-	-	-	-	0.2	4,024	General Plant	Information Technology	Multiple	As per Alectra Security roadmap to key IT systems.
150541	Base	Business Support	0.2	-	-	-	-	0.2	4,022	General Plant	Information Technology	Multiple	The project will encompass a variety of sub projects for the purpose of investigating new and emerging technologies. Building a culture of innovation Alectra will need a continued effort in remaining ahead of the trends and implementing new and more efficient ways of doing business. The projects that are slated for this years budget are room Artificial Intelligence and Wearable Technology
150679	M-Factor	Alectra Drive for the Workplace	0.2	0.2	0.2	0.2	0.2	0.8	3,997	System Service	Capacity (Lines)	Multiple	Alectra Drive for the Workplace will demonstrate the value of integrating smart electric vehicle (EV) charging system at workplaces into the distribution grid such that mass uptake of electric vehicles can be managed in a safe and reliable manner. The planned investment will help manage the flow of electricity needed to serve the building and EV charging stations, so that electricity costs are minimized for commercial customers while EV drivers have an easy and accessible charging solution.
150320	M-Factor	Voltage Conversion - Dewitt MS , Hamilton	2.6	1.0	0.5	-	-	4.1	3,972	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 12 outages and had 888,434 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
151348	Base	Cable Injection Project - (M20) - Hwy 7 - Markham - 14th - McCowan, Markham	-	0.4	-	-	-	0.4	3,971	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 14 failures.
150358	M-Factor	New build - QEW Dixie West New OH Circuits, Mississauga	-	-	1.1	-	-	1.1	3,907	System Service	Capacity (Lines)	Enersource	This project is an to added betterment coordinated with the MTO's QEW Expansion along Dixie West OH.
150466	Base	Atomic Scheduler Upgrade - IT Infrastructure	-	-	0.3	-	-	0.3	3,883	General Plant	Information Technology	Multiple	Enhancement to Atomic application scheduler to support process improvement requirements. Atomic is the application scheduler in use at Alectra. This application will be used to support application and report scheduling for both CC&B and JDE. These enhancements are considered for the overall customer and organizational benefits.
150540	Base	Implement application security - IT Infrastructure	-	-	0.1	-	-	0.1	3,861	General Plant	Information Technology	Multiple	Ongoing application security enhancements and additions to meet vendor requirements .
150408	Base	42M71 Feeder Egress Salvation Rd, West, Creditview, Wanless	-	0.4	-	-	-	0.4	3,769	System Service	Capacity (Lines)	Brampton	This project consists of 42M71 feeder egress and ties to 42M61 and 42M43 will provide contingency to circuits nearing planning limits.
151430	Base	Cable Injection- 005- AREA 38- Bristol & Creditview, Mississauga	-	0.9	-	-	-	0.9	3,746	System Renewal	Underground Asset Renewal	Enersource	There is 1 outage, we are injecting a total of 11,193 m of cable for this project, and the average age of the cable is 32 years.
151413	Base	Cable Replacement Project- Rathburn Rd W & Elora Dr (9), Mississauga	-	-	-	1.6	-	1.6	3,744	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 8 outages, the length is 3,270 m, and the average cable age is 27 years old.
150367	M-Factor	Mini-Orlando MS 27.6kV Land Purchase, Mississauga	-	-	-	-	2.2	2.2	3,727	System Service	Capacity (Stations)	Enersource	Mini-Orlando MS is situated on leased land in the area of Mavis Road, south of Highway 401, provides capacity for the commercial and industrial customers in the Heartland area
150043	M-Factor	Rear Lot Renewal Project - East of Queen St. to Eastern Ave./North of Greenway St.	2.6	-	-	-	-	2.6	3,714	System Renewal	Rear Lot Conversion	Powerstream	This area has had an average of 1.7 outages lasting 9.7hrs per year based on a 3 year average.
102075	Base	Major repairs, refurbishment, or modifications to switches/switchgear	0.1	0.1	0.1	0.1	0.1	0.5	3,702	System Renewal	Underground Asset Renewal	Powerstream	Switchgear and Switches in stores that repair/refurbishment of the units can allow them to be returned to service
150521	Base	Security Additions & Enhancements	-	0.2	-	-	-	0.2	3,700	General Plant	Information Technology	Multiple	As per Alectra Security roadmap to key IT systems.
150376	Base	New build - Hamilton South Mountain feeders capacity relief, Hamilton	-	1.1	1.1	-	-	2.2	3,694	System Service	Capacity (Lines)	Horizon	This project is build new feeder to alleviate capacity in South Hamilton and to alleviate on the four feeders which are over the planning limit
151411	Base	Cable Replacement Project- Queensway & Mavis (31), Mississauga	-	-	-	3.6	-	3.6	3,694	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 8 outages, the length is 8,488 m, and the average cable age is 42 years old.
151319	Base	Cable Injection Project - (I4) -Queen - Dixie - Steeles - Hwy 410, Brampton	-	-	0.4	-	-	0.4	3,650	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 0 outage due to cable failures to date. Cables are 31 years old and will be at the injection eligibility threshold by the time of project execution in 2022.
150415	Base	42M65 Feeder Egress Pleasant TS to SG20-1438	-	0.5	-	-	-	0.5	3,641	System Service	Capacity (Lines)	Brampton	This project consists of 42M65 feeder egress out of Pleasant TS and will supply the redvelopments in downtown.
150535	Base	Network Segmentation - IT Infrastructure	0.3	-	-	-	-	0.3	3,636	General Plant	Information Technology	Multiple	As per Alectra Security roadmap to key IT systems with focus on network segmentation for corporate environments.

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Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151428	Base	Cable Injection- 002- AREA 30- Eglinton Ave W & Miss Rd, Mississauga	-	0.6	0.6	-	-	1.2	3,632	System Renewal	Underground Asset Renewal	Enersource	There are 2 outages, we are injecting a total of 14,541 m of cable for this project, and the average age of the cable is 31 years.
150329	M-Factor	Rear Lot Renewal Project - Main Street / Unionville / Carlton	-	-	-	-	2.5	2.5	3,599	System Renewal	Rear Lot Conversion	Powerstream	This area has had an average of 1 outages lasting an 1hr 40 minutes per year based on a 3 year average.
151276	Base	Cable Injection Project - (SCH) - Vansickle	-	0.4	0.7	0.4	-	1.5	3,556	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 2 failures, or 11 failures per 100km. The average cable installation year is 1990 in this project scope.
151200	M-Factor	Alectra Single Platform Website ongoing	0.1	0.1	0.1	-	-	0.3	3,548	General Plant	Information Technology	Multiple	Ongoing enhancements to the Alectra platform to improve functionality for customers
150498	Base	Capital Corrective Equipment Replacement - Stations Central South	0.3	0.3	0.3	0.3	0.3	1.4	3,535	System Renewal	Substation Renewal	Enersource	This project is intended to provide capital for all unplanned station equipment replacements in the Central South Operating Area (former Enersource) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
150499	Base	Capital Corrective Equipment Replacement - Stations Central North	0.3	0.3	0.3	0.3	0.3	1.4	3,535	System Renewal	Substation Renewal	Brampton	This project is intended to provide capital for all unplanned station equipment replacements in the Central North Operating Area (Brampton) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
150497	Base	Capital Corrective Equipment Replacement - Stations West	0.3	0.3	0.3	0.3	0.3	1.4	3,535	System Renewal	Substation Renewal	Horizon	This project is intended to provide capital for all unplanned station equipment replacements in the West Operating Area (former Horizon) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
151304	Base	Cable Injection Project - (HAM) - Stone Church - Garth - Lincoln M. Alexander	0.6	-	-	-	-	0.6	3,492	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 5 failures, or 18 failures per 100km. The average cable installation year is 1986 in this project scope.
150047	M-Factor	Rear Lot Renewal Project - Royal Orchard - North	1.8	1.0	1.1	-	-	4.0	3,478	System Renewal	Rear Lot Conversion	Powerstream	This area has had an average of 3 failures per year lasting 4 hours per year based on 3 year average.
101542	M-Factor	New Barrie 20MVA Substation - Harvie	-	-	-	0.8	1.4	2.2	3,447	System Service	Capacity (Stations)	Powerstream	The project entails the purchase of a station site in the vicinity of Harvie Road and Veterans Drive in Barrie and constructing a new 44/13.8kV, 20MVA, 4-feeder municipal substation.
151462	M-Factor	Cable Injection Project - (G1) - Hwy 410 - Kennedy - Wanless - Main, Brampton	-	0.3	0.2	-	-	0.6	3,438	System Renewal	Underground Asset Renewal	Brampton	From 2000-2018 customers in this area experienced 2 failures. Exact number of failures in recent years is unknown at this moment.
150774	Base	Lines Central-North - Site Restorations	0.1	0.1	0.1	0.1	-	0.4	3,434	System Renewal	Overhead Asset Renewal	Brampton	
150721	Base	Lines Central-South - Site Restorations	0.1	0.1	0.1	0.1	-	0.4	3,434	System Renewal	Underground Asset Renewal	Enersource	
151344	Base	Cable Injection Project - (R16) - Major Mackenzie - Bayview - 16th - Yonge, Richmond Hill	-	0.3	-	-	-	0.3	3,397	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 16 failures.
150523	Base	Security Additions & Enhancements	-	-	0.2	-	-	0.2	3,395	General Plant	Information Technology	Multiple	As per Alectra Security roadmap to key IT systems.
150353	M-Factor	Truscott Plaza - Additional capacity, Mississauga	-	-	-	-	1.0	1.0	3,353	System Service	Capacity (Lines)	Enersource	This project is to provide 27.6 KV capacity to supply developments in Truscott areas as the existing 4.16kV does not provide service size
150672	Base	Burden Allocation - System Service	0.1	0.1	0.1	0.1	0.1	0.6	3,353	System Service	Capacity (Lines)	Horizon	
150537	Base	Cyber Security - Upgrade access management controls	-	0.3	-	-	-	0.3	3,321	General Plant	Information Technology	Multiple	As per Alectra Security roadmap to key IT systems with focus on end user access management controls.
150662	Base	Station Sustainment PI System Expansion for CASCADE CARE	0.1	-	-	-	-	0.1	3,302	General Plant	Information Technology	Multiple	Expanding the use of the PI System to enable more efficient interfaces with other enterprise systems such as OMS and SCADA; Cascade is used to drive maintenance and generate work orders for maintenance of grid equipment
151458	M-Factor	Cable Injection Project - (V31) - Langstaff - Weston - Rutherford - Jane, Vaughan	-	-	-	0.6	-	0.6	3,280	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 1 failure in 2017.
150390	M-Factor	New build - Waterdown 3rd Feeder, Hamilton	-	1.7	-	-	-	1.7	3,248	System Service	Capacity (Lines)	Horizon	This project is to alleviate capacity issues in the Waterdown area of Hamilton, primarily served by two Dundas 27.6kV feeders
150263	Base	Cable Replacement Project - East Left Behind Cable	1.3	2.7	1.6	3.4	1.6	10.5	3,237	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in these areas have experienced 11 failures.
150345	Base	Overhead Conductor Replacement - #6 Copper - Feeder WT10	0.4	-	-	-	-	0.4	3,210	System Service	Safety & Security	Horizon	This project consists of overhead conductor replacement to mitigate safety risk and provide additional capacity.
151416	Base	Cable Replacement Project- Woodchester & Thorn Lodge (34), Mississauga	-	-	-	2.4	-	2.4	3,184	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 7 outages, the length is 6,669 m, and the average cable age is 49 years old.
151356	Base	Cable Injection Project - (V44) - Langstaff - Pine Valley - Hwy 7 - Kipling, Vaughan	-	-	-	0.4	-	0.4	3,176	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 6 failures.

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150601	Base	Advanced Metering Infrastructure (AMI) Security Audit - East	0.1	-	-	0.1	-	0.1	3,171	System Access	Metering	Powerstream	Multi-year project to renew meter data security to address emerging cyber threats.
151440	Base	2020 GUELPH - Transite Underground Duct Replacement	0.3	-	-	-	-	0.3	3,168	System Renewal	Underground Asset Renewal	Guelph	Replacement of Duct Structure which contains asbestoes a known carcinogen and impacts worker safety.
102065	Base	Capital Corrective Equipment Replacement - East	0.3	0.3	0.3	0.3	0.4	1.7	3,161	System Renewal	Substation Renewal	Powerstream	This project is intended to provide capital for all unplanned station equipment replacements in the East Operating Area (former PowerStream area) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
151297	Base	Cable Replacement Project - (HAM) - Govenors - Old Ancaster	-	-	-	-	1.0	1.0	3,148	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 3 failures, or 10 failures per 100km. The average cable installation year is 1957 in this project scope.
150611	Base	Transformer Tank and Radiator Reconditioning- Multi-year initiative - East	0.2	0.2	0.2	0.2	0.2	0.8	3,117	System Renewal	Substation Renewal	Powerstream	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the East Operating Area (former PowerStream). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150524	Base	Security Additions & Enhancements	-	-	-	0.2	-	0.2	3,110	General Plant	Information Technology	Multiple	details refer to PWC doc
150623	Base	Purchase and Installation of Animal Guarding-Annual Multi-year initiative-WEST	0.0	0.0	0.0	0.0	0.0	0.0	3,095	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of animal guard installation in West
150622	Base	Purchase and Installation of Animal Guarding-Annual Multi-year initiative-CENTRAL	0.0	0.0	0.0	0.0	0.0	0.0	3,093	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of Animal guard at Central South Stations
150621	Base	Purchase and Installation of Animal Guarding-Annual Multi-year initiative-EAST	0.0	0.0	0.0	0.0	0.0	0.0	3,082	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of Animal guard at East Stations
151317	Base	Cable Injection Project - (H4) - Queen - Hwy 410 - Steeles - Kennedy, Brampton	-	-	-	0.4	-	0.4	3,033	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 2 outages due to cable failures in 2007 and 2012 with average duration of 72 minutes.
151426	Base	Cable Replacement Project-Southdown & Lakeshore (35), Mississauga	-	-	-	-	6.8	6.8	3,020	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 3 outages, the length is 8,126 m, and the average cable age is 48 years old. There are 62 backlot transformers that we are also replacing.
150348	Base	Overhead Conductor Replacement - #6 Copper - Feeder OT2	0.4	-	-	-	-	0.4	3,018	System Service	Safety & Security	Horizon	This project consists of overhead conductor replacement to mitigate safety risk and provide additional capacity
151417	Base	Cable Replacement Project- Rathburn & Cawthra (27), Mississauga	-	-	-	0.6	-	0.6	2,968	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 8 outages, the length is 1,103 m, and the average cable age is 38 years old.
150089	M-Factor	Markham TS#3 T1/T2 "B" Differential Protections Upgrade	0.1	0.1	-	-	-	0.2	2,935	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to replace the T1/T2 GEC solid state Transformer "B" Differential Protection relays at Markham TS#3 with new relays having fault recording capabilities
100632	M-Factor	27.6 kV Pole Line on 14th Ave from Hwy 48 to 9th Line	-	-	-	2.0	-	2.0	2,933	System Service	Capacity (Lines)	Powerstream	This project consists of building new 27.6 KV pole line on 14th Avenue from HWY 48 to 9th Line. Feeders in this area are over the planning limit and existing load over planning limit and this project will redirected to alternate supply as well as supply new development.
101036	M-Factor	Install a new 4 ccts CNR yard overhead crossing on the south side of Hwy 7	-	-	1.4	-	-	1.4	2,919	System Service	Capacity (Lines)	Powerstream	This project is to increase supply capacity to Vaughan Metro Center and Vaughan Mills. It will also reduce outage impact in case of pole failure on the north side of Hwy 7 crossing CN yard.
151393	Base	2021 GUELPH - Transite Underground Duct Replacement	-	0.3	-	-	-	0.3	2,918	System Renewal	Underground Asset Renewal	Guelph	Replacement of Duct Structure which contains asbestoes a known carcinogen and impacts worker safety.
151208	Base	Station Equipment Temperature Monitoring - South West	-	-	-	0.0	-	0.0	2,911	System Renewal	Substation Renewal	Guelph	MULTI ANSWER
150699	Base	Station Switchgear Replacement - Shawson MS43 LV1	1.1	-	-	-	-	1.1	2,878	System Renewal	Substation Renewal	Enersource	The existing LV1 switchgear at Shawson MS43 station houses gas circuit breakers that utilize vintage technology to provide short circuit protection against faults. These circuit breakers are technically obsolete and are prone to failure. Also the switchgear is non-arc-resistant and poses a potential safety hazard to Alectra personnel and even to the general public who happen to be in the vicinity of the station during a failure event. Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted funding requirements and could result in lengthy customer interruptions. Therefore, proactive replacement of the existing switchgear and associated equipment is a prudent strategy as the restoration of the system could take 8-10 months due to long equipment lead times in the event of a failure.
151286	Base	Cable Replacement Project - (H2) - Wanless - Heart Lake - Bovaird - Kennedy, Brampton	-	0.4	1.7	1.3	0.4	3.7	2,868	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 6 outages due to cable failures from 2011 to 2017 with an average duration of 126 minutes

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101625	Base	Cyber Security Audit & Upgrades	0.1	0.1	0.1	0.1	0.1	0.4	2,865	General Plant	Information Technology	Multiple	This project would fund various activities and countermeasures to improve the cyber security posture of the Operations' Network. This will be a mandate for compliance to Ontario Cyber Security framework. The counter measures include: - an annual audit of the cyber security countermeasures in place; - implementation of new technologies to seal identified compromises; - replacement of deployed cyber security equipment deemed end of life or not able to deliver an expected level of service.
150783	Base	Fleet_Central South Vehicle Replacement-Pick ups	0.5	0.1	-	-	-	0.7	2,848	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150525	Base	Security Additions & Enhancements	-	-	-	-	0.3	0.3	2,842	General Plant	Information Technology	Multiple	details refer to PWC doc
150671	Base	Burden Allocation - System Renewal	1.7	1.7	1.8	1.9	1.9	9.0	2,831	System Renewal	Other System Renewal	Horizon	
151107	Base	Cable Replacement Project - 7143 Main Feeder	0.9	-	-	-	-	0.9	2,822	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 4 outages, the length is 1,325 m, and the average cable age is 39 years old.
150401	M-Factor	136M6 Goreway TS Extensions	-	-	1.0	-	-	1.0	2,821	System Service	Capacity (Lines)	Brampton	This feeder will supply all future residential & small commercial loads around the Gore Rd., Ebenezer Rd. & Castlemore Rd. 136M6 will off load 136M4 on the south section of the area mentioned. 136M6 will off load and provide contingency for 136M4 on the south section of this area.
150632	Base	AMI Gatekeeper Expansion - Brampton RZ	0.0	0.0	0.0	0.0	0.0	0.2	2,820	System Access	Metering	Brampton	Multi-year project to expand and upgrade AMI field communication equipment to service new connections.
151422	Base	Cable Replacement Project-Queen St W & Paisley (30), Mississauga	-	-	-	-	1.5	1.5	2,820	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 6 outages, the length is 3,992 m, and the average cable age is 36 years old.
150141	Base	Cable Replacement Project – (M49) - Steeles and Fairway Heights, Markham	2.9	-	-	-	-	2.9	2,807	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 37 years old and will be 38 when project starts (2020).
150572	Base	Cable Replacement Project - (J4) - Queen - Clark - Bramalea - Kensington - Knightsbridge, Brampton	1.1	-	-	-	-	1.1	2,794	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 9 outages due to cable failures from 2007 to 2017 with average duration of 127 minutes.
151311	Base	Cable Injection Project - (E5) - Steeles - Mclaughlin - Hwy 407 - Chinguacousy, Brampton	-	-	0.3	-	-	0.3	2,785	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 2 outages due to cable failures in 2007 and 2012 with average duration of 70 minutes.
151365	Base	Cable Injection Project - (V02) - Atkinson and Worth, Vaughan	-	-	-	-	0.4	0.4	2,765	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 1 failure.
151394	Base	2022 GUELPH - Transite Underground Duct Replacement	-	-	0.3	-	-	0.3	2,683	System Renewal	Underground Asset Renewal	Guelph	Replacement of Duct Structure which contains asbestoes a known carcinogen and impacts worker safety.
151144	Base	Cable Replacement Project and Transformers Replacement - Rathburn Rd. W, Mississauga	1.2	-	-	-	-	1.2	2,658	System Renewal	Underground Asset Renewal	Enersource	Tis project is split into 3 phases. 2 phases are being completed in 2019, the duct structure for third phase is expected to be completed in 2019 and the final phase is will be done in 2020.
151346	Base	Cable Injection Project - (M45) - Hwy 7 and Woodbine, Markham	-	0.3	-	-	-	0.3	2,650	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 9 failures.
150666	M-Factor	Facilities_John_Roof Deck – Rooftop Renovation	0.4	-	-	-	-	0.4	2,610	General Plant	Facilities Management	Horizon	Removal of cooling tower, chillers and lines that contain R-22 refrigerant (hazardous substance), replace emergency fire exit pathway on the roof from the Hughson St to the John St buildings to ensure employee safety and meet with City Bylaws. Repair roof as a result of the equipment removals.
150079	M-Factor	Markham TS#1 T1/T2 "B" Overcurrent Protections and HMI Upgrade	-	0.2	0.2	-	-	0.3	2,596	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade Markham TS#1 T1/T2 "B" Overcurrent Protections with fault recording ability and HMI Upgrade
151340	Base	Cable Replacement Project - (V29) - Hwy 7 - Jane - Steeles - Weston, Vaughan	-	-	-	-	4.3	4.3	2,594	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 5 failures.
150374	M-Factor	New build - 13.8kV Feeder Extension 9th Line, Derry to Argentia, Mississauga	-	-	-	1.2	-	1.2	2,571	System Service	Capacity (Lines)	Enersource	13.8kV OH feeder extension 9th Line from Derry Rd W to Argentia Rd in Mississauga.This will provide additional capacity for growth along 9th Line.
151427	Base	Cable Injection- 001- AREA 11- Truscott & Southdown, Mississauga	-	0.4	1.3	-	-	1.7	2,550	System Renewal	Underground Asset Renewal	Enersource	There are 2 outages, we are injecting a total of 21,576 m of cable for this project, and the average age of the cable is 32 years.
150332	M-Factor	Non-Wires Alternative Pilot	0.8	0.8	0.8	0.8	0.8	4.0	2,537	System Service	Capacity (Stations)	Powerstream	The project will provide customers with increased flexibility to make decisions about their electricity consumption, generation, and costs; it leads to more efficient integration of DERs which yields greater benefits to customer, system reliability, and power quality. This project will also provide the opportunity to increase operational efficiency and improved asset management to enhance service to customer and defer and/or reduce infrastructure investment needs in York Region.
151042	Base	Markham TS1 Firewall Upgrade	0.2	-	-	-	-	0.2	2,531	System Service	System Control, Comm'ns & Performance	Powerstream	Markham TS1 Firewall Upgrade
150681	Base	Data Analytics - IT/OT Infrastructure	0.3	0.4	-	-	-	0.7	2,528	General Plant	Information Technology	Multiple	This project will develop a data analytics platform to provide enhanced customer value by implementing preventative measures to improve overall outage detection and prediction with use-cases focusing on Distributed Energy Resource (DER) monitoring, integration and optimization.
151421	Base	Cable Replacement Project-Rathkeale Rd & Edenrose St (6), Mississauga	-	-	-	-	2.8	2.8	2,502	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 6 outages, the length is 8,577 m, and the average cable age is 31 years old.
150580	Base	West Region Tools and Test Equipment	0.2	0.2	0.2	0.2	0.2	1.0	2,494	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of Capital tools required to perform work

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Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150627	Base	Station Equipment Temperature Monitoring-EAST	0.1	0.1	0.1	0.1	0.1	0.4	2,479	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of Station Temperature Monitoring system in Central North and it enables controlled emergency loading beyond the nameplate rating.
150629	Base	Station Equipment Temperature Monitoring-WEST	0.1	0.1	0.1	0.1	0.1	0.4	2,479	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of Station Temperature Monitoring system in West and it enables controlled emergency loading beyond the nameplate rating.
150095	M-Factor	Vaughan TS#1 T1/T2 "B" Differential Protections Upgrade	-	-	0.1	0.1	-	0.2	2,478	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the current T1/T2 ASEA solid state Transformer "B" Differential Protection relays at Vaughan TS#1 with new relays having fault recording capabilities
151202	Base	Purchase of Major Station Tools - Multi-year	0.0	0.0	0.0	0.0	0.0	0.0	2,473	General Plant	Tools, Shop and Garage Equipment	Guelph	Replacement of Capital tools required to perform work
151342	Base	Cable Injection Project - (M40) - Major Mackenzie - Warden - 16th - Woodbine, Markham	-	0.2	-	-	-	0.2	2,470	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 16 failures.
151419	Base	Cable Replacement Project- Thomas St & Hillside (24), Mississauga	-	-	-	1.8	-	1.8	2,467	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 6 outages, the length is 4,089 m, and the average cable age is 30 years old.
151395	Base	2023 GUELPH - Transite Underground Duct Replacement	-	-	-	0.3	-	0.3	2,461	System Renewal	Underground Asset Renewal	Guelph	Replacement of Duct Structure which contains asbestoes a known carcinogen and impacts worker safety.
150625	Base	Purchase of Major Tools - Muliti Year-CENTRAL	0.0	0.0	0.0	0.0	0.0	0.1	2,395	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
150624	Base	Purchase of Major Tools - Muliti Year-EAST	0.0	0.0	0.0	0.0	0.0	0.1	2,395	General Plant	Tools, Shop and Garage Equipment	Brampton	Replacement of Capital tools required to perform work
150626	Base	Purchase of Major Tools - Muliti Year-WEST	0.0	0.0	0.0	0.0	0.0	0.1	2,395	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of Capital tools required to perform work
151221	Base	Metering - AMI Hardware Upgrade	-	0.4	0.3	-	-	0.7	2,384	System Access	Metering	Guelph	Multi-year project to expand and upgrade AMI field communication equipment to service new connections, in Guelph RZ.
150707	Base	Alectra Station Access Harmonization - Abloy CLIQ system expansion-CENTRAL	0.0	-	-	-	-	0.0	2,376	System Service	Safety & Security	Enersource	This project consists of upgrade to station access in Central South. Provides added security and risk mitigation for keys that are lost or stolen and provides a system that tracks key and lock cylinder usage as well provides the ability to activate and deactivate keys from an application
150705	Base	Alectra Station Access Harmonization - Abloy CLIQ system expansion-EAST	0.0	-	-	-	-	0.0	2,371	System Service	Safety & Security	Brampton	This project consists of upgrade to station access in Central North. Provides added security and risk mitigation for keys that are lost or stolen and provides a system that tracks key and lock cylinder usage as well provides the ability to activate and deactivate keys from an application
101761	Base	Unforeseen Projects Initiated by the customer PS South	0.4	0.4	0.4	0.4	0.5	2.0	2,365	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
151061	Base	Markham TS2 Firewall Upgrade	0.0	0.2	-	-	-	0.3	2,335	System Service	System Control, Comm'ns & Performance	Powerstream	Markham TS2 Firewall Upgrade
151435	Base	Cable Injection- 010 - Area 56- Derry Rd W & Ninth Line, Mississauga	-	-	1.2	1.3	1.3	3.8	2,307	System Renewal	Underground Asset Renewal	Enersource	There are 3 outages, we are injecting a total of 45,837 m of cable for this project, and the average age of the cable is 30 years.
151098	Base	Station Switchgear Replacement - Battleford MS54 LV1	1.3	-	-	-	-	1.3	2,297	System Renewal	Substation Renewal	Enersource	The existing LV1 switchgear at Battleford MS54 station houses gas circuit breakers that utilize vintage technology to provide short circuit protection against faults. These circuit breakers are technically obsolete and are prone to failure. Also the switchgear is non-arc-resistant and poses a potential safety hazard to Alectra personnel and even to the general public who happen to be in the vicinity of the station during a failure event. Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted funding requirements and could result in lengthy customer interruptions. Therefore, proactive replacement of the existing switchgear and associated equipment is a prudent strategy as the restoration of the system could take 8-10 months due to long equipment lead times in the event of a failure.
151425	Base	Cable Replacement Project-Rathburn Rd E & Tomken (10), Mississauga	-	-	-	-	1.4	1.4	2,295	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 10 outages, the length is 3,180 m, and the average cable age is 38 years old.
151290	Base	Cable Replacement Project - (I3) - Bovaird - Dixie - Queen - Hwy 410, Brampton	-	0.7	0.7	0.7	0.7	2.9	2,280	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 8 outages due to cable failures from 2007 to 2018 with average duration of 133 minutes.
151347	Base	Cable Injection Project - (V40) - Teston - Weston - Major Mackenzie - Pine Valley, Vaughan	-	0.2	-	-	-	0.2	2,274	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 7 failures.
150084	M-Factor	Markham TS#2 T1/T2 "B" Differential Protections Upgrade	-	-	-	0.1	0.1	0.2	2,270	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the T1/T2 GEC solid state Transformer "B" Differential Protection relays at Markham TS#3 with new relays having fault recording capabilities
151396	Base	2024 GUELPH - Transite Underground Duct Replacement	-	-	-	-	0.3	0.3	2,252	System Renewal	Underground Asset Renewal	Guelph	Replacement of Duct Structure which contains asbestoes a known carcinogen and impacts worker safety.
151244	Base	Fault Indicators	0.0	0.0	0.0	0.0	0.0	0.1	2,243	System Service	System Control, Comm'ns & Performance	Guelph	The scope of this project is to install Fault Indicators in Guelph. The project would include the fault indicators communicating to the existing SCADA and will improve the fault locating and improve SAIDI
150708	Base	Alectra Station Access Harmonization - Abloy CLIQ system expansion-North&TS	0.1	-	-	-	-	0.1	2,235	System Service	Safety & Security	Powerstream	This project consists of upgrade to station access in East. Provides added security and risk mitigation for keys that are lost or stolen and provides a system that tracks key and lock cylinder usage as well provides the ability to activate and deactivate keys from an application

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Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151281	Base	Cable Replacement Project - (SCH) - Lake - Linwell - Geneva - Scott	-	1.0	-	-	-	1.0	2,227	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 6 failures, or 189 failures per 100km. The average cable installation year is 1976 in this project scope.
150542	Base	Meeting Room Transformation - IT/OT Infrastructure	0.3	-	-	-	-	0.3	2,223	General Plant	Information Technology	Multiple	The meeting room transformation project aim to leverage and deliver automation technology for better use of the meeting space; centralized control; consistent experiences across the enterprise; and standard design of the physical space. Efficiencies will be met when meeting rooms can start on time due to the ease of use and collaboration efforts will reduce travel and health and safety concerns. With Alectra being so geographically diverse, it imperative to keep the employees off the road as much as possible to reduce the risk of injury.
151181	Base	Cable Replacement Project - Left Behind Cable, Brampton	0.4	0.5	0.5	0.5	0.5	2.5	2,163	System Renewal	Underground Asset Renewal	Brampton	This project is to address cables which were part of a cable injection project but were ultimately not injectable at the time of project execution. These 'left behind' segments must be addressed, if they are left in the system they could cause a failure. Customers would not only experience an outage, but question the utilities work practices as we would have addressed only a portion of the cables instead of all the cables which could cause an outage.
151070	Base	Markham TS3 Firewall Upgrade	-	0.0	0.2	-	-	0.3	2,149	System Service	System Control, Comm'ns & Performance	Powerstream	Markham TS3 Firewall Upgrade
150321	M-Factor	Voltage Conversion - Galbraith MS, Hamilton	-	1.0	2.3	-	-	3.3	2,140	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 4 outages and had 77,467 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
151423	Base	Cable Replacement Project-Old Carriage Road (33), Mississauga	-	-	-	-	1.4	1.4	2,104	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 5 outages, the length is 2,229 m, and the average cable age is 45 years old.
151192	Base	Asset Register	0.5	-	-	-	-	0.5	2,082	General Plant	Information Technology	Multiple	Develop an enterprise asset register application to support Asset Management requirements to manage and track movement of assets, asset demographics, equipment failures, and support asset condition assessments and business case modelling.
151341	Base	Cable Injection Project - (M15) - 16th - Markham - 9th - Hwy 7, Markham	-	0.2	-	-	-	0.2	2,076	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 30 failures.
150096	M-Factor	Vaughan TS#2 T1/T2 "B" Differential Protections Upgrade	-	-	-	-	0.1	0.1	2,074	System Service	System Control, Comm'ns & Performance	Powerstream	Vaughan TS#2 T1/T2 "B" Differential Protections Upgrade
151345	Base	Cable Injection Project - (M51) - 14th - Bayview - Steeles - Yonge, Markham	-	0.2	-	-	-	0.2	2,071	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 9 failures.
151343	Base	Cable Injection Project - (M14) - Hwy 7 - Markham - 9th - 14th, Markham	-	0.2	-	-	-	0.2	2,070	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 10 failures.
151338	Base	Cable Replacement Project- (BA15) - Burton - Huronia - Little - Bayview, Barrie	-	-	-	-	3.2	3.2	2,063	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 41 years old and will be 46 when project starts (2024).
150661	Base	SS2019-Purchase and Installation of Online Transformer tap Changer Filtration Systems - CENTRAL	0.0	-	-	-	-	0.0	2,056	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of transformer tap changer filtration system in Central South
150663	Base	Technology Changes in Control Room	0.3	-	-	-	-	0.3	2,052	General Plant	Facilities Management	Multiple	Replace aging equipment within the Control room to ensure optimal performance in managing the distribution assets
102728	Base	Station Switchgear Replacement - Big Bay Point MS304	0.2	0.8	-	-	-	1.1	2,051	System Renewal	Substation Renewal	Powerstream	This substation project consists of replacing the existing switchgear and associated equipment, as well as the primary circuit switcher at Big Bay Point MS304. The current line-up is technically obsolete, in poor condition, and is prone to failure. A failure could affect a large number of customers and potentially result in complete loss of supply from the station, requiring load transfer to another station. Proactive replacement of the existing equipment is a prudent strategy as system reliability would be greatly affected in the event of a failure. Additionally, the restoration of the system to normal conditions could take 8-10 months due to long equipment lead times.
150675	Base	Emerging Customer Inititated Work Central (Mississauga)	0.2	0.2	0.2	0.2	0.2	0.9	2,049	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
150558	Base	OT Hardware Refresh	-	0.7	-	-	-	0.7	2,049	General Plant	Information Technology	Multiple	Current routers in PS backbone are limited to 100Mbps ports. Backbone with new hardware is operating at 1gbps. New routers need to operate at that capacity. Equipment in Barrie office is at end of life and hasn't been upgraded since before BHDI merger with PS in 2008. Equipment in Sandalwood is consumer grade unmanaged switches Mavis brocade switches will be nearing end of life. Replace unmanaged Linksys switches in LegHZ datacentres
151329	Base	Cable Replacement Project - (V51) - Langstaff - Kipling - Hwy 7 - Hwy 27, Vaughan	-	2.2	-	-	-	2.2	2,049	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 5 failures.
101764	Base	Road Authority Expenditure PS North	1.0	1.5	1.6	1.6	1.7	7.4	2,038	System Access	Road Authority	Powerstream	Mandatory - System Access Related Project
150604	Base	Smart Meter Network Expansion - PowerStream RZ	0.3	0.2	0.2	0.3	0.3	1.3	2,036	System Access	Metering	Powerstream	Multi-year project to expand and upgrade AMI field communication equipment to service new connections.

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151092	Base	Distribution Automation - Central South	0.5	0.5	0.6	0.6	0.8	3.0	2,014	System Service	SCADA and Automation	Enersource	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151030	Base	Addition of Sensors to SCADA Controllable 44kV LISs in Brampton	0.3	0.3	0.3	0.3	0.3	1.3	2,013	System Service	System Control, Comm'ns & Performance	Brampton	This project is to add sensors to the 44KV switches in Central North
151068	Base	Return to Service of Smart Fault Indicators - East	0.2	-	-	-	-	0.2	1,998	System Renewal	Substation Renewal	Powerstream	This project involves making necessary modifications to 50 previously installed SMART Fault Indicators in the East Operating Area (former PowerStream) so as to return them to service. These devices will greatly improve monitoring capability and facilitate prompt decision making during emergency situations, thus reducing outage durations.
150694	M-Factor	Cityview microgrid enhancements	0.0	0.0	0.0	0.0	0.0	0.1	1,985	System Service	Capacity (Lines)	Powerstream	The project is to understand how microgrids can be integrated into the distribution grid in a safe and reliable manner. The microgrid is used to evaluate integration and connection to the distribution grid, while reducing the building's load, greenhouse gas emissions, and increasing its resiliency to grid outages.
150538	Base	Cyber Security Devices Upgrades	-	-	-	0.6	-	0.6	1,985	General Plant	Information Technology	Multiple	This project upgrades security tools to maintain compliance with OEB Cyber Security Framework
151335	Base	Cable Replacement Project - (BA14) - Tifffin and Hwy 400, Barrie	-	-	-	2.7	-	2.7	1,976	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 43 years old and will be 47 when project starts (2023).
102547	M-Factor	Two Ccts on Birchmount Rd from ROW to 14th Ave	-	-	1.6	-	-	1.6	1,969	System Service	Capacity (Lines)	Powerstream	This project is to build 2 ccts pole line on Birchmount Rd from the Right of Way (ROW) to 14th Ave. This will extend 2 feeders 26M17 and 26M18 to 14th Ave to tie with feeder 22M7/22M8 for reliability
151324	Base	Cable Injection Project - (M3) - Castlemore - Goreway - Queen - Airport, Brampton	-	-	0.2	-	-	0.2	1,916	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 1 outage due to cable failure in 2008 with average duration of 61 minutes. The cables are 31 years old and will be at the injection eligibility threshold by the time of project execution in 2022.
151350	Base	Cable Injection Project - (M22) - Major Machenzie - Hwy 48 - 16th - McCowan, Markham	-	-	0.2	-	-	0.2	1,915	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 4 failures.
151330	Base	Cable Replacement Project - (A01) - Henderson - Yonge - Bloomington - Bathurst, Aurora	-	1.8	-	-	-	1.8	1,905	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 3 failures.
151321	Base	Cable Injection Project - (J5) - Steeles - Bramalea - Hwy 407 - Dixie, Brampton	-	0.1	-	-	-	0.1	1,903	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 0 outage due to cable failures to date. Cables are 31 to 33 years old and will be at the injection eligibility threshold by the time of project execution in 2021.
100268	Base	Low Voltage Transformer Bushing Replacement - Markham TS#3 - T1/T2	0.3	-	-	-	-	0.3	1,883	System Renewal	Substation Renewal	Powerstream	This project involves replacing end-of-life low-voltage bushings on Markham TS#3 power transformers. Bushing failure would result in environmental risk due to spilled oil and in transformer failure causing an extended power interruption.
100904	M-Factor	Install Double Cct Pole Line on Major Mackenzie - Hwy 27 to Huntington Rd	-	-	-	3.7	-	3.7	1,874	System Service	Capacity (Lines)	Powerstream	This project is to build two 27.6kV ccts on Major Mackenzie - Hwy 27 to Huntington Rd to supply new customers on Major Major Dr and existing customers. There is one 4.8kV single phase cct on the west half of the section and there is one 27.6kV cct (1/0 AL) on the east half the section. They don't have sufficient capacity for future developments in the area.
101013	Base	Planned Circuit Breaker Replacement Markham TS#3 - E & Z Buses	0.5	0.5	-	-	-	1.0	1,832	System Renewal	Substation Renewal	Powerstream	The existing 27.6 kV circuit breakers at Markham TS#3 have been identified in the Asset Condition Assessment (ACA) Model as requiring replacement due to obsolescence and historical failures. Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted funding requirements and could result in lengthy customer interruptions.
151224	Base	Cable Replacement - (920) - Scottsdale Drive Subdivision, Guelph	0.6	-	-	-	-	0.6	1,808	System Renewal	Underground Asset Renewal	Guelph	
150801	Base	Fleet_West_Vehicle Replacement_Bucket Truck 1-286	0.4	-	-	-	-	0.4	1,804	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150670	Base	SCADA FDIR	0.1	0.1	0.1	0.1	0.1	0.6	1,799	System Service	SCADA and Automation	Multiple	Fault Detection, Isolation, and Restoration implementation, next generation of distribution automation technology. This utilizes devices which are already automated and integrates them into the OMS system such that devices perform self healing after a fault. in some cases reducing the outage time to less then 1 minute.
150539	Base	Cyber Security Devices Upgrades	-	-	-	-	0.6	0.6	1,789	General Plant	Information Technology	Multiple	This project upgrades security tools to maintain compliance with OEB Cyber Security Framework
150764	Base	Fleet_West_Vehicle Replacement_Bucket Truck 1-285	-	0.4	-	-	-	0.4	1,780	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151323	Base	Cable Injection Project - (L4) - Queen - Airport - Steeles - Torbram, Brampton	-	-	-	0.2	-	0.2	1,746	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 0 outage due to cable failures to date. Cables are 31 years old and will be at the injection eligibility threshold by the time of project execution in 2023.

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Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151283	Base	Cable Replacement Project - (HAM) - Mohawk	-	0.8	0.8	-	-	1.6	1,740	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 1 failure, or 20 failures per 100km. This area includes the 2D2X feeder which was identified as a Worst Performing Feeder in 2018. The average cable installation year is 1953 in this project scope.
150680	M-Factor	Alectra Drive at Home	0.5	0.5	0.6	0.6	0.6	2.7	1,731	System Service	Capacity (Lines)	Multiple	Alectra Drive at Home will demonstrate the value of integrating smart electric vehicle (EV) charging system in multi rise buildings as well as residential homes into the distribution grid such that mass uptake of electric vehicles can be managed in a safe and reliable manner. It will also provide insight into the characteristics of EV Charging, how EVs can be aggregated and controlled to provide the benefit at the local, regional and provincial system levels, and customer response to these control and optimization strategies.
151201	Base	Purchase of New Critical Spare Parts - Guelph	0.0	0.0	0.0	0.0	0.0	0.0	1,728	System Renewal	Substation Renewal	Guelph	This project involves procurement of critical spare parts for stations in the South West Operating Area (Guelph) so as to facilitate prompt repair of failed assets during emergency situations.
151333	Base	Cable Replacement Project - (BA9) - Little - Fairview - Harvie - Ferndale, Barrie	-	-	1.8	-	-	1.8	1,718	System Renewal	Underground Asset Renewal	Powerstream	From 2014-2018 customers in this area experienced 6 failures.
150378	M-Factor	Rear Lot Renewal Project - East of Queen Street/North of Mill Street	-	-	-	1.8	-	1.8	1,699	System Renewal	Rear Lot Conversion	Powerstream	This area has had an average of 1 outage lasting 8.6hrs per year based on 3 a year average.
150108	Base	Low Voltage Transformer Bushing Replacement - Vaughan TS#3 - T1/T2	0.3	-	-	-	-	0.3	1,677	System Renewal	Substation Renewal	Powerstream	This project involves replacing end-of-life low-voltage bushings on Vaughan TS#3 power transformers. Bushing failure would result in environmental risk due to spilled oil and in transformer failure causing an extended power interruption.
150912	Base	Unit # 362 Palfinger crane truck	-	0.5	-	-	-	0.5	1,660	General Plant	Fleet Renewal	Powerstream	
150619	Base	Purchase of Critical Spare Parts - West	0.0	0.0	0.0	0.0	0.0	0.1	1,649	System Renewal	Substation Renewal	Horizon	This project involves procurement of critical spare parts for stations in the West Operating Area (former Horizon) so as to facilitate prompt repair of failed assets during emergency situations.
150839	Base	Fleet_West_Vehicle Replacement_ Bucket Truck 1-346	-	0.6	-	-	-	0.6	1,642	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150844	Base	Fleet_West_Vehicle Replacement_Bucket Truck 1-270	-	-	0.4	-	-	0.4	1,636	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151295	Base	Cable Replacement Project - (SCH) - Welland - Bunting - Carlton - Cushman	-	0.2	-	-	-	0.2	1,635	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 2 failures, or 48 failures per 100km. The average cable installation year is 1975 in this project scope.
151385	Base	Cable Replacement - (892) - 30-250 Janefield Ave Subdivision, Guelph	-	0.7	-	-	-	0.7	1,630	System Renewal	Underground Asset Renewal	Guelph	
151136	Base	C55 Alectra: Optimization of Business Practices	0.5	0.6	0.2	0.2	0.1	1.6	1,625	General Plant	Information Technology	Multiple	Optimizing the current software to communicate with other systems such as the ERP will allow for more efficient and effective budgeting processes and consolidation of information allowing for consistent reporting of the information from one system.
150885	Base	Fleet_West_Vehicle Replacement_ Bucket Truck 1-361	-	-	0.4	-	-	0.4	1,624	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150893	Base	Fleet_West_Vehicle Replacement_ Digger Derrick 1-342	-	-	0.4	-	-	0.4	1,616	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151137	Base	Cable Replacement Project - Main Fedeer(s) upgrade - 68F2, 68F4, 68F7, 83F5, 83F3	0.8	-	-	-	-	0.8	1,614	System Renewal	Underground Asset Renewal	Enersource	Only 2 outages on all of the feeders combined. If we can replace it with feeders with 4-5 failures, we can show better reliability analysis. The combined length of these feeders is 3,885 m.
151436	Base	Cable Injection-011 - Area 58 & 59- Winston Churchill & The Collegeway, Mississauga	1.7	1.9	1.9	-	-	5.5	1,614	System Renewal	Underground Asset Renewal	Enersource	There are 14 outages, we are injecting a total of 69,795 m of cable for this project, and the average age of the cable is 30 years.
150333	Base	Overhead Conductor Replacement - #6 Copper - Feeder OT8	0.7	-	-	-	-	0.7	1,611	System Service	Safety & Security	Horizon	This project consists of overhead conductor replacement to mitigate safety risk and provide additional capacity.
151331	Base	Cable Replacement Project - (V41) - Stephanie Blvd, Vaughan	-	1.5	-	-	-	1.5	1,604	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 2 failures.
151139	M-Factor	Voltage Conversion - MS-12 Hansen Rd, Brampton	-	-	3.1	2.4	-	5.5	1,599	System Renewal	Overhead Asset Renewal	Brampton	From 2015-2017 customers in this area experienced 29 outages and had 94,267 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
151386	Base	Cable Replacement - (278) - 31 Greengate Rd Subdivision, Guelph	-	-	0.6	-	-	0.6	1,596	System Renewal	Underground Asset Renewal	Guelph	
150902	Base	Unit # 396 Backhoe replacement	0.2	-	-	-	-	0.2	1,592	General Plant	Fleet Renewal	Powerstream	
150842	Base	Fleet_West_Vehicle Replacement_Bucket Truck 1-365	-	0.4	-	-	-	0.4	1,585	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.

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Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150642	Base	Proactive Replacement of Remote Terminal Units - Central North	0.2	0.2	0.2	0.2	0.2	0.8	1,582	System Renewal	Substation Renewal	Brampton	This project involves replacement of end-of-life remote terminal units and communications equipment at stations in the Central-North Operating Area (Brampton). Replacement equipment can be leveraged to allow for Smart Grid initiatives such as quicker fault detection and automatic isolation and restoration. If existing equipment were to fail, the ability to remotely monitor and control switching devices would be lost, thus risking longer interruptions.
150617	Base	Purchase of Critical Spare Parts - Central North	0.0	0.0	0.0	0.0	0.0	0.1	1,569	System Renewal	Substation Renewal	Brampton	This project involves procurement of critical spare parts for municipal stations in the Central North Operating Area (Brampton) so as to facilitate prompt repair of failed assets during emergency situations.
151292	Base	Cable Replacement Project- (K4) - Queen - Torbram - Steeles - Bramalea	-	1.3	-	-	-	1.3	1,568	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 0 cable failure to date. Cables are 41 to 50 years old and beyond EUL.
151353	Base	Cable Injection Project - (V41) - Kirby - Weston - Teston - Pine Valley, Vaughan	-	-	0.1	-	-	0.1	1,566	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 2 failures.
151332	Base	Cable Replacement Project - (BA20) - Bayfield and Simcoe, Barrie	-	-	-	-	2.0	2.0	1,565	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 43 years old and will be 48 when project starts (2024).
151309	Base	Cable Injection Project - (E3) - Bovaird - McLaughlin - Queen - Chinguacousy, Brampton	-	-	0.1	-	-	0.1	1,560	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 1 outage due to cable failure in 2015 with duration of 86 minutes.
151087	Base	Switchgear Replacement	0.2	0.2	0.2	0.3	0.3	1.2	1,559	System Renewal	Underground Asset Renewal	Guelph	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
150618	Base	Purchase of Critical Spare Parts - Central South	0.0	0.0	0.0	0.0	0.0	0.2	1,557	System Renewal	Substation Renewal	Enersource	This project involves procurement of critical spare parts for stations in the Central South Operating Area (former Enersource) so as to facilitate prompt repair of failed assets during emergency situations.
151354	Base	Cable Injection Project - (V52) - Rutherford - Kipling - Langstaff - Hwy 27, Vaughan	-	-	0.1	-	-	0.1	1,553	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 2 failures.
102077	Base	Major repair, refurbishment, or conversions of distribution transformers	0.0	0.0	0.0	0.0	0.0	0.2	1,541	System Renewal	Transformer Renewal	Powerstream	Transformers returned or in stores where repair/refurbishment of the unit can return it to service at a lower cost then purchase of a new unit
150883	Base	Fleet_West_Vehicle Replacement_ Bucket Truck 1-374	-	-	0.4	-	-	0.4	1,540	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150398	M-Factor	Rear Lot Renewal Project - Strathcona Dr	-	-	-	-	0.9	0.9	1,537	System Renewal	Rear Lot Conversion	Horizon	This area has had an average of 44 outages lasting 0.35hrs per year based on 3 year average.
150964	Base	Fleet_West_Vehicle Replacement_ Bucket Truck 1-337	-	-	-	0.4	-	0.4	1,531	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150989	Base	Fleet_West_Vehicle Replacement_ Underground Reel Tensioner Truck 1-351	-	-	-	0.4	-	0.4	1,519	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150887	Base	Fleet_West_Vehicle Replacement_ Bucket Truck 1-379	-	-	-	0.4	-	0.4	1,502	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151372	Base	Cable Replacement - (451) - Country Club Dr Subdivision, Guelph	-	-	0.4	-	-	0.4	1,482	System Renewal	Underground Asset Renewal	Guelph	
150368	M-Factor	New build - North Central feeders capacity (Carlton TS to Linwell Rd/Lake St) relief, St.Catharines	-	1.0	1.0	-	-	2.0	1,481	System Service	Capacity (Lines)	Horizon	This project is to alleviate capacity issues in the North and Central section of St.Catharines, primarily served by Carlton BY bus feeders which are over the planning limit.
151222	Base	Concrete Structures	0.2	0.2	0.2	0.2	0.2	1.0	1,469	System Renewal	Underground Asset Renewal	Guelph	Replacement of lids on civil structures to avoid public risk
150763	Base	Facilities_Reno_Addiscott - Service Centre Upgrades	-	-	0.1	-	-	0.1	1,462	General Plant	Facilities Management	Powerstream	Repairs to building envelop/walls to prevent further damage to the build infrastructure and systems that are supporting critical operational systems such as control rooms, server rooms, customer services groups, etc.
150410	M-Factor	42M66 OH Feeder Egress Mississauga Rd, Bovaird to CNR	0.1	-	-	-	-	0.1	1,458	System Service	Capacity (Lines)	Brampton	42M66 OH Feeder extension from Mississauga Rd from Bovaird Dr. to CNR Tracks to feed new developments in the area of Bovaird drive and Mississauga road.
151408	Base	Cable Replacement Project- Burnhamthorpe & Miss. Road (13), Mississauga	-	-	2.4	-	-	2.4	1,429	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 11 outages, the length is 7,311 m, and the average cable age is 30 years old.
151320	Base	Cable Injection Project - (I5) - Steeles - Dixie - Hwy 407 - Hwy 410, Brampton	-	-	-	0.1	-	0.1	1,426	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 0 outage due to cable failures to date. Cables are 31 years old and will be at injection eligibility threshold by the time of project execution in 2023.
150858	Base	Fleet_West_Vehicle Replacement_SUVs	0.3	-	-	-	-	0.3	1,426	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150334	Base	Distribution Automation - West	0.7	0.7	0.7	0.7	0.8	3.7	1,424	System Service	SCADA and Automation	Horizon	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151371	Base	Cable Replacement - (87) - Marksam Rd/ Rhonda Rd Subdivision, Guelph	-	0.6	0.4	-	-	1.0	1,423	System Renewal	Underground Asset Renewal	Guelph	

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150889	Base	Fleet_West_Vehicle Replacement_ Digger Derrick 1-333	-	-	0.4	-	-	0.4	1,415	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150019	Base	Cable Injection Project - (M41) - Woodbine and Elgin Mills, Markham	0.1	-	-	-	-	0.1	1,414	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 40 years old and will be 41 when project starts (2020).
151052	Base	Emerging Customer Initiated Work - Relocations	0.1	0.1	0.1	0.1	0.1	0.5	1,412	System Access	Customer Connections	Guelph	Mandatory - System Access Related Project
150941	Base	Unit # 300 Dump truck replacement	-	-	0.1	-	-	0.1	1,400	General Plant	Fleet Renewal	Powerstream	
151410	Base	Cable Replacement Project-Roselle & Priority Cres (2), Mississauga	-	-	1.0	-	-	1.0	1,391	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 7 outages, the length is 3,006 m, and the average cable age is 43 years old.
151308	Base	Cable Injection Project - (HAM) - Hollybush - Parkside - Dundas - Spring Creek	-	-	-	-	0.1	0.1	1,389	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 1 failure, or 5 failures per 100km. The average cable installation year is 1988 in this project scope.
151207	Base	On-line Dissolved Gas Monitoring	0.1	-	-	-	-	0.1	1,386	System Service	System Control, Comm'ns & Performance	Guelph	This project consists of installation of Online DGA monitoring system at MS in Guelph. Online DGA has proven to be invaluable in diagnosing a potential transformer failure as well as assessing the health of a transformer
150751	Base	Facilities_East_Capital Replacement Investment Support	0.1	1.2	0.5	0.1	0.1	2.0	1,374	General Plant	Facilities Management	Powerstream	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
150641	Base	Replace 230kV Primary Switches - Jim Yarrow TS	0.2	-	-	-	-	0.2	1,373	System Renewal	Substation Renewal	Brampton	The primary switches at Jim Yarrow TS are non-standard, have a history of problems, particularly with alignment issues, and have no spare parts on hand. Failure of one of these switches could result in loss of supply to a 125 MVA power transformer.
150965	Base	Fleet_West_Vehicle Replacement_ Bucket Truck 1-256	-	-	-	-	0.5	0.5	1,371	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150982	Base	Fleet_West_Vehicle Replacement_ Bucket Truck 1-299	-	-	-	-	0.5	0.5	1,371	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151134	Base	Cable Replacement Project - Winston Churchill consolidation - 49F6 and 49F4	0.3	-	-	-	-	0.3	1,358	System Renewal	Underground Asset Renewal	Enersource	This project is already with design. We are not doing this like-for-like. Miron has completed D10-111-001 for removal of the bad feeders.
151288	Base	Cable Replacement Project - (H4) - Queen - Hwy 410 - Steeles - Kennedy, Brampton	-	0.6	0.6	0.6	-	1.8	1,354	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 4 outages due to cable failures from 2009 to 2018 with average duration of 189 minutes.
150349	Base	Overhead Conductor Replacement - #6 Copper - Feeder WL1	0.7	-	-	-	-	0.7	1,347	System Service	Safety & Security	Horizon	This project consists of overhead conductor replacement to mitigate safety risk and provide additional capacity
150830	Base	Fleet_West_Vehicle Replacement_Dump Truck_1-330	0.1	-	-	-	-	0.1	1,345	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151296	Base	Cable Injection Project - (SCH) - Welland - Bunting - Carlton - Cushman	0.3	-	-	-	-	0.3	1,345	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 2 failures, or 48 failures per 100km. The average cable installation year is 1989 in this project scope.
151357	Base	Cable Injection Project - (V34) - Kirby - Jane - Teston - Weston, Vaughan	-	-	-	0.1	-	0.1	1,343	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 1 failure.
150335	Base	Pole Renewal - West	2.2	2.4	2.7	3.0	3.2	13.5	1,338	System Renewal	Overhead Asset Renewal	Horizon	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
150795	Base	Fleet_Central South Vehicle Replacement- 244-08 S Bucket	-	0.5	-	-	-	0.5	1,329	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150362	M-Factor	Voltage Conversion - Dufferin St S, between MS431 and Albert St S, Alliston	0.4	-	-	-	-	0.4	1,328	System Renewal	Overhead Asset Renewal	Powerstream	Customers in this area experienced 11 outages and had 15,031,879 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
151374	Base	Cable Replacement - (893) - Janefield Ave Subdivision, Guelph	-	-	-	-	0.6	0.6	1,325	System Renewal	Underground Asset Renewal	Guelph	
151387	Base	Cable Replacement - (833) - 295 Water St Subdivision, Guelph	-	-	-	0.6	-	0.6	1,320	System Renewal	Underground Asset Renewal	Guelph	
151337	Base	Cable Replacement Project - (BA18) - Ferndale and Benson, Barrie	-	-	-	1.0	-	1.0	1,318	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 41 years old and will be 45 when project starts (2023).
151326	Base	Cable Replacement Project - (V44) - Hayhoe - Islington - Hwy 7, Vaughan	-	0.8	-	-	-	0.8	1,312	System Renewal	Underground Asset Renewal	Powerstream	From 2016-2019YTD customers in this area experienced 6 failures.
102102	Base	Enterprise File Synchronization and Sharing Platform	0.0	0.0	0.0	-	-	0.1	1,308	General Plant	Information Technology	Multiple	Alectra is looking for a secure Enterprise File Synchronization and Sharing solution that will increase productivity of internal and external teams by facilitating seamless collaboration of corporate data anywhere , anytime, and on any device without the restrictions of having to connect to the Alectra network. The overarching goal of this implementation will be to provide a balance between delivering business productivity and securing enterprise information.
151388	Base	Cable Replacement - (724) - 30 Hadati Rd, Guelph	-	-	-	-	0.8	0.8	1,303	System Renewal	Underground Asset Renewal	Guelph	

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151291	Base	Cable Replacement Project - (I4) - Queen - Dixie - Steeles - Hwy 410, Brampton	-	-	-	-	1.5	1.5	1,302	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 0 cable failure to date. Cables are 41 to 42 years old and beyond EUL.
150963	Base	Fleet_West_Vehicle Replacement_ Bucket Truck 1-224	-	-	-	-	0.6	0.6	1,299	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150502	Base	On-Line Dissolved Gas Oil Monitoring of 10 MS Transformers - EAST	0.1	0.1	-	-	-	0.2	1,293	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of Online DGA monitoring system at MS in East. Online DGA has proven to be invaluable in diagnosing a potential transformer failure as well as assessing the health of a transformer
150738	Base	Facilities_West_Capital Replacement Investment Support	0.8	0.3	0.3	1.8	0.5	3.6	1,289	General Plant	Facilities Management	Horizon	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
150330	M-Factor	Rear Lot Renewal Project - Marsdale, St.Catharines	-	-	-	1.1	2.0	3.1	1,284	System Renewal	Rear Lot Conversion	Horizon	This area has had an average of 19 outages lasting 1hr per year based on 3 year average.
150355	M-Factor	Voltage Conversion - Elmwood MS, Hamilton	-	-	-	-	2.8	2.8	1,275	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 23 outages and had 251,178 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
150573	Base	Oracle ULA Extension	1.5	1.5	-	-	-	3.0	1,265	General Plant	Information Technology	Multiple	MULTI ANSWER
151358	Base	Cable Injection Project - (V62) - Kirby - Hwy 27 - Nashville - Huntington, Vaughan	-	-	-	0.1	-	0.1	1,265	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 1 failure.
150790	Base	Fleet_Central South Vehicle Replacement-Puller/Tensioner	-	0.2	0.2	0.2	-	0.6	1,265	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150350	Base	Overhead Conductor Replacement - #6 Copper - Feeder WL4	0.8	-	-	-	-	0.8	1,261	System Service	Safety & Security	Horizon	This project consists of overhead conductor replacement to mitigate safety risk and provide additional capacity
151138	M-Factor	Voltage Conversion - MS-2 Church St, Brampton	3.0	1.4	-	-	-	4.4	1,255	System Renewal	Overhead Asset Renewal	Brampton	From 2015-2017 customers in this area experienced 11 outages and had 20,372 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
102241	Base	Proactive Replacement of Remote Terminal Units - East	0.1	0.1	0.1	0.1	0.1	0.5	1,240	System Renewal	Substation Renewal	Powerstream	This project involves replacement of end-of-life remote terminal units and communications equipment at stations in the East Operating Area (former PowerStream). Replacement equipment can be leveraged to allow for Smart Grid initiatives such as quicker fault detection and automatic isolation and restoration. If existing equipment were to fail, the ability to remotely monitor and control switching devices would be lost, thus risking longer interruptions.
151183	Base	OH Rebuild Project - Church Street	0.8	-	-	-	-	0.8	1,239	System Renewal	Overhead Asset Renewal	Enersource	This project involves the replacment of 55 poles, 35 which are in very poor and poor condition. Due to the significantly high population of poor poles this area is a candidate for multi-pole line faliure under high winds.
150422	M-Factor	136M9 Feeder Extension Castlemore Rd, Goreway Dr to McVean Dr	-	-	0.1	-	-	0.1	1,233	System Service	Capacity (Lines)	Brampton	This project provides 136M9 capacity along Castlemore Dr from Goreway Dr to McVean Dr., and McVean will bring greenfield capacity up to Mayfield Rd to service north east Brampton. 136M9 in future will connect to and provide offloading and contingency for 136M8 and 136M42 which are at approching planning limit.
151146	Base	Cable Replacement and Transformers Replacement - Project - Folkway, Mississauga	4.0	-	-	-	-	4.0	1,229	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 34 outages, the length is 10,432 m
150323	M-Factor	Station Switchgear Replacement - Bloor MS38 LV1	-	-	-	-	0.7	0.7	1,228	System Renewal	Substation Renewal	Enersource	Bloor MS is centrally located, supplying a large number of customers, and reliability is very important. This switchgear is non-arc-resistant and poses a potential safety hazard to Alectra personnel and even to the general public who happen to be in the vicinity of the station during a failure event. The circuit breakers that are housed in the switchgear prone to failure and are considered obsolete (no longer supported by the manufacturer and parts are difficult to come by). Obsolescence translates into more frequent and more lengthy maintenance requirements and longer outage duration in the event of a failure. Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted reactive capital expenditure.
150877	Base	Fleet_ Central North Vehicle Replacement S/Bucket 7109	-	-	0.5	-	-	0.5	1,222	General Plant	Fleet Renewal	Brampton	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151282	Base	Cable Replacement Project - (SCH) - Weiden	-	0.2	-	-	-	0.2	1,218	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 6 failures, or 962 failures per 100km. The average cable installation year is 1978 in this project scope.
150529	Base	OT GIS & OMS Software Upgrade	-	-	-	0.3	-	0.3	1,210	General Plant	Information Technology	Multiple	Requried upgrades to our customer facing GIS and OMS systems to ensure product support and security patches.

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150814	Base	Fleet_West_Vehicle Replacement_Step Vans 1-279 & 1-281	0.4	-	-	-	-	0.4	1,179	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151064	Base	Secondary Pedestals -St. Catharines	0.2	0.2	0.2	0.2	0.2	1.0	1,154	System Service	Safety & Security	Horizon	This project involves the replacment of above grade steel secondary pedestals which pose a safety risk to the general public
150044	M-Factor	Rear Lot Renewal Project - Blake/Kempenfelt	0.3	-	-	-	-	0.3	1,144	System Renewal	Rear Lot Conversion	Powerstream	This area has had an average of 0.66 outages lasting 2.2hrs per year based on a 3 year average.
151312	Base	Cable Injection Project - (F2) - Wanless - Main - Bovaird - McLaughlin, Brampton	-	-	0.0	-	-	0.0	1,140	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 0 cable failure to date. Cables will be at the injection eligibility threshold by the time of project execution in 2022.
150254	M-Factor	Cable Replacement Project - (A02) - Steeplechase Ave, Aurora	2.9	-	-	-	-	2.9	1,133	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 outages to date. Cable is 45 years old and beyond EUL
150862	Base	Fleet_Central North Vehicle Replacement-RBD 57	-	0.6	-	-	-	0.6	1,125	General Plant	Fleet Renewal	Brampton	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151322	Base	Cable Injection Project - (K4) - Queen - Torbram - Steeles - Bramalea, Brampton	-	0.1	-	-	-	0.1	1,125	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 1 outage due to cable failure in 2007.
101125	Base	Lines Mobile Equipment - IT/OT Infrastructure	0.1	0.1	0.1	0.1	0.1	0.4	1,119	General Plant	Information Technology	Multiple	This budget covers the deployment of mobile technology - laptops/field tablets and accessories - within the Lines Department to gain efficiencies in field operations. By deploying this technology, the Lines area can move away from a paper-based to a more electronic environment. In future, it is envisioned that, for example, mobile applications will facilitate the electonic transmission of work orders and electronic record keeping (asset tracking, tailboards, switching orders, timesheets). This will allow for streamlined operational processes and record-keeping, thereby supporting corporate technological initiatives such as the GIS, Outage Management System, and future Workforce Management system. At present, all Lines Management personnel and Subforemen have laptops, facilitating activities such as viewing of the GIS, electronic Asset Tracking Forms, and use of OMS Responder Mobile. Expenditures in this area will allow for more deployment of field devices among Lines crews and for the implementation of more computerized processes.
150500	Base	On-Line Dissolved Gas Oil Monitoring of 10 MS Transformers - WEST	0.1	0.2	0.1	-	-	0.4	1,117	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of installation of Transformer bushing monitoring system in West
150856	Base	Fleet_West_Vehicle Replacement_Dump/Cargo Truck	0.1	-	-	-	-	0.1	1,115	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150908	Base	Fleet East Unit # 103 Bucket truck replacement	0.3	-	-	-	-	0.3	1,107	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151405	Base	Cable Replacement Project- Erin Mills & N.Sheridan (16), Mississauga	-	1.2	-	-	-	1.2	1,105	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 8 outages, the length is 3,326 m, and the average cable age is 45 years old.
150139	Base	Cable Replacement Project – (B19) - Donald St and Simcoe Terrace, Barrie	0.6	-	-	-	-	0.6	1,102	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 44 years old and will be 45 when project starts (2020).
150570	Base	Alectra West Substation Ground Grid Installations	0.3	0.3	0.3	0.3	-	1.2	1,091	System Service	Safety & Security	Horizon	This project is to install ground grid at East Stations
151204	Base	Upgrade to Station Facilities (Buildings/Civil work) Multi-year	0.0	0.0	0.0	0.0	0.0	0.0	1,089	General Plant	Facilities Management	Guelph	This project involves work involving structural components of stations, including windows, brickwork, roofs, foundations, drainage, doors, etc. at stations in the SouthWest Operational Area. Not keeping up with this work would result in advanced deterioration resulting in even greater maintenance costs, potential safety concerns and potential failure of the electrical equipment in the building causing power interruptions.
150879	Base	Fleet East Vehicle replacement - Pickup 2500	0.2	-	-	-	-	0.2	1,087	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
103198	Base	BizTalk Upgrade - IT Infrastructure	-	-	0.3	0.3	-	0.5	1,085	General Plant	Information Technology	Multiple	Upgrade existing BizTalk to latest version. We currently have a development, test, and Production environment.
151434	Base	Cable Injection- 009- AREA 54- Highway 401 & Argentia, Mississauga	-	-	-	2.5	-	2.5	1,085	System Renewal	Underground Asset Renewal	Enersource	There are 0 outages, we are injecting a total of 30,642 m of cable for this project, and the average age of the cable is 30 years.
151284	Base	Cable Replacement Project - (E3) - Bovaird - McLaughlin - Queen - Chinguacousy, Brampton	-	-	-	0.7	-	0.7	1,082	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 0 cable failure to date. Cables will be at the injection eligibility threshold by the time of project execution in 2023.
151293	Base	Cable Replacement Project - (SCH) - Lakeshore - Stanley - Parnell - Chancery	-	0.9	-	-	-	0.9	1,081	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 2 failures, or 55 failures per 100km. The average cable installation year is 1978 in this project scope.
151327	Base	Cable Replacement Project - (BR6) - 8th and Dissette, Bradford	-	0.4	-	-	-	0.4	1,077	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 6 failures.
150752	Base	Cityview back up generator replacement	0.4	-	-	-	-	0.4	1,072	General Plant	Facilities Management	Powerstream	

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150794	Base	Fleet_Central South Vehicle Replacement- 229-09 S/Bucket	-	-	0.5	-	-	0.5	1,071	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150806	Base	Fleet_Central South Vehicle Replacement-207-09 S/bucket	-	-	-	0.5	-	0.5	1,069	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151041	Base	Protection Logic Upgrades - East MSs (North)	0.1	0.1	0.1	0.1	-	0.3	1,061	System Service	System Control, Comm'ns & Performance	Powerstream	
151373	Base	Cable Replacement - (923) - Scottsdale Drive Subdivision, Guelph	-	-	-	0.8	-	0.8	1,060	System Renewal	Underground Asset Renewal	Guelph	
150758	M-Factor	Facilities_Reno_Staff Relocation from Jane St	-	-	0.6	-	-	0.6	1,060	General Plant	Facilities Management	Brampton	Required renovations to the Cityview building to accommodate employees from various Alectra groups currently at Jane St, reducing the need to continue the office space lease at Jane St. The Jane St office lease expires in 2021 and would not be renewed, reducing operating expenditures.
150859	Base	Fleet_West_Vehicle Replacement_Cargo Vans	-	0.2	-	-	-	0.2	1,060	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150865	Base	Fleet_West_Vehicle Replacement_Pickups	-	0.2	-	-	-	0.2	1,055	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151406	Base	Cable Replacement Project- Rathburn Rd W & Queenbridge (8), Mississauga	-	0.3	-	-	-	0.3	1,053	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 4 outages, the length is 857 m, and the average cable age is 40 years old.
151003	Base	Fleet_West_Vehicle Replacement_Pickups	-	-	-	-	0.1	0.1	1,042	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150762	Base	Facilities_Reno_Patterson - Service Centre Upgrades	-	0.1	-	-	-	0.1	1,036	General Plant	Facilities Management	Powerstream	Repairs to building envelop/walls to prevent further damage to the build infrastructure and systems that are supporting critical operational systems such as control rooms, server rooms, customer services groups, etc.
100919	M-Factor	Install 2nd 27.6 kV Cct on Woodbine Ave from Elgin Mills Rd to 19th Ave	-	0.6	-	-	-	0.6	1,028	System Service	Capacity (Lines)	Powerstream	This project is to add one additional 27.6kV cct on the existing pole line from Elgin Mills Rd to 19th Ave that has provision for 2nd cct to increase capacity in the 19th and woodbine area as well as the Future Urban area
151157	Base	Fleet_West_Vehicle Replacement_Dump/Cargo Truck	-	0.2	-	-	-	0.2	1,025	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150354	M-Factor	Voltage Conversion - Eastmount MS, Hamilton	-	-	-	-	3.8	3.8	1,022	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 43 outages and had 2,261,630 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
150578	Base	Alectra - Microsoft Software	0.1	0.1	0.1	-	-	0.3	1,021	General Plant	Information Technology	Multiple	Compliance for Alectra employees for Microsoft application suite of products to perform daily operation .
151334	Base	Cable Replacement Project - (BA13) - Dunlop and Miller, Barrie	-	0.4	-	-	-	0.4	1,010	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 41 years old and will be 43 when project starts (2021).
150776	Base	Fleet_Central South Equipment Replacement-forklift	0.0	-	-	-	-	0.0	1,006	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150257	M-Factor	Cable Replacement Project - (V15) - Jardin Dr, Vaughan	2.9	-	-	-	-	2.9	1,004	System Renewal	Underground Asset Renewal	Powerstream	From 2017-2019 YTD customers in this area experienced 5 outages.
150937	Base	Fleet_West_Vehicle Replacement_Cargo/Passenger Vans.	-	-	0.0	0.0	-	0.1	995	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150392	Base	Storage Upgrade	0.7	0.3	1.3	-	-	2.3	995	General Plant	Information Technology	Multiple	Upgrade on premise Enterprise Storage platform in addition to increased capacity requirements as a result of employee and customer demand for data retention. Off Premise storage costs (SharePoint Online, One Drive, Development, test and production environments)
150916	Base	Fleet East Vehicle replacement - Extended Vans	0.1	-	-	-	-	0.1	987	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151091	Base	Switchgear Renewal - Central South	3.6	3.7	3.8	3.8	3.9	18.8	982	System Renewal	Underground Asset Renewal	Enersource	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
150983	Base	Fleet East Vehicle replacement - Pickup truck 1500	-	-	-	0.3	-	0.3	982	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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150882	Base	Fleet East Vehicle replacement - Pickup 3500	0.2	-	-	-	-	0.2	973	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150380	M-Factor	Rear Lot Renewal Project - Gunn/Oakley Park/St.Vincent	-	-	-	-	1.8	1.8	967	System Renewal	Rear Lot Conversion	Powerstream	This area has had an average of 1 outage lasting 13hrs per year based on a 3 year average.
150890	Base	Fleet East Vehicle replacement - Work van	0.1	-	-	-	-	0.1	967	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151159	Base	Fault Indicator Installation and Replacement - Hamilton and St. Catharines	0.3	0.3	0.3	0.3	0.3	1.4	966	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of fault indicator installation in West
150628	Base	Station Equipment Temperature Monitoring-CENTRAL	-	0.1	0.1	0.1	0.1	0.3	965	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of Station Temperature Monitoring system in Central South and this enables controlled emergency loading beyond the nameplate rating.
150815	Base	Fleet_Central South Vehicle Replacement-Trailers	-	-	-	0.1	-	0.1	961	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150929	Base	Fleet East Vehicle replacement - Pickup truck 3500	-	0.5	-	-	-	0.5	957	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151294	Base	Cable Injection Project - (SCH) - Lakeshore - Stanley - Parnell - Chancery	0.1	-	-	-	-	0.1	954	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 2 failures, or 55 failures per 100km. The average cable installation year is 1985 in this project scope.
151287	Base	Cable Replacement Project - (SCH) - Bolger - Elma - Dorothy - The Meadows	-	0.4	-	-	-	0.4	953	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 10 failures, or 322 failures per 100km. The average cable installation year is 1976 in this project scope.
150947	Base	Fleet_West_Vehicle Replacement_ Pickups	-	-	-	-	0.1	0.1	952	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151065	Base	Manhole Lid Replacement	0.3	0.3	0.4	0.4	0.4	1.7	925	System Renewal	Underground Asset Renewal	Horizon	Replacement of lids on civil structures to avoid public risk
150911	Base	Fleet East Unit # 81 Single bucket truck replacement	0.5	-	-	-	-	0.5	923	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150900	Base	Fleet_West_Vehicle Replacement_ Step Vans	-	-	-	0.4	-	0.4	918	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150981	Base	Fleet East Vehicle replacement - Pickup truck 2500	-	-	-	0.5	-	0.5	914	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151156	Base	Fleet_West_Vehicle Replacement_Step Vans	-	-	0.4	-	-	0.4	914	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151280	Base	Cable Injection Project - (SCH) - Millward - Jeanette Drive - Trevor	0.0	-	-	-	-	0.0	909	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 2 failures, or 333 failures per 100km. The average cable installation year is 1992 in this project scope.
150361	M-Factor	Airport 88M5 & 88M7 HONI Purchase	-	-	-	0.5	-	0.5	905	System Service	Capacity (Lines)	Enersource	Hydro One owns the OH Feeders from Richview TS to the CN rails approximately 6100m away. 88M5 and 88M7 would transfer ownership from HONI to Alectra to reliably supply to airport.
150932	Base	Fleet East Vehicle replacement - SUV	-	-	0.2	-	-	0.2	905	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151017	Base	Fleet_West_Vehicle_Replacement_Tensioner Trailers	-	-	-	0.4	-	0.4	894	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150781	Base	Fleet_Central South Replacement-Tractor 301-08	-	-	0.2	-	-	0.2	893	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150819	Base	Fleet_West_Vehicle Replacement_Cargo Vans 1-347, 1-350, 1-368, 1-349, 1-110, 1-111, 1-114	0.4	-	-	-	-	0.4	890	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150969	Base	Fleet East Vehicle replacement - SUV/Van	-	-	-	0.2	-	0.2	885	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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150892	Base	Fleet East Vehicle replacement - Van pool vans	0.1	-	-	-	-	0.1	875	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150317	M-Factor	Voltage Conversion - Deerhurst MS, Hamilton	3.0	2.6	2.2	-	-	7.8	869	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 6 outages and had 121,838 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
151279	Base	Cable Injection Project - (SCH) - Jacobson - Chestnut - Woodcrest	-	-	-	-	0.1	0.1	866	System Renewal	Underground Asset Renewal	Horizon	Customers in this area have experienced 0 underground XLPE cable outages to date. The average cable installation year is 1991. Since this project is in 2024, the cable will now be 8 years over the TUL while simultaneously pushing the boundary of Area 2 as a candidate for injection (see Figure A10 - 8: XLPE Cable by Type in Exhibit 04, Tab 01, Schedule 01, Appendix A10, Page 14)
150974	Base	Fleet East Vehicle replacement - Forklift	-	-	0.2	-	-	0.2	863	General Plant	Fleet Renewal	Powerstream	Asset replacement due to poor conditions and age and lack of parts replacement. Equipment not as available to support capital system renewal projects and respond to emergencies with material handling. .
150923	Base	Fleet_Central North Vehicle Replacement-DBL.Bucket 49	0.6	-	-	-	-	0.6	855	General Plant	Fleet Renewal	Brampton	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150943	Base	Fleet East Vehicle replacement - Extended Van	-	-	0.3	-	-	0.3	850	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150904	Base	Fleet East Yearly Light and Misc equipment	0.0	0.0	0.1	0.0	0.0	0.2	847	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150935	Base	Fleet East Vehicle replacement - Pickup truck 1500	-	-	0.2	-	-	0.2	847	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150780	Base	Fleet_Central South Replacement-DBL>Bucket 234-05	0.6	-	-	-	-	0.6	845	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150698	Base	Station Switchgear Replacement - City Centre South MS61 LV1	-	-	-	-	0.4	0.4	844	System Renewal	Substation Renewal	Enersource	City Centre South MS is located centrally adjacent to Square One shopping mall, and feeds a large number of customers. Therefore, reliability is very important. This project involves replacing the existing LV1 13.8 kV switchgear with new arc-rated switchgear and new circuit breakers. It also includes upgrading the transformer protection and replacing end-of-life feeder egress cables. The existing equipment line-up is technically obsolete, poses safety and environmental risks, and is prone to failure. Proactive replacement of the existing equipment is a prudent strategy as system reliability would be greatly affected in the event of a failure. Additionally, the restoration of the system to normal conditions could take 8-10 months due to long equipment lead times.
150914	Base	Fleet East Vehicle replacement - Pickup truck 1500	-	0.0	-	-	-	0.0	842	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151285	Base	Cable Replacement Project - (G2) - Wanless - Kennedy - Bovaird - Main, Brampton	-	-	-	-	0.8	0.8	841	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 1 outage due to cable failure in 2007 with duration of 82 minutes. The cables are 41 to 43 years old and beyond EUL.
150907	Base	Fleet East Unit # 361 digger truck	0.6	-	-	-	-	0.6	840	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150910	Base	Fleet East Unit # 91 Single bucket truck replacement	-	0.5	-	-	-	0.5	839	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150262	M-Factor	Cable Replacement Project - (M33) - 16th Avenue and Village Parkway, Markham	-	-	2.1	-	-	2.1	835	System Renewal	Underground Asset Renewal	Powerstream	From 2017-2019 YTD customers in this area experienced 1 failure. From 2015-2019 YTD customers in this area experienced 3 failures. Cable is 42 years old.
150909	Base	Fleet East Unit # 115 Single bucket truck replacement	-	-	0.4	-	-	0.4	835	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150817	Base	Fleet_Central South Vehicle Replacement-230-11 S/bucket	-	-	-	0.5	-	0.5	830	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.

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Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150834	Base	Fleet East Vehicle replacement - Unit # 500 SUV	0.0	-	-	-	-	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150835	Base	Fleet East Vehicle replacement -Unit # 507 SUV	0.0	-	-	-	-	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150836	Base	Fleet East Vehicle replacement -Unit # 515 SUV	0.0	-	-	-	-	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150837	Base	Fleet East Vehicle replacement -Unit # 522 SUV	0.0	-	-	-	-	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150838	Base	Fleet East Vehicle replacement -Unit # 534 SUV	0.0	-	-	-	-	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150867	Base	Fleet East Vehicle replacement -Unit # 535 SUV	0.0	-	-	-	-	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150840	Base	Fleet East Vehicle replacement -Unit # 536 SUV	0.0	-	-	-	-	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150841	Base	Fleet East Vehicle replacement -Unit # 537 SUV	0.0	-	-	-	-	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150845	Base	Fleet East Vehicle replacement -Unit # 549 SUV	0.0	-	-	-	-	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150829	Base	Fleet East Vehicle replacement -Unit # 553 SUV	0.0	-	-	-	-	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151149	Base	Fleet East Vehicle replacement - Unit 523 SUV	0.0	-	-	-	-	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150915	Base	Fleet East Vehicle replacement - Pickup truck 1500	0.0	-	-	-	-	0.0	824	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150917	Base	Fleet East Vehicle replacement - Passenger Van	0.0	-	-	-	-	0.0	821	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151163	Base	Fleet_West_Vehicle Replacement_ Passenger Van_1-370	-	-	0.0	-	-	0.0	807	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150746	Base	Facilities_Central_Capital Replacement Investment Support	-	-	0.4	1.5	0.5	2.3	807	General Plant	Facilities Management	Multiple	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
150913	Base	Fleet East Vehicle replacement - Cube Vans	-	-	0.8	-	-	0.8	806	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151469	M-Factor	Cable Replacement Project - (F4-G4) - Main - Steeles - Chinguacousy - Queen, Brampton	-	-	-	-	1.0	1.0	804	System Renewal	Underground Asset Renewal	Brampton	From 2000-2018 customers in this area experienced 86 failures. Exact number of failures in recent years is unknown at this moment.
151466	M-Factor	Cable Replacement Project - (V24) - Langstaff - Jane - Rutherford - Keele, Vaughan	-	-	-	-	1.0	1.0	800	System Renewal	Underground Asset Renewal	Powerstream	From 2015-2019 YTD customers in this area experienced 0 failures. From 2013-2019 YTD customers in this area experienced 2 failures.
151468	M-Factor	Cable Replacement Project - (V51) - Langstaff - Kipling - Hwy 7 - Hwy 27, Vaughan	-	-	-	-	1.0	1.0	799	System Renewal	Underground Asset Renewal	Powerstream	From 2017-2019 YTD customers in this area experienced 1 failure. From 2015-2019 YTD customers in this area experienced 5 failures.
150866	Base	Fleet_ Central North Vehicle Replacement -Forklift 178	-	0.1	-	-	-	0.1	792	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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151431	Base	Cable Injection- 006- AREA 39- Erin Mills Pkway & Thomas St, Mississauga	-	-	-	1.8	1.4	3.2	786	System Renewal	Underground Asset Renewal	Enersource	There are 0 outages, we are injecting a total of 38,448 m of cable for this project, and the average age of the cable is 30 years.
150946	Base	Fleet East Vehicle replacement - Van pool vans	-	-	0.1	-	-	0.1	782	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150805	Base	Fleet_Central South Vehicle Replacement-206-09 S/bucket	-	-	0.5	-	-	0.5	782	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150939	Base	Fleet East Unit # 105 Bucket truck replacement	-	-	0.2	-	-	0.2	781	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150788	Base	Fleet_Central South Vehicle Replacement-Arrowboard	0.0	-	-	-	-	0.0	766	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
101622	Base	DACS Inverters and RTU's removal - East	0.0	0.0	0.1	0.1	0.0	0.2	765	System Renewal	Substation Renewal	Powerstream	This project involves removal of obsolete and out-of-service DACs inverters, RTUs and associated wiring at stations in the East Operating Area (former PowerStream) so as to remove clutter, thus simplifying future work and freeing up space for future station upgrades.
150779	Base	Fleet_Central South Replacement-DBL.Bucket 228-05	-	0.6	-	-	-	0.6	763	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150864	Base	Fleet_Central North Vehicle Replacement_Loader 175	-	0.1	-	-	-	0.1	762	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150824	Base	Fleet_West_Vehicle Replacement_Pickups.	0.2	-	-	-	-	0.2	759	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150881	Base	Fleet_ Central North Vehicle Replacement DBL.Bucket 7808	-	-	-	0.6	-	0.6	749	General Plant	Fleet Renewal	Brampton	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150765	Base	Facilities_Reno_Vansickle - Service Centre Upgrades	-	-	-	0.1	-	0.1	746	General Plant	Facilities Management	Horizon	Repairs to building envelop/walls to prevent further damage to the build infrastructure and systems that are supporting critical operational systems such as control rooms, server rooms, customer services groups, etc.
150971	Base	Fleet East Vehicle replacement - Pickup truck 2500	-	-	0.2	-	-	0.2	742	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
101632	Base	Obsolete Revenue Metering Removal from TSs	0.0	0.0	0.1	0.1	0.0	0.2	740	System Service	Safety & Security	Powerstream	Evolution of the distribution system to permit more efficient integration of DERs to yield 18
150979	M-Factor	Fleet East Vehicle replacement - Extended Vans	-	-	-	-	0.2	0.2	738	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150996	Base	Fleet East Vehicle replacement - Pickup truck 1500	-	-	-	-	0.2	0.2	729	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151072	M-Factor	Station Service Transfer Upgrade - Vaughan TS#3	0.1	-	-	-	-	0.1	726	System Renewal	Substation Renewal	Powerstream	This project involves replacing the manual station service transfer switch with an automatic transfer switch. This work will mitigate the risk of loss of the entire station due to DC system failure as occurred in March 2016, thus avoiding another major lengthy power interruption.
150921	Base	Fleet East Unit # 123 83' Double Bucket	-	0.6	-	-	-	0.6	718	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150799	Base	Fleet_Central South Vehicle Replacement- Reel Carrier	-	-	0.3	-	-	0.3	716	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151178	M-Factor	Cable Replacement Project - Mason Heights	0.7	-	-	-	-	0.7	716	System Renewal	Underground Asset Renewal	Enersource	From 2015-2017 customers in this area experienced 5 outages. 1 cable with 4 failures. 2 cables with 2 failures.
150970	Base	Fleet East Vehicle replacement - Van pool vans	-	-	-	0.1	-	0.1	714	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150922	Base	Fleet East Unit # 59 digger truck	-	0.6	-	-	-	0.6	714	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.

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151467	M-Factor	Cable Replacement Project - (V17) - Langstaff - Keele - Rutherford - Dufferin, Vaughan	-	-	-	-	2.4	2.4	703	System Renewal	Underground Asset Renewal	Powerstream	From 2017-2019 YTD customers in this area experienced 3 failures. From 2015-2019 YTD customers in this area experienced 4 failures.
150925	Base	Fleet East Vehicle replacement - Cube Vans	-	0.2	-	-	-	0.2	701	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150827	Base	Fleet_West_Equipment Replacement_Backhoe	0.1	-	-	-	-	0.1	699	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150869	Base	Fleet_ Central North Vehicle Replacement-Puller/tensioner 194	0.3	-	-	-	-	0.3	693	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151082	Base	SCADA Infrastructure	0.1	0.1	0.1	0.1	0.1	0.7	688	System Service	System Control, Comm'ns & Performance	Guelph	
150706	Base	Alectra Station Access Harmonization - Abloy CLIQ system expansion-WEST	0.0	-	-	-	-	0.0	686	System Service	Safety & Security	Horizon	This project consists of upgrade to station access in West
151191	Base	Facilities_Reno_Nebo - Service Centre Upgrades	-	-	-	-	0.1	0.1	685	General Plant	Facilities Management	Horizon	Repairs to building envelop/walls to prevent further damage to the build infrastructure and systems that are supporting critical operational systems such as control rooms, server rooms, customer services groups, etc.
151058	Base	Distribution Transformer Replacements & Upgrades	0.3	0.3	0.4	0.4	0.4	1.8	683	System Renewal	Transformer Renewal	Guelph	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
150719	Base	Upgrade of JMUX Optical Interfaces - Alectra East SONET Ring	0.3	0.3	-	-	-	0.5	676	System Service	System Control, Comm'ns & Performance	Powerstream	
151005	Base	Fleet_West_Vehicle Replacement_Cargo Van	-	-	-	-	0.1	0.1	674	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150669	Base	Burden Allocation - System Access	0.6	0.6	0.7	0.7	0.7	3.3	670	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150377	M-Factor	Voltage Conversion and Rear Lot - Montgomery Dr, Hamilton	-	-	1.8	-	-	1.8	661	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 71 outages and had 7,403,242 minutes of interruption. This project also addresses rear lot assets which are extrememly difficult to replace if they fail due to complexities of access issues and restricitions for equipment to rebuild the assets.
150894	Base	Fleet_ Central North Vehicle Replacement S/Bucket 3110	-	-	-	0.5	-	0.5	656	General Plant	Fleet Renewal	Brampton	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151048	Base	Station Switchgear Replacement - City Centre North MS47 HV1	0.3	-	-	-	-	0.3	656	System Renewal	Substation Renewal	Enersource	City Centre North MS is located centrally adjacent to Square One shopping mall, and feeds a large number of customers. It also provides back up to City Centre South MS – hence, reliability is very important. This substation project consists of replacing the HV1 44 kV switchgear and associated breaker and protection in City Centre North MS47. The current transformer protection device consists of a vintage 1973 Markham Electric oil with spring actuator type 44 kV circuit breaker. Station subject matter experts have identified this breaker as problematic. Parts are no longer available and this equipment is prone to failure. Proactive replacement of the LV switchgear, circuit breakers and protective equipment is a prudent strategy as system reliability would be greatly affected in the event of a failure. Additionally, the restoration of the system to normal conditions could take 8-10 months due to long equipment lead times.
150792	Base	Fleet_Central South Vehicle Replacement- RBD 109-07	-	-	-	0.6	-	0.6	653	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150966	Base	Fleet East Unit # 124 83' Double Bucket	-	-	0.6	-	-	0.6	651	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150962	M-Factor	Fleet East Unit # 61 Digger truck replacement	-	-	-	-	0.4	0.4	644	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
102166	Base	SQL Expansion - IT Infrastructure	0.1	0.5	0.1	0.1	0.2	0.9	636	General Plant	Information Technology	Multiple	Expand existing SQL infrastructure to meet project demands and natural growth of database. Add system capacity, improve performance, and reduce the risk of downtime due resource constraints.

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150818	M-Factor	Fleet_Central South Vehicle Replacement-236-10 S/bucket	-	-	-	-	0.5	0.5	635	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150980	M-Factor	Fleet East Vehicle replacement - Work Van	-	-	-	-	0.1	0.1	622	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150942	M-Factor	Fleet_ Central North Vehicle Replacement_S/Bucket	-	-	-	-	0.5	0.5	621	General Plant	Fleet Renewal	Brampton	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150807	M-Factor	Fleet_Central South Vehicle Replacement-209-09 S/bucket	-	-	-	-	0.5	0.5	621	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150863	Base	Fleet_Central North Vehicle Replacement-S/Bucket 70	-	0.5	-	-	-	0.5	620	General Plant	Fleet Renewal	Brampton	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150933	Base	Fleet_ Central North Vehicle Replacement Stake Trucks	-	-	0.3	-	-	0.3	616	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150203	Base	Station Equipment Temperature Monitoring-NORTH & TS	0.1	0.1	0.1	0.1	0.1	0.3	614	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of Station Temperature Monitoring system in East and it enables controlled emergency loading beyond the nameplate rating.
150945	M-Factor	Fleet_ Central North Vehicle Replacement_Reel Carriers	-	-	-	-	0.7	0.7	614	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150803	M-Factor	Fleet_Central South Vehicle Replacement- Material Handler	-	-	-	-	0.6	0.6	606	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150976	Base	Fleet East Unit # 365 digger truck	-	-	-	0.6	-	0.6	604	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150977	Base	Fleet East Unit # 366 digger truck	-	-	-	0.6	-	0.6	604	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150896	M-Factor	Fleet_ Central North Vehicle Replacement S/Bucket 8910	-	-	-	-	0.5	0.5	596	General Plant	Fleet Renewal	Brampton	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150871	M-Factor	Fleet_Central North Vehicle Replacement-Step Van 8108	0.2	-	-	-	-	0.2	595	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150880	Base	Fleet_ Central North Vehicle Replacement Tractor 7708	-	-	0.2	-	-	0.2	593	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150496	Base	iPass Project Management – Planned Capital - West	0.7	0.7	0.7	0.7	0.7	3.5	589	System Renewal	Underground Asset Renewal	Horizon	Help in optimizing DER performance and efficiency to improve addressing overall energy needs.
150846	M-Factor	Fleet_West_Vehicle Replacement_Step Vans	0.4	-	-	-	-	0.4	589	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150732	Base	Vault Cover Rehabilitation	0.1	-	-	-	-	0.1	582	System Renewal	Underground Asset Renewal	Powerstream	Replacement of lids on civil structures to avoid public risk
150967	M-Factor	Fleet East Unit # 125, 83' Double Bucket	-	-	-	0.7	-	0.7	580	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150978	M-Factor	Fleet East Vehicle replacement - Cube Vans	-	-	-	-	0.7	0.7	580	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150876	M-Factor	Fleet_Central North Vehicle Replacement_ Step Vans 6310	-	0.3	-	-	-	0.3	568	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150953	M-Factor	Fleet_ Central North Vehicle Replacement_Trailer 11510	-	-	-	-	0.0	0.0	566	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
102046	Base	Purchase of Major Tools - Muliti Year-North & TS	0.0	0.0	0.0	0.0	0.0	0.2	565	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work

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Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150793	M-Factor	Fleet_Central South Vehicle Replacement-210-09 S/bucket	-	0.5	-	-	-	0.5	560	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151209	M-Factor	Station LED Lighting Upgrades - South West	-	-	-	-	0.0	0.0	556	System Renewal	Substation Renewal	Guelph	Replacement of inefficient lighting fixtures and lamps at Guelph stations will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
151128	M-Factor	MS Transformer & HV Switchgear Replacement - Western MS36 T1 & HV1	-	-	-	0.2	0.6	0.8	554	System Renewal	Substation Renewal	Enersource	Recent testing has indicated possible mechanical damage to the transformer windings and the HV switchgear has suffered damage due to a prior failure. The station is in a residential area and a transformer failure could result in a fire, posing a risk to the community and collateral damage to other assets in the station, as well as resulting in an extensive power interruption. Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted reactive capital expenditure.
151150	M-Factor	Fleet East Vehicle replacement - SUV	-	-	-	-	0.0	0.0	550	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150968	M-Factor	Fleet East Vehicle replacement Pickup truck 2500	-	-	-	-	0.1	0.1	549	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151206	Base	Installation of SWI Video Security System	-	0.0	0.0	-	-	0.0	544	System Service	Safety & Security	Guelph	This project consists of installation of SWI Video security system in SouthWest. The implementation of video monitoring will ensure that station security and safety related issues can be easily identified and addressed immediately
150905	Base	Fleet East Multi Year Shop tools	0.0	0.0	0.0	0.0	0.0	0.1	544	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of tools and shop equipment required to repair and maintain vehicles to ensure vehicle availability to support capital systems projects.
101816	Base	Alectra East (South), Fault Indicator Installation and Replacement Multi-year initiative	0.2	0.2	0.2	0.3	0.3	1.2	542	System Service	System Control, Comm'ns & Performance	Powerstream	This project is installtion of fault indictor in East - North Region which will result improved outage response, operational efficiency, and reliability
150938	M-Factor	Fleet_ Central North Vehicle Replacement_Stake Trucks	-	-	-	0.3	-	0.3	539	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151085	M-Factor	Rear Lot Conversions	0.1	0.1	0.1	0.1	0.1	0.6	531	System Renewal	Rear Lot Conversion	Guelph	
101134	Base	Alectra East (North), Fault Indicator Installation and Replacement Multi-year initiative	0.2	0.2	0.3	0.3	0.3	1.3	527	System Service	System Control, Comm'ns & Performance	Powerstream	This project is installtion of fault indictor in East - South Region which will result improved outage response, operational efficiency, and reliability
150437	Base	OT GIS & OMS Enhancements	0.3	0.4	0.3	0.3	0.4	1.7	520	General Plant	Information Technology	Multiple	Ongoing productivity enhancements to core GIS and OMS platforms to meet internal and customer demand for functionality.
150975	M-Factor	Fleet East Unit # 75 83' Double Bucket	-	-	-	-	0.7	0.7	513	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151179	M-Factor	Cable Replacement Project - Area of Erin Mills Parkway and South Millway	0.5	-	-	-	-	0.5	482	System Renewal	Underground Asset Renewal	Enersource	From 2015-2017 customers in this area experienced 4 outages. 1 cable with 4 failures.
150602	Base	Smart Meter Test Facility - PowerStream RZ	0.0	0.0	0.0	0.0	0.0	0.1	471	System Access	Metering	Powerstream	Multi-year project to expand the capability of the Meter Test Facility to test increasing types of meters and AMI systems before they are placed into production.
150810	M-Factor	Fleet_Central South Vehicle Replacement-Step Vans	-	-	-	0.2	-	0.2	462	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150955	Base	Fleet_ Central North Vehicle Replacement_Arrowboards	-	-	-	-	0.1	0.1	459	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150798	M-Factor	Fleet_Central South Vehicle Replacement- Arrowboard	-	-	-	0.0	-	0.0	450	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150848	Base	Fleet_Central South Vehicle Replacement-Compressors	-	-	-	0.1	-	0.1	449	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150782	M-Factor	Fleet_Central South Vehicle Replacement-Step Van	0.2	-	-	-	-	0.2	439	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150811	M-Factor	Fleet_Central South Vehicle Replacement-Pick ups	-	-	0.2	-	-	0.2	434	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151141	M-Factor	Cable Replacement and Transformers replacement - Project - Windjammer, Mississauga	2.7	-	-	-	-	2.7	432	System Renewal	Underground Asset Renewal	Enersource	From 2005-2019 YTD customers in this area experienced 32 failures. This area has had an average of 2.3 outages per year.
102027	Base	Purchase of Critical Spare Parts - Multiyear - East	0.1	0.1	0.1	0.1	0.1	0.4	428	System Renewal	Substation Renewal	Powerstream	This project involves procurement of critical spare parts for transformer and municipal stations in the East Operating Area (former PowerStream) so as to facilitate prompt repair of failed assets during emergency situations.
150576	M-Factor	Split the 1/0 loop on Cityview Blvd into two loops	-	-	0.5	-	-	0.5	423	System Service	Capacity (Lines)	Powerstream	This project is to split the 1/0 loop on Cityview Blvd into two loops. As of 2019, there is 18.5MVA connected kVA on the loop: 12MVA on the residential side and 6.5 MVA on the commercial side with 1865 residential and 93 commerical customers.
101781	Base	iPass Project Management – Planned Capital - East	0.4	0.4	0.4	0.4	0.4	2.0	409	System Renewal	Overhead Asset Renewal	Powerstream	Estimating the effects of DER contribution at the feeder and region levels to further optimize the energy flows between the Utility and its consumers,
150494	Base	iPass Project Management – Planned Capital - Central-North	0.4	0.4	0.4	0.4	0.4	2.0	409	System Renewal	Overhead Asset Renewal	Brampton	Predicting the influence of weather conditions and DER contribution simultaneously on the power grid, for proactively mitigating local outages,
150495	Base	iPass Project Management – Planned Capital - Central-South	0.4	0.4	0.4	0.4	0.4	2.0	409	System Renewal	Overhead Asset Renewal	Enersource	Enable better visibility towards preventive equipment maintenance needs arising due to DER penetration which will further help mitigate outage risks,
150607	M-Factor	Station LED Lighting Upgrades - Central	0.0	0.0	0.0	0.0	0.0	0.1	408	System Renewal	Substation Renewal	Enersource	Replacement of inefficient lighting fixtures and lamps at stations in the Central Operational Area will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
150606	M-Factor	Station LED Lighting Upgrades - EAST	0.0	0.0	0.0	0.0	0.0	0.1	408	System Renewal	Substation Renewal	Brampton	Replacement of inefficient lighting fixtures and lamps at stations in this Operational Area will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
151013	M-Factor	Fleet_West_Vehicle_Replacement_Bucket Truck_1-354	-	-	-	0.4	-	0.4	407	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151158	M-Factor	Fleet_Central South_Vehicle Replacement -Vans	0.1	-	-	-	-	0.1	407	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151132	M-Factor	MS Transformer & HV Switchgear Replacement - Munden MS35 T1 & HV1	-	-	-	0.2	0.7	0.9	406	System Renewal	Substation Renewal	Enersource	Recent testing has indicated that the transformer insulation has deteriorated and lacks a proper foundation and is beginning to lean. The station is in a residential area and a transformer failure could result in a fire, posing a risk to the community and collateral damage to other assets in the station, as well as resulting in an extensive power interruption. Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted reactive capital expenditure.
150786	M-Factor	Fleet_Central South Vehicle Replacement-SUV	0.0	-	-	-	-	0.0	403	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150868	M-Factor	Fleet_Central North Vehicle Replacement-180 Loader	0.3	-	-	-	-	0.3	400	General Plant	Fleet Renewal	Brampton	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150518	Base	Upgrade to Station Facilities (Building / Civil work) Multi-year - Central	-	-	-	-	0.1	0.1	399	System Renewal	Substation Renewal	Enersource	MULTI ANSWER
150517	Base	Upgrade to Station Facilities (Building / Civil work) Multi-year - West	-	-	-	-	0.1	0.1	399	System Renewal	Substation Renewal	Horizon	MULTI ANSWER
151168	M-Factor	Fleet_Central South Vehicle Replacement-Step Vans	-	-	-	-	0.7	0.7	395	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150399	M-Factor	Rear Lot Renewal Project - Richlieu Dr and Trelawne Dr, St.Catharines	-	-	-	1.3	1.2	2.4	393	System Renewal	Rear Lot Conversion	Horizon	This area has had an average of 40 outages lasting 1.5hrs per year based on 3 year average.

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151212	M-Factor	Driveway Paving Multi-year initiative - South West	-	-	-	-	0.0	0.0	391	System Renewal	Substation Renewal	Guelph	These driveways at Guelph stations that are covered in gravel require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150138	M-Factor	Cable Replacement Project – (BA23-BA24) - Cook St and Steel St, Barrie	-	-	-	1.7	-	1.7	389	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 43 years old. Project is in 2023 so it will be over EUL by 6 years.
150920	M-Factor	Fleet East Vehicle addition - Van pool van	0.0	-	-	-	-	0.0	387	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150831	M-Factor	Fleet_West_Vehicle Replacement_SUVs_1-268,1-226,1-227	0.1	-	-	-	-	0.1	376	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150513	Base	Installation of SWI Video security system at 4 MS stations per year - Annual Multi-year initiative-EAST	0.2	0.1	-	-	-	0.3	372	System Service	Safety & Security	Brampton	This project consists of installation of SWI Video security system in CentralNorth
151007	M-Factor	Fleet_West_Vehicle_Replacement_Trailers	-	-	-	-	0.1	0.1	367	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150608	M-Factor	Station LED Lighting Upgrades - West	-	-	-	0.0	0.0	0.1	359	System Renewal	Substation Renewal	Horizon	Replacement of inefficient lighting fixtures and lamps at stations in the West Operational Area will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
150356	M-Factor	Voltage Conversion - Clarkson Area, Mississauga	-	-	-	-	2.7	2.7	359	System Renewal	Overhead Asset Renewal	Enersource	From 2015-2017 customers in this area experienced 35 outages and had 91,638 minutes of interruption.
150951	M-Factor	Fleet East Vehicle addition - Van pool van	-	0.0	-	-	-	0.0	345	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
102034	Base	Upgrade to Station Facilities (Building / Civil work) Multi-year - East	0.1	0.1	0.1	0.1	0.1	0.7	340	System Renewal	Substation Renewal	Powerstream	MULTI ANSWER
150854	M-Factor	Fleet_Central South Vehicle Replacement-Trailers	-	-	-	-	0.2	0.2	330	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150813	M-Factor	Fleet_Central South Vehicle Replacement-SUV	-	-	-	-	0.1	0.1	330	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150797	M-Factor	Fleet_Central South Vehicle Replacement- SUV	-	-	0.1	-	-	0.1	326	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150550	Base	ServiceNow Expansion - IT Infrastructure	-	0.1	-	-	-	0.1	325	General Plant	Information Technology	Multiple	Building and adding features within ServiceNow we will eliminate outdated processes by automating more tasks and decisions allowing us to be more efficient and productive. Enhancements include the automation of the flow of data between other systems and across programs used by various departments and ServiceNow. Servicebots will be used as ServiceNow learns from past patterns, in order to predict future outcomes, including determining risks, assigning owners, and categorizing work. Learned models set the category of the IT request and assign the task to the right team, as well as calculate associated risk of action or inaction. This capability will improve the speed and efficiency of IT service delivery.
150549	Base	ServiceNow Expansion - IT Infrastructure	0.1	-	-	-	-	0.1	323	General Plant	Information Technology	Multiple	Building and adding features within ServiceNow we will eliminate outdated processes by automating more tasks and decisions allowing us to be more efficient and productive. Enhancements include the automation of the flow of data between other systems and across programs used by various departments and ServiceNow. Servicebots will be used as ServiceNow learns from past patterns, in order to predict future outcomes, including determining risks, assigning owners, and categorizing work. Learned models set the category of the IT request and assign the task to the right team, as well as calculate associated risk of action or inaction. This capability will improve the speed and efficiency of IT service delivery.
150575	Base	OT Scada map Cleanup	-	0.5	-	-	-	0.5	316	General Plant	Information Technology	Multiple	SCADA Map clean up program to ensure accuracy and safety in the SCADA environment.

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150501	Base	On-Line Dissolved Gas Oil Monitoring of 20 MS Transformers - CENTRAL	-	-	-	-	0.2	0.2	313	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of Transformer bushing monitoring system in Central South
150712	Base	New JMUX Node at AMS4	0.1	-	-	-	-	0.1	311	System Service	System Control, Comm'ns & Performance	Powerstream	New JMUX Node at AMS4
150873	M-Factor	Fleet_Central North Vehicle Replacement_Vans	-	0.1	-	-	-	0.1	308	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150741	Base	Facilities_Replacement_Patterson Road Roof	-	-	-	-	1.2	1.2	308	General Plant	Facilities Management	Powerstream	Building roofs have exceeded the project useful life. Various decaying roof conditions identified need to be addressed to prevent further damage to the building envelope, structure and assets.
150884	M-Factor	Fleet_Central North Vehicle Replacement Pick up 9514	-	0.1	-	-	-	0.1	299	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
102537	Base	Insulator Replacement - 44kV Multi year project	0.2	-	-	-	-	0.2	295	System Renewal	Overhead Asset Renewal	Powerstream	Replacement of non-polymer insulators (Areas are prioritiezed by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.
150100	Base	Convert Three MS's in Bradford to WiMax Communications	0.0	-	-	-	-	0.0	294	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of conversion of three Bradford MS to Wimax communication
150531	Base	OT GIS Hardware Refresh	-	-	-	0.4	-	0.4	294	General Plant	Information Technology	Multiple	Hardware platform refresh to support GIS infrastructure.
150101	Base	Convert Three MS's in Alliston to WiMax Communications	0.0	-	-	-	-	0.0	294	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of conversion of three Alliston MS to Wimax communication
150610	M-Factor	Driveway Paving - Various Stations - Multi-year initiative - Central	0.0	0.0	0.0	0.0	0.0	0.1	290	System Renewal	Substation Renewal	Enersource	Existing driveways at stations in the Central Operational Area that are covered in gravel and require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150609	M-Factor	Driveway Paving - Various Stations - Multi-year initiative - East	0.0	0.0	0.0	0.0	0.0	0.1	290	System Renewal	Substation Renewal	Brampton	Existing driveways in this Operational Area that are covered in gravel require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150612	M-Factor	Driveway Paving - Various Stations - Multi-year initiative - West	0.0	0.0	0.0	0.0	0.0	0.1	290	System Renewal	Substation Renewal	Horizon	Existing driveways in the West Operational Area that are covered in gravel require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150870	M-Factor	Fleet_Central North Vehicle Replacement-Van 5910	0.1	-	-	-	-	0.1	289	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150800	M-Factor	Fleet_Central South Vehicle Replacement- trailer	-	0.0	-	-	-	0.0	288	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150796	M-Factor	Fleet_Central South Vehicle Replacement- Vans	-	-	0.2	-	-	0.2	286	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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Project Number	Funding	Project Name	2020 ($MM)	2021 ($MM)	2022 ($MM)	2023 ($MM)	2024 ($MM)	Total DSP 2020-2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150551	Base	ServiceNow Expansion - IT Infrastructure	-	-	0.1	-	-	0.1	279	General Plant	Information Technology	Multiple	Building and adding features within ServiceNow we will eliminate outdated processes by automating more tasks and decisions allowing us to be more efficient and productive. Enhancements include the automation of the flow of data between other systems and across programs used by various departments and ServiceNow. Servicebots will be used as ServiceNow learns from past patterns, in order to predict future outcomes, including determining risks, assigning owners, and categorizing work. Learned models set the category of the IT request and assign the task to the right team, as well as calculate associated risk of action or inaction. This capability will improve the speed and efficiency of IT service delivery.
150552	Base	ServiceNow Expansion - IT Infrastructure	-	-	-	0.1	-	0.1	258	General Plant	Information Technology	Multiple	Building and adding features within ServiceNow we will eliminate outdated processes by automating more tasks and decisions allowing us to be more efficient and productive. Enhancements include the automation of the flow of data between other systems and across programs used by various departments and ServiceNow. Servicebots will be used as ServiceNow learns from past patterns, in order to predict future outcomes, including determining risks, assigning owners, and categorizing work. Learned models set the category of the IT request and assign the task to the right team, as well as calculate associated risk of action or inaction. This capability will improve the speed and efficiency of IT service delivery.
151166	M-Factor	Fleet_ Central North Vehicle Replacement pick ups	-	-	-	0.1	-	0.1	245	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150812	M-Factor	Fleet_Central South Vehicle Replacement-Vans	-	-	-	-	0.1	0.1	240	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
102050	Base	Various Stations-Station Lighting Upgrade/Retrofit-Energy Efficiency Lighting-initiative Multi-year - East	0.1	0.1	0.1	0.1	0.1	0.3	240	System Renewal	Substation Renewal	Powerstream	Replacement of inefficient indoor and outdoor lighting fixtures and lamps at stations in the East Operating Area (former PowerStream) will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
103028	Base	Installation of a New JMUX Node at VTS1-T1T2	0.1	-	-	-	-	0.1	238	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of installation of JMUX node at Vaughan TS1
151167	M-Factor	Fleet_Central South Vehicle Replacement-Pick ups	-	-	-	-	0.2	0.2	237	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150391	Base	Wireless LAN Upgrade	0.5	-	-	0.1	-	0.6	235	General Plant	Information Technology	Multiple	Corporate Wireless LAN upgrade to replace end of life wireless infrastructure in corporate and operation center locations.
150897	M-Factor	Fleet_ Central North Vehicle Replacement pick ups	-	-	0.1	-	-	0.1	234	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151075	Base	Fuel Pump Replacement Nebo Rd.	0.0	-	-	-	-	0.0	234	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of systems that have surpass end of life, are consistently down for repairs and parts are difficult to obtain, impacting fuel of vehicles to support capital systems projects and customer emergencies responses.
150421	M-Factor	2D7X Pimlico Dr - Voltage Conversion and Rear Lot	-	-	-	-	0.6	0.6	234	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 28 outages and had 805,077 minutes of interruption. This project also addresses rear lot assets which are extremely difficult to replace if they fail due to complexities of access issues and restricitions for equipment to rebuild the assets.
150853	M-Factor	Fleet_Central South Vehicle Replacement-Vans	-	-	-	-	0.2	0.2	228	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151155	M-Factor	Fleet_Central South Vehicle Replacement-Pick ups	0.1	-	-	-	-	0.1	227	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151164	Base	Fleet_Central South _key box replacement	0.0	-	-	-	0.0	0.0	223	General Plant	Fleet Renewal	Enersource	Adopted the current vehicles key management system at all sites to ensure access to vehicles when required. This ensure access to vehicles after hours and tracking of vehceil keys.
151038	Base	Fleet_West_Equipment_Key Boxes	0.0	-	-	-	0.0	0.0	223	General Plant	Fleet Renewal	Horizon	Adopted the current vehicles key management system at all sites to ensure access to vehicles when required. This ensure access to vehicles after hours and tracking of vehceil keys.
150843	M-Factor	Fleet_Central South Vehicle Replacement-Bocat	-	-	-	0.0	-	0.0	223	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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150888	M-Factor	Fleet_ Central North Vehicle Replacement SUVs	-	-	0.0	-	-	0.0	223	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150961	Base	Fleet_West_Vehicle Replacement_Forklift	-	0.2	-	-	-	0.2	220	General Plant	Fleet Renewal	Horizon	Asset replacement due to poor conditions and age and lack of parts replacement. Equipment not as available to support capital system renewal projects and respond to emergencies with material handling. .
100319	M-Factor	Radial Supply Remediation/Conversion - 13.8 kV to 27.6 kV on Miller Ave	-	-	-	1.5	-	1.5	208	System Renewal	Overhead Asset Renewal	Powerstream	From 2015-2017 customers in this area experienced 15 outages and had 45,942 minutes of interruption. Customers in this area ona radial supply with no backup, this is atypical of Alectra Utilities customers and needs to be rectified to ensure customers here are receiving service similar to other Alectra Utiliites customers.
150891	M-Factor	Fleet_ Central North Vehicle Replacement Car	-	-	0.0	-	-	0.0	208	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151059	Base	Station Switchgear Replacement - City Centre North MS47 HV2	0.3	-	-	-	-	0.3	199	System Renewal	Substation Renewal	Enersource	City Centre North MS is located centrally adjacent to Square One shopping mall, and feeds a large number of customers. It also provides back up to City Centre South MS – hence, reliability is very important. The current transformer protection device consists of a vintage 1973 Markham Electric oil with spring actuator type 44 kV circuit breaker. Station subject matter experts have identified this breaker as problematic. Additionally, due to obsolescence, it is no longer supported by the manufacturer and parts are difficult to come by.
151145	M-Factor	Cable Replacement Project - Bough Beeches Blvd.	0.7	-	-	-	-	0.7	197	System Renewal	Underground Asset Renewal	Enersource	From 2015-2017 customers in this area experienced 5 outages. 3 cables with 3 failures each.
150936	Base	Fleet_ Central North Vehicle Replacement Tower Lights	-	-	-	0.0	-	0.0	192	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150394	M-Factor	King St. Voltage Conversion & Loop (LRT Betterment)	-	-	-	-	0.3	0.3	192	System Renewal	Overhead Asset Renewal	Enersource	From 2015-2017 customers in this area experienced 5 outages and had 61,455 minutes of interruption.
150686	Base	Rockwood MS - Station RTU and Protection Relays Upgrade	0.1	-	-	-	-	0.1	191	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of bus, line and transformer protection at Richmond Hill TS
150802	Base	Fleet_Central South Vehicle Replacement- Scissor lift	-	-	-	0.0	-	0.0	185	General Plant	Fleet Renewal	Enersource	Asset replacement due to poor conditions and age and lack of parts replacement. Equipment not as available to support capital system renewal projects and respond to emergencies with material handling. .
150787	M-Factor	Fleet_Central South Vehicle Replacement- Van	-	0.1	-	-	-	0.1	183	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150944	M-Factor	Fleet_ Central North Vehicle Replacement_Trailer	-	-	-	0.1	-	0.1	182	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150822	Base	Fleet_Central South Vehicle Replacement-Arrowboard	-	-	-	-	0.0	0.0	179	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150326	Base	Software Asset Management as a Service	-	-	-	-	0.1	0.1	173	General Plant	Information Technology	Multiple	The Software Asset Management module of ServiceNow will enable the creation of an accurate, up to date, single system of record for IT infrastructure, both on premises and in public clouds. It will identify IP-enabled configuration items (CIs), map their interdependencies, and populate and maintain them in the ServiceNow Configuration Management Database (CMDB). Software spend across the year will be more predictable, and access to software agreements will be more efficient. Auditing of agreements will be more manageable. The implementation will all better control over the complexity of our software assets, allowing us to optimize the use of these assets.
150153	Base	Bradford MS324-F2 Reconductor - Holland Street	-	-	-	-	0.0	0.0	169	System Service	Capacity (Lines)	Powerstream	This project is to reconductor MS324f2 feeder to increase capacity and meet contingency requirements. Increase the ampacity of the existing section of 13.8kV feeder along Holland Street by reconductoring the existing 3/0 Al with 336 Al from Langford Drive to Professor Day
150825	Base	Line & Transformer Protection Migration to DNP - Jim Yarrow TS	-	-	0.1	0.1	-	0.2	164	System Renewal	Substation Renewal	Brampton	This is part of a multi-phase project to upgrade aging and failure-prone protection systems at Jim Yarrow TS to the current protection standards. Proper protection to transmission lines will provide protection to the assets in the case of faults.
150512	M-Factor	Installation of SWI Video security system at 4 MS stations per year - Annual Multi-year initiative-CENTRAL	-	-	-	-	0.2	0.2	164	System Service	Safety & Security	Enersource	This project consists of installation of SWI Video security system in Central South. The implementation of video monitoring will ensure that station security and safety related issues can be easily identified and addressed immediately

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150511	M-Factor	Installation of SWI Video security system at 4 MS stations per year - Annual Multi-year initiative-WEST	-	-	-	-	0.2	0.2	164	System Service	Safety & Security	Horizon	This project consists of installation of SWI Video security system in West. The implementation of video monitoring will ensure that station security and safety related issues can be easily identified and addressed immediately
150519	M-Factor	Upgrade to Station Facilities (Building / Civil work) MultiYear - East	-	-	-	-	0.1	0.1	156	System Renewal	Substation Renewal	Brampton	This project involves work involving structural components of stations, including windows, brickwork, roofs, foundations, drainage, doors, etc. at stations in the East Operational Area. Not keeping up with this work would result in advanced deterioration resulting in even greater maintenance costs, potential safety concerns and potential failure of the electrical equipment in the building causing power interruptions.
151382	Base	2022 GUELPH - Fleet	-	-	0.6	-	-	0.6	151	General Plant	Fleet Renewal	Guelph	Replacement of end of life asset due to poor conditions, high mileage and engine hours and age. Vehicle experiencing more down time at the shop for repairs and maintenance impacting vehicle availability.
150510	Base	Upgrade/Retrofit SWI Video Security System at Jim Yarrow TS station	0.1	-	-	-	-	0.1	148	System Service	Safety & Security	Brampton	This project consists of installation of SWI Video security system at Jim Yarrow TS
103030	Base	Technology Upgrades Improving the System Control Room Environment	0.1	0.1	0.1	0.1	0.1	0.3	148	General Plant	Information Technology	Multiple	This project will continue to build on the original capital project whose scope was focused on the replacement of computers used as Operator WorkStations. The scope of this program has been expanded to account for all technology purchases required for the Control Room theater.
151438	Base	2020 GUELPH - Fleet	0.7	-	-	-	-	0.7	146	General Plant	Fleet Renewal	Guelph	Replacement of end of life asset due to poor conditions, high mileage and engine hours and age. Vehicle experiencing more down time at the shop for repairs and maintenance impacting vehicle availability.
151108	Base	Office Equipment	0.1	0.1	0.1	0.1	0.1	0.4	144	General Plant	Facilities Management	Guelph	Replace aging equipment within the Guelph operational centre to ensure optimal performance in managing the distribution assets
150687	Base	Woodlands MS - Station RTU & Protection Relays Replacement	0.1	-	-	-	-	0.1	141	System Service	System Control, Comm'ns & Performance	Enersource	Woodlands MS - Station RTU & Protection Relays Replacement
151381	Base	2021 GUELPH - Fleet	-	0.7	-	-	-	0.7	138	General Plant	Fleet Renewal	Guelph	Replacement of end of life asset due to poor conditions, high mileage and engine hours and age. Vehicle experiencing more down time at the shop for repairs and maintenance impacting vehicle availability.
151384	Base	2024 GUELPH - Fleet	-	-	-	-	0.6	0.6	138	General Plant	Fleet Renewal	Guelph	Replacement of end of life asset due to poor conditions, high mileage and engine hours and age. Vehicle experiencing more down time at the shop for repairs and maintenance impacting vehicle availability.
150586	Base	OT SCADA map cleanup	-	-	0.3	-	-	0.3	137	General Plant	Information Technology	Multiple	SCADA Map clean up program to ensure accuracy and safety in the SCADA environment.
151245	M-Factor	Capacitor Bank Installations	0.0	0.0	0.0	0.0	0.0	0.1	135	System Service	System Control, Comm'ns & Performance	Guelph	This project consists of capacitor bank installation to increase power factor, capacity and reduce losses.
150235	M-Factor	Greenwood Expansion Station Service Supply Backup	-	-	-	-	0.0	0.0	130	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of providing back up to the station service transformer at Greenwood TS. In the current configurationt the two station transformers are supplied from VTS#1 and a failure on VTS#1 result in removal of both VTS#1 and VTS#1.
150582	M-Factor	Back-end Automation (Orchestration Tool\Setup)	-	-	-	-	0.2	0.2	128	General Plant	Information Technology	Multiple	Automated integration of enterprise system platforms with HR functionality. Increase in productivity related to human resources
102931	Base	Paving of 3 MS & TS Station Driveways per year - Annual Multi-year initiative - East	0.0	0.0	0.0	0.0	0.1	0.2	125	System Renewal	Substation Renewal	Powerstream	Existing driveways at stations in the East Operating Area (former PowerStream) are covered in gravel and require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
151039	Base	Fleet_West_Equipment_Key Box	-	0.0	-	-	-	0.0	124	General Plant	Fleet Renewal	Horizon	Adopted the current vehicles key management system at all sites to ensure access to vehicles when required. This ensure access to vehicles after hours and tracking of vehceil keys.
150655	Base	Maingate MS - Station RTU and Protection Relays Upgrade	-	0.2	-	-	-	0.2	124	System Service	System Control, Comm'ns & Performance	Enersource	This project consist of RTU and protection relay upgrade at Maingate MS
150689	Base	Rogers MS - Station RTU and Protection Relays Upgrade	-	0.2	-	-	-	0.2	124	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of bus, line and transformer protection at Richmond Hill TS
151076	Base	Fuel Pump Replacement Vansickle Rd.	-	0.0	-	-	-	0.0	123	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of systems that have surpass end of life, are consistently down for repairs and parts are difficult to obtain, impacting fuel of vehicles to support capital systems projects and customer emergencies responses.
150597	Base	Lock Box Installs - East	0.0	0.0	0.0	0.0	0.0	0.0	116	System Access	Metering	Powerstream	Multi-year project to install lock boxes at ICI properties with restricted access to eliminate need for a customer appointment for access.
151143	M-Factor	Cable Replacement and Transformers Replacement -Project - Shelter Bay Rd. Mississauga	1.1	-	-	-	-	1.1	112	System Renewal	Underground Asset Renewal	Enersource	From 2017-2019 YTD customers in this area experienced 6 failures.

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150821	M-Factor	Fleet_Central South Vehicle Replacement-Van	-	-	-	-	0.1	0.1	111	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
101487	M-Factor	Add one Additional 27.6 kV Cct on Major Mack Dr and 9th Line	-	-	-	1.3	-	1.3	108	System Service	Capacity (Lines)	Powerstream	There are two ccts 12M1/12M3 on Major Mack Dr east of Hwy 48, but only one cct 12M3 goes all the way to 9th Line. The second cct stops half way and is a radial supply. This project is to establish another tie between two ccts on Major Mack and 9th Line. The purpose is to form a supply loop and a new tie between Buttonville TS and MTS2.
150255	M-Factor	Cable Replacement Project - (B23) - Cundles Rd and Janine St, Barrie	-	-	-	1.1	-	1.1	99	System Renewal	Underground Asset Renewal	Powerstream	
151383	Base	2023 GUELPH - Fleet	-	-	-	0.6	-	0.6	98	General Plant	Fleet Renewal	Guelph	Replacement of end of life asset due to poor conditions, high mileage and engine hours and age. Vehicle experiencing more down time at the shop for repairs and maintenance impacting vehicle availability.
150462	Base	MV90 Upgrade	0.2	-	-	-	-	0.2	98	General Plant	Information Technology	Multiple	Enhancement to MV90 systems application to support process improvement requirements. As the MV90 system is one of the core applications of the organization, operational enhancements come in from a number of venues and thereby feedback into the other downstream systems. These enhancements are considered for the overall customer and organizational benefits.
150569	Base	Server OS Upgrades - IT Infrastructure	0.1	0.1	0.1	0.2	-	0.4	95	General Plant	Information Technology	Multiple	Operating system upgrades to support IT infrastructure.
150737	Base	Facilities_East Region_Reactive Capital	0.3	0.3	0.3	0.3	0.3	1.3	92	General Plant	Facilities Management	Powerstream	Approved capital funds available to address any unforeseen and unbudgeted asset replacements/demands. Having these funds available for immediate use is critical for Facilities building operations to restore equipment/assets back to normal operations a.s.a.p.
150736	Base	Facilities_West Region_Reactive Capital	0.3	0.3	0.3	0.3	0.3	1.3	92	General Plant	Facilities Management	Horizon	Approved capital funds available to address any unforeseen and unbudgeted asset replacements/demands. Having these funds available for immediate use is critical for Facilities building operations to restore equipment/assets back to normal operations a.s.a.p.
150734	Base	Facilities_Central Region_Reactive Capital	0.3	0.3	0.3	0.3	0.3	1.3	92	General Plant	Facilities Management	Multiple	Approved capital funds available to address any unforeseen and unbudgeted asset replacements/demands. Having these funds available for immediate use is critical for Facilities building operations to restore equipment/assets back to normal operations a.s.a.p.
150464	M-Factor	Fieldworker Upgrade - IT/OT Infrastructure	0.3	-	-	-	-	0.3	91	General Plant	Information Technology	Multiple	Upgrade to increase functionality for the metering field staff to improve response times for customers
151079	Base	Fleet West Major Equipment & Tools	-	0.1	-	-	-	0.1	91	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of tools and shop equipment required to repair and maintain vehicles to ensure vehicle availability to support capital systems projects.
150958	M-Factor	Fleet_West_Vehicle Replacement_Forklift	-	-	-	-	0.1	0.1	91	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
101393	M-Factor	Redundant Fibre Path to Aurora MS#4 Sub-Station	-	-	-	0.5	-	0.5	90	System Service	System Control, Comm'ns & Performance	Powerstream	AMS4 is a major node on the Operations Network, but the fiber optic routes into the AMS4 are not diverse. This major hub is therefore exposed to a single point of failure, and loss of communications to this hub would be very impact. This project is to provide redundant fibre path to Aurora MS to offer increased security and reliability.
150676	Base	Mobile Devices - IT Infrastructure	0.0	0.0	0.0	0.0	-	0.0	88	General Plant	Information Technology	Multiple	
151078	Base	Fleet West Major Equipment & Tools	0.1	-	-	-	-	0.1	81	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of tools and shop equipment required to repair and maintain vehicles to ensure vehicle availability to support capital systems projects.
103171	Base	Implementation of a new Alectra Network Operations Voice Radio System	0.0	0.0	0.0	0.0	0.0	0.1	79	General Plant	Information Technology	Multiple	
150564	Base	OT SCADA hardware upgrade cycle 4	-	-	0.2	-	-	0.2	75	General Plant	Information Technology	Multiple	Planned hardware updrades for monitors and workstations on enterprise SCADA platform.
151069	Base	PI Upgrades & Enhancements - IT/OT Infrastructure	0.1	-	-	-	-	0.1	63	General Plant	Information Technology	Multiple	Partner with OSIsoft (creator of PI) implement next level predictive analytics using AI (artificial intelligence) and ML (machine learning).
151016	M-Factor	Fleet_West_Vehicle_Replacement_Pickups	-	-	0.1	-	-	0.1	56	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151018	M-Factor	Fleet_West_Vehicle_Replacement_Trailer	-	-	-	0.1	-	0.1	50	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
102922	Base	Installation/Retrofit of SWI Video Security System at 3 TS stations	0.0	-	-	-	-	0.0	48	System Service	Safety & Security	Powerstream	This project consists of installation of SWI Video security system at 3 Transformer Station in West
150563	Base	OT SCADA upgrade cycle 3	-	0.2	-	-	-	0.2	46	General Plant	Information Technology	Multiple	Planned hardware updrades for monitors and workstations on enterprise SCADA platform.
150906	Base	Vehicle key box system	0.0	-	-	-	0.0	0.0	43	General Plant	Fleet Renewal	Powerstream	

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150747	M-Factor	Net Zero Energy Emissions	0.3	0.3	0.3	0.3	0.3	1.6	35	System Service	Distributed Energy Resources (DER)	Powerstream	The project will help Alectra Utilities to ensure that growing DER challenges are met through building expertise and capability in real time monitoring, integrating and optimizing of DERs in line with customer preferences. This will lead to a system that can safely integrate and optimize value from DERs for the benefit of customers.
151053	Base	Building Sustainment	0.2	0.2	0.2	0.2	0.2	0.9	32	General Plant	Facilities Management	Guelph	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
150584	Base	OT Control room hardware upgrade cycle	-	-	0.3	-	-	0.3	27	General Plant	Information Technology	Multiple	Planned hardware updrades for monitors and workstations on enterprise control room platforms. .
103065	Base	Upgrade Advanced Distribution Management System (ADMS) to latest version release.	-	-	-	0.1	-	0.1	25	General Plant	Information Technology	Powerstream	
151084	Base	Shop equipment refurbishment and replacement	-	-	0.0	-	-	0.0	23	General Plant	Fleet Renewal	Brampton	
150878	M-Factor	Bus & Main Breaker Protections Replacement - Jim Yarrow TS	-	-	-	-	0.1	0.1	22	System Renewal	Substation Renewal	Brampton	This is part of a multi-phase project to upgrade aging and failure-prone protection systems to the current protection standards. Proper protection to the main bus and transformers will provide protection to the assets in the case of faults when they occur.
150562	Base	OT Firewall Upgrade	-	0.2	-	-	-	0.2	20	General Plant	Information Technology	Multiple	Hardware upgrade cycle for OT platform.
150704	Base	Feeder Protection Migration to DNP - Jim Yarrow TS	0.3	0.2	-	-	-	0.5	16	System Renewal	Substation Renewal	Brampton	This is part of a multi-phase project to upgrade aging and failure-prone protection systems at Jim Yarrow TS to the current protection standards. Proper protection to distribution feeders will provide protection to the assets in the case of faults.
151160	M-Factor	Fleet_West_Vehicle Replacement_ Pole Trailer_1-405	-	-	-	0.1	-	0.1	15	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150581	Base	Analytics\Monitoring Tool IT infrastrucutre rescources	-	-	-	0.3	-	0.3	14	General Plant	Information Technology	Multiple	Gather requirements, determine available products that meet those requirements and RFP. SOW will include POC of chosen products as well as Professional Services to assist with design, build and implementation.
150583	Base	OT Server Hardware upgrade OMS/SCADA	-	-	-	0.3	-	0.3	13	General Plant	Information Technology	Multiple	Hardware refresh for customer facing OMS platform and SCADA architecture .
151031	Base	Fleet Shop equipment refurbishment and replacement	0.1	0.1	0.1	0.1	0.1	0.3	13	General Plant	Fleet Renewal	Enersource	For the refurbishment of trailers, shop compressors and hoists to extend the life of the assets instead of replacement to reduce the need fro capital expenditures.
150678	Base	P&C Specific Tools & Testing Equipment - West	0.0	0.0	0.0	0.0	0.0	0.1	12	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
102999	Base	P&C Specific Tools and Testing Equipment	0.0	0.0	0.0	0.0	0.0	0.1	12	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
102157	Base	Server Refresh - IT Infrastructure	1.0	0.4	1.2	0.4	0.4	3.4	10	General Plant	Information Technology	Multiple	Ongoing server refresh to support applications.
150396	Base	Network Refresh - IT Infrastructure	0.4	0.4	0.4	-	-	1.1	10	General Plant	Information Technology	Multiple	Replacement of existing network infrastructure that is unsupported (or soon to be) including further rationalization and design modifications to support the delivery of services throughout the Alectra Environment.
150547	M-Factor	Business Support	-	-	-	-	0.2	0.2	8	General Plant	Information Technology	Multiple	The project will encompass a variety of sub projects for the purpose of investigating new and emerging technologies. Building a culture of innovation Alectra will need a continued effort in remaining ahead of the trends and implementing new and more efficient ways of doing business.
151029	M-Factor	Fleet_West_Vehicle_Replacement_Pickups	-	-	-	-	0.2	0.2	1	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

Project List for Oral Hearing Undertakings

Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150404	Base	Kenilworth TS Power Factor Correction	0.1	184,357	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of capacitor bank installation at Kenilworth TS to improve PF and to comply with IESO market rules.
150725	Base	Lines Central-North - Reactive Renewal	1.2	181,454	System Renewal	Reactive Capital	Brampton	Replacement of assets which have failured and requires replacement in order to restore power to customers
150690	Base	Lines Central-South - Reactive Renewal	3.1	171,818	System Renewal	Reactive Capital	Enersource	Replacement of assets which have failured and requires replacement in order to restore power to customers
150682	Base	Remote Fault Indicator Deployment	0.4	164,221	System Service	System Control, Comm'ns & Performance	Multiple	This project consists of remote fault indictor deployment which will result improved outage response, operational efficiency, and reliability
150217	Base	Build double 27.6kV ccts on Teston Rd and Pine Valley Dr to supply Block 40/47	1.4	151,265	System Service	Capacity (Lines)	Powerstream	This project is to rebuild existing 8.32 kV poleline on teston road (Pine Valley drive to Weston road) as it does not have sufficent capacity for new developments.
150587	Base	Kenilworth TS Upgrade	0.6	134,984	System Access	Transmitter Related Upgrades	Horizon	HONI will be replacing transformers at Kenilworth TS which is at physical end-of-life, as well as switchgear. Alectra Utilities role in the project will be to coordinate planned outages and disconnect and reconnect feeder egress connections
102247	Base	Interest Capitalization	1.1	104,304	General Plant	Other General Plant	Powerstream	
150596	Base	Meter Renewal - all types but Suite - PowerStream RZ	0.1	94,470	System Access	Metering	Powerstream	Multi-year project to renew existing residential (except suite) metering equipment.
101871	Base	Services (New and Upgrades) - Layouts – East North - Commercial Services	0.0	94,398	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150600	Base	Firmware Upgrades for Smart Meters - East	0.0	94,363	System Access	Metering	Powerstream	Multi-year project to renew residential Smart meter firmware to improve communication performance.
151169	Base	Central-South - Capitalization of Locates	0.0	94,345	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
151174	Base	West Lines - Capitalization locates	0.0	94,319	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150631	Base	Transformer Station Metering - Central North	0.1	94,246	System Access	Metering	Brampton	Multi-year project to purchase, install and renew wholesale metering equipment.
101696	Base	Subdivision - North Underground Residential Distribution System Final Close out and Inspection.	0.0	94,197	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
103381	Base	East Lines - Capitalization locates	0.1	94,145	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101870	Base	Services (New and Upgrades) - Layouts – East South - Commercial Services	0.1	94,022	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101869	Base	Services (New and Upgrades) - Layouts – East North - New Residential	0.1	93,989	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150650	Base	Replace PCB Risk PT's - Enersource RZ	0.1	93,977	System Access	Metering	Enersource	Multi-year project to replace metering transformers identified with unacceptable levels of PCB's, to prevent hazardous spills.
101919	Base	New Services (new and upgrades) - Commercial, Industrial and Institutional (ICI) Projects - NORTH	0.1	93,955	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150647	Base	Transformer Station Metering - Enersource RZ	0.1	93,884	System Access	Metering	Enersource	Multi-year project to purchase, install and renew wholesale metering equipment.
151049	Base	Commercial, Industrial, Institutional, Apartment Connections	0.1	93,830	System Access	Customer Connections	Guelph	Mandatory - System Access Related Project
101685	Base	Subdivision - South Underground Residential Distribution System Final Close out and Inspection.	0.1	93,778	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150457	Base	Services (New and Upgrades) - Layouts – St Catharines	0.2	93,519	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
151162	Base	Non Recoverable replacement of Distribution Equipment due to accident/vandalism	0.2	93,457	System Renewal	Reactive Capital	Horizon	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
101924	Base	Mulit Unit Metering for New Buildings NORTH - PowerStream RZ	0.1	93,421	System Access	Metering	Powerstream	Multi-year project to purchase and install suite metering in new buildings in northern area of territory.
150588	Base	New Residential Subdivision Development - Alectra West	0.3	93,266	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
101791	Base	New Services - new and upgrades - COMMERCIAL, INDUSTRIAL, INSTITUTIONAL (ICI) SERVICES - SOUTH	0.2	92,878	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101812	Base	Reactive Capital, Alectra East - LIS	0.3	92,710	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
150754	Base	Lines Central-North - Non-Recoverable Replacements	0.3	92,705	System Renewal	Reactive Capital	Brampton	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
150726	Base	Lines Central-South - Non-Recoverable Replacements	0.3	92,705	System Renewal	Reactive Capital	Enersource	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
101820	Base	Reactive Capital, Alectra East - Non-Recoverable Replacement	0.3	92,583	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
150389	Base	Services (New and Upgrades) - Layouts – Central North	0.4	92,563	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
150651	Base	C & I Metering - Renewal- Brampton RZ	0.6	92,561	System Access	Metering	Brampton	Multi-year project to renew existing ICI metering equipment.
150386	Base	New Service (new and upgrades) - Commercial and Institutional (ICI) Projects - Central North	0.4	92,424	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
150453	Base	CIS CC&B Modifications(Regulatory Enhancements)	0.9	92,261	General Plant	Information Technology	Multiple	Enhancements to the CIS (CC&B) application needed to meet any regulatory requirements Such requirements in the past have been Ontario Energy Savings Program (OESP) as well as the Monthly Billing projects.
150649	Base	Suite Metering - Enersource RZ	0.5	91,838	System Access	Metering	Enersource	Multi-year project to purchase, install and renew suite metering equipment.
150654	Base	C & I Metering - New Services - Brampton RZ	0.6	91,553	System Access	Metering	Brampton	Multi-year project to purchase and install ICI metering equipment on new services.
150595	Base	C & I and Wholesale Metering - PowerStream RZ	0.5	91,530	System Access	Metering	Powerstream	Multi-year project to purchase, install, and renew ICI and wholesale metering equipment.
101868	Base	Services (New and Upgrades) - Layouts – East South - New Residential	0.4	91,488	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101795	Base	Multi Unit Metering for New Buildings SOUTH - PowerStream RZ	0.4	91,273	System Access	Metering	Powerstream	Multi-year project to purchase and install suite metering in new buildings in southern area of territory.
101873	Base	Services (New and Upgrades) - Layouts – East North - Residential Upgrades	0.5	91,023	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
151051	Base	System Relocations Road Authorities	1.0	91,002	System Access	Road Authority	Guelph	Mandatory - System Access Related Project
150652	Base	New Residential Subdivision Development - Alectra Central South	0.6	90,948	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
150388	Base	Services (New and Upgrades) - Layouts – Central South	0.7	90,774	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
150692	Base	New Feeder in Residential Subdivision Development - Alectra Central North	0.9	90,609	System Service	Capacity (Lines)	Brampton	This expenditure is required to meet the needs of the development community that construct municipal approved residential subdivisions in Alectra Utilities' Central North service territory
150599	Base	Suite Meter - Reverification - PowerStream RZ	0.9	90,368	System Access	Metering	Powerstream	Multi-year project to renew Measurement Canada seal dates on existing suite metering equipment.
150455	Base	Services (New and Upgrades) - Commercial, Industrial and Institutional (ICI) Projects - St Catharines	0.9	90,201	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150659	Base	Residential Meters - by Metering - Brampton RZ	1.0	90,096	System Access	Metering	Brampton	Multi-year project to purchase, install and renew residential metering equipment. Work carried out by Metering.
150456	Base	Services (New and Upgrades) - Layouts – Hamilton	0.9	89,962	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150630	Base	New Residential Subdivision Development - Alectra Central North	0.7	89,952	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
101828	Base	Reactive Capital, Alectra East - Recoverable Replacement	0.7	89,766	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover some costs for (i.e. pole hit, vehicle at scene of accicent, Alectra Utilities obtains most of costs (near $0 impact too budget))
101896	Base	New Institutional/Commercial/Industrial Subdivision Development - Alectra East	0.9	89,347	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101872	Base	Services (New and Upgrades) - Layouts – East South - Residential Upgrades	0.7	89,345	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101800	Base	Reactive Capital, Alectra East - Storm Damage	1.2	86,549	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
151047	Base	Subdivisions	0.7	85,393	System Access	Customer Connections	Guelph	Mandatory - System Access Related Project
150620	Base	Metering Renewal - all types - Horizon RZ	1.9	84,064	System Access	Metering	Horizon	Multi-year project to purchase, install, and renew residential, ICI and wholesale metering equipment.
101808	Base	Reactive Capital, Alectra East - Switchgears	1.8	83,304	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
150648	Base	Metering Renewal - all types but Suite - Enersource RZ	2.3	82,569	System Access	Metering	Enersource	Multi-year project to purchase, install and renew residential (except suite) and ICI metering equipment.
101892	Base	New Subdivision Development - Secondary Service Lateral - Alectra East	2.6	80,776	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
151125	M-Factor	Connection Cost Recovery Agreement (CCRA) – Midhurst TS – 15th Anniversary True-up	3.2	78,172	General Plant	Connection and Cost Recovery Agreements	Powerstream	In accordance with the Connection Cost Recovery Agreement, a 15-year true-up is required for Midhurst TS.

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150384	Base	New Service (new and upgrades) - Commercial and Institutional (ICI) Projects - Central South	3.0	77,904	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
151124	M-Factor	Goreway TS Expansion (CCRA) - 10 Yr True-Up Payment, Brampton	5.6	76,026	General Plant	Connection and Cost Recovery Agreements	Brampton	In accordance with the Connection Cost Recovery Agreement, a 10-year true-up is required for Goreway TS.
150449	Base	Services (New and Upgrades) - Commercial, Industrial and Institutional (ICI) Projects - Hamilton	5.0	69,328	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
151095	Base	Reactive Restoration	1.0	63,547	System Renewal	Reactive Capital	Guelph	Replacement of assets which have failured and requires replacement in order to restore power to customers
150465	Base	LPSS Upgrade - IT Infrastructure	0.5	59,940	General Plant	Information Technology	Multiple	Enhancement to LPSS Alectra market settlement system LPSS is the Alectra settlement system. This is one of the core applications of the organization, operational enhancements come in from a number of venues and thereby feedback into the other downstream systems. These enhancements are considered for the overall customer and organizational benefits.
101824	Base	Reactive Capital, Alectra East - Distribution Equipment	5.2	58,190	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
151161	Base	Joint Use Pole Removal	0.1	57,200	System Renewal	Overhead Asset Renewal	Horizon	This project is for the removal of poles in the field after third party (joint use) attachements have been removed or transferred for projects already closed by Alectra Utilities.
150463	Base	Customer Self Service Portal Enhancements	0.9	56,341	General Plant	Information Technology	Multiple	Enhancement to CIS (CC&B) self service portal application to support process improvement requirements.The self service portal is the means by which Alecra customers can obtain their customer related information, interact with a CSR, post questions. The enhancements will allow Alectra customers a better experience when interacting with Alectra through the web portal channel.
151050	Base	Metering - all types - Guelph RZ	0.6	55,986	System Access	Metering	Guelph	Multi-year project to purchase, install, and renew residential, ICI and wholesale metering equipment in Guelph RZ.
150469	Base	ERP JD Edwards Enhancements	2.0	55,715	General Plant	Information Technology	Multiple	Allocation of capital funds to provide 3rd party assistance on capital work, along with creating system enhancements to the JD Edwards ERP and supporting Systems.
150325	Base	CIS CC&B Enhancements	1.3	55,520	General Plant	Information Technology	Multiple	Enhancement to CIS (CC&B) application to support process improvement requirements.As the CIS (CC&B) system is one of the core applications of the organization, operational enhancements come in from a number of venues and thereby feedback into the other downstream systems. These enhancements are considered for the overall customer and organizational benefits.
103637	Base	GS>50 MIST Meter Multi-year initiative Implementation	0.6	55,000	System Access	Metering	Powerstream	Multi-year project to install MIST meters on GS>50 accounts, as required by the Distribution System Code.
101832	Base	Joint Use Pole Removal	0.6	54,024	System Renewal	Overhead Asset Renewal	Powerstream	This project is for the removal of poles in the field after third party (joint use) attachements have been removed or transferred for projects already closed by Alectra Utilities.
150344	Base	HaLRT_New Lake Feeder for TPSS#8 area capacity	0.6	48,091	System Service	Capacity (Lines)	Horizon	The TPSS#8 location has supply constraints on the 13.8kV system. This project is to bring a new feeder out of Lake TS to the area to reinforce the supply and allow for switching to free up capacity to accommodate the new load request.
151236	Base	Edinburgh Rd (Paisley to Willow) Extension	0.7	48,011	System Service	Capacity (Lines)	Guelph	Replace existing pole line to accommodate two 13.8kV circuits in order to provide capacity and contingency for the new developments on Edinburgh Road North and also act as an inter-tie between Campbell TS and Cedar TS
101887	Base	New Residential Subdivision Development - Alectra East	9.0	44,864	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
100859	Base	Switchgear Renewal - East	2.6	43,705	System Renewal	Underground Asset Renewal	Powerstream	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
151089	Base	Overhead Rebuilds	1.2	39,246	System Renewal	Overhead Asset Renewal	Guelph	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
101508	Base	Transformer Renewal - East	2.2	37,474	System Renewal	Transformer Renewal	Powerstream	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
101003	M-Factor	Richmond Hill TS#2 Upgrade Bus, Line & Transformer Protections	0.1	36,020	System Service	System Control, Comm'ns & Performance	Powerstream	This project entails upgrade of Bus, Line and Transformer Protection relays at Richmond Hill TS#2 (Lazenby TS#2) with new relays having fault recording capabilities. This project will also address the communications protocol at this station whihch is obsolete and is incompatible with that of the rest of the system.
150673	Base	Road Authority Central (Mississauga)	3.7	35,001	System Access	Road Authority	Enersource	Mandatory - System Access Related Project
150134	Base	Cable Injection Project - (V37) - Langstaff and Weston, Vaughan	1.5	34,877	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 20 failures.
150405	Base	25M9 Jim Yarrow TS Extensions	0.3	33,741	System Service	Capacity (Lines)	Brampton	Jim Yarrow TS extension with new underground line extending 25M9 from Winston Churchill Blvd utility corridor to Steeles Ave in order to back up 25M8 & 25M10 to accomodate future load growth in Churchill Business Community Park and residential developments between Steeles Ave & Embleton Rd
150645	Base	Road Authority Central (Brampton)	4.4	31,814	System Access	Road Authority	Brampton	Mandatory - System Access Related Project
150828	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-West	0.9	31,592	System Renewal	Overhead Asset Renewal	Horizon	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151452	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-West	0.9	31,590	System Renewal	Underground Asset Renewal	Horizon	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
101762	Base	Road Authority Expenditure PS South	4.0	31,544	System Access	Road Authority	Powerstream	Mandatory - System Access Related Project
101355	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-East	0.9	31,425	System Renewal	Overhead Asset Renewal	Powerstream	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151450	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-East	0.9	31,425	System Renewal	Underground Asset Renewal	Powerstream	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
150072	M-Factor	Markham TS#3 Bus Differential & Overcurrent Protections Upgrades	0.2	27,028	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the Markham TS#3 Bus Differential & Overcurrent Protections Upgrades with new relays having fault recording capabilities.
100867	Base	Pole Renewal - East	4.4	25,595	System Renewal	Overhead Asset Renewal	Powerstream	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
151074	Base	Reactive renewal	3.2	25,136	System Renewal	Reactive Capital	Horizon	Replacement of assets which have failured and requires replacement in order to restore power to customers
150571	Base	Cable Injection Project - (J3-K3-N2-O2), Brampton	2.3	24,484	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 32 outages due to cable failures from 2007 to 2018 with average duration of 104 minutes.
150375	Base	New Build - 136M10 Goreway TS Extensions, Brampton	1.6	22,413	System Service	Capacity (Lines)	Brampton	The 136M10 feeder egress project will install a new feeder from the Goreway TS to provide relief to the 136M44 circuit which is over the planning limit
100015	Base	Transformer Temperature Monitoring - Aurora MS, King & Concord	0.1	22,040	System Service	System Control, Comm'ns & Performance	Powerstream	This project consist of transformer temperature monitoring and telemetry at Aurora MS - King and Concord which will improve system reliability and enables controlled emergency loading beyond the nameplate rating.

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151043	Base	Transformer Renewal - Central South	1.9	21,870	System Renewal	Transformer Renewal	Enersource	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
102545	Base	Install a New 27.6kV Pole Line on 19th Ave from Leslie St to Woodbine Ave	1.4	21,590	System Service	Capacity (Lines)	Powerstream	This is to remediate radial supply on Leslie St north of Elgin Mills Rd (supplying Leslie North development in Richmond Hill) and radial supply on Woodbine Ave north of Elgin Mills Rd (supplying future urban area in Markham).
150688	Base	Station Sustainment & Protection & Control CASCADE Expansion	0.1	20,717	General Plant	Information Technology	Multiple	Expand the use of the CASCADE system to be used by the Protection and Control asset in addition to the Station assets
101593	Base	Station Ground Grid Refurbishments	0.1	20,602	System Service	Safety & Security	Powerstream	This project consists of refurbishment of station ground grid in East. The project would be to design and implement ground grid improvements to meet step and touch potential requirements.
150664	Base	Residential Meters - by Lines - Brampton RZ	0.7	18,167	System Access	Metering	Brampton	Multi-year project to purchase, install and renew residential metering equipment. Work carried out by Lines.
151109	Base	Switch Replacement	0.2	18,145	System Renewal	Overhead Asset Renewal	Guelph	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacment units
150458	Base	MAS upgrade - IT Infrastructure	0.1	17,426	General Plant	Information Technology	Multiple	Metering Automation System for smart grid Upgrade to be implemented in a phased approach over the next 4 years as smart grid continues to evolve work in conjunction with the metering team to analyze and implement leverage new technologies to provide better more accurate meter readings be responsive to the issues first not reactive when a customer calls
151104	Base	Distribution Automation - Central North	0.4	17,389	System Service	SCADA and Automation	Brampton	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
102352	Base	Vaughan TS#4 Feeder Integration - Part 2	4.0	16,373	System Service	Capacity (Lines)	Powerstream	This project is the second part of VTS4 feeder integration plan. The purposes is to integrate two new 27.6kV feeders (25M9 to 25M10) from VTS4 into Alectra's distribution system to increase distribution capacity by 40 MVA, off load existing feeders and stations with the new feeders and increase supply capacity to Vaughan West.
151318	Base	Cable Injection Project - (I3) -Bovaird - Dixie - Queen - Hwy 410, Brampton	0.5	16,119	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 6 outages due to cable failures from 2014 to 2015 with average duration of 71 minutes.
151046	Base	Addiscott Court Security Fence Improvement	0.3	16,097	General Plant	Facilities Management	Powerstream	To improve the fencing to secure the capital inventory within the operational yard in Markham
150639	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-CENTRAL	0.0	15,736	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of DC charging system for Central South Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
150638	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-East	0.0	15,736	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of DC charging system for Central North Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
150636	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-North & TS	0.0	15,736	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of installation of DC charging system for East Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150640	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-WEST	0.0	15,736	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of installation of DC charging system for West Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
150749	M-Factor	New WiMAX Communication Network - Central South	0.4	15,089	System Service	System Control, Comm'ns & Performance	Enersource	This project is required to implement the WiMax Network for Central South for secure data transfer of monitoring sensors.
150285	Base	Transformer Renewal - Central North	0.6	14,492	System Renewal	Transformer Renewal	Brampton	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
150025	Base	Cable Injection Project - (V18) - Major Mackenzie and Keele, Vaughan	1.1	14,485	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2017 customers in this area experienced 2 failures.
150559	Base	Rathburn Rd Duct Extension (LRT Betterment)	0.4	14,448	System Service	Capacity (Lines)	Enersource	A duct installation to connect existing ducts west and east on Rathburn Rd. A 5 year moratorium is proposed due to streetscaping and this project should be completed with other work.
101027	Base	Switch Renewal - East	0.6	14,309	System Renewal	Overhead Asset Renewal	Powerstream	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacment units
150505	Base	Purchase and Install 11 Self Recharging Transformer Air Breathers - TS and MS - Multi-year initiative - EAST	0.0	14,277	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of transformer air breather at TS and MS stations in West. Moisture in transformer oil is a major cause of acceleration of transformer ageing and internal failure of transformers. By elimination of moisture ingress through the transformer breather, and having the breather perform this task automatically without human intervention ensures that the transformer oil moisture is minimal.
102062	Base	Purchase & Installation of 10 Self Recharging Transformer Air Breathers on TS transformers-Multi-year initiative-North & TS	0.1	14,211	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of installation of transformer air breather at TS and MS stations in East. Moisture in transformer oil is a major cause of acceleration of transformer ageing and internal failure of transformers. By elimination of moisture ingress through the transformer breather, and having the breather perform this task automatically without human intervention ensures that the transformer oil moisture is minimal.
150506	Base	Purchase and Installation of 15 Self Recharging Transformer Air Breathers on MS Transformers - Multi-year initiative-CENTRAL	0.1	14,155	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of transformer air breather at TS and MS stations in Central South. Moisture in transformer oil is a major cause of acceleration of transformer ageing and internal failure of transformers. By elimination of moisture ingress through the transformer breather, and having the breather perform this task automatically without human intervention ensures that the transformer oil moisture is minimal.
150504	Base	Purchase and Installation of 10 Self Recharging Transformer Air Breathers on TS and MS Transformers - Multi-year initiative-WEST	0.1	14,105	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of installation of transformer air breather at TS and MS stations in East .Moisture in transformer oil is a major cause of acceleration of transformer ageing and internal failure of transformers. By elimination of moisture ingress through the transformer breather, and having the breather perform this task automatically without human intervention ensures that the transformer oil moisture is minimal.
151066	Base	Cable Replacement Project - Hamilton Mountain URD	3.8	14,040	System Renewal	Underground Asset Renewal	Horizon	Recent underground cable failures in this area are unknown at this time. The average cable installation year is 1971 in this project scope. The cables are 23 years over the TUL.
102098	Base	Client - IT Infrastructure	1.1	13,761	General Plant	Information Technology	Multiple	To upgrade desktop/laptop/mobile devices that are 5 years or older (Approximately 20% of our equipment). Net new equipment for mobile computing as well as upgrades and replacements for damaged devices. Request made by various business units. This budget also includes RSA tokens\Licenses, monitors, mice, keyboards, docking stations, tablets and small non-MFP printers. Out of Scope: Large MFP Printers
150014	Base	Cable Injection Project - (V01) - Yonge - Steeles - Bathurst - Center, Vaughan	0.8	13,574	System Renewal	Underground Asset Renewal	Powerstream	From 2014-2016 customers in this area experienced 13 failures.

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151247	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-Guelph	0.6	13,414	System Renewal	Overhead Asset Renewal	Guelph	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
102232	Base	Capital Funds for Emergency P&C Purchases - East	0.0	13,271	System Renewal	Substation Renewal	Powerstream	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the East Operating Area (former PowerStream). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.
150683	Base	Capital Funds for Emergency P&C Purchases - Central North	0.0	13,185	System Renewal	Substation Renewal	Brampton	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the Central North Operating Area (Brampton). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.
150685	Base	Capital Funds for Emergency P&C Purchases - West	0.0	13,185	System Renewal	Substation Renewal	Horizon	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the West Operating Area (former Horizon). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.
150684	Base	Capital Funds for Emergency P&C Purchases - Central South	0.0	13,185	System Renewal	Substation Renewal	Enersource	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the Central South Operating Area (former Mississauga). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.
150784	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-Central North	0.7	12,968	System Renewal	Overhead Asset Renewal	Brampton	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151453	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-Guelph	0.6	12,922	System Renewal	Underground Asset Renewal	Guelph	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
150823	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-Central South	0.7	12,655	System Renewal	Overhead Asset Renewal	Enersource	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
102099	Base	Printer & Copier Fleet Replacement	0.0	12,636	General Plant	Information Technology	Multiple	Replacement of existing fleet of printers/copiers that are 5 or more years old. This will include non-MFP printers. Replacement to be determined by an evaluation of evolving needs and corporate requirements as well as age of equipment.
151449	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-Central North	0.8	12,176	System Renewal	Underground Asset Renewal	Brampton	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
103211	Base	Misc Software Upgrades (FormScape, AutoCAD, etc.) - IT/OT Infrastructure	0.1	12,021	General Plant	Information Technology	Multiple	Upgrade/ acquire software as required / requested by business.

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151451	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-Central South	0.8	11,936	System Renewal	Underground Asset Renewal	Enersource	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
150007	Base	Extend 153M10 to Transfer MS322	1.7	11,505	System Service	Capacity (Lines)	Powerstream	This project consists of extenstion of 153M10 to transfer MS322. Back-up capability lines project extending the 153M10 circuit along Holland Street from Bridge Street , south along Morris Road, west along Centre Street to Thomas Street, north on Drury Street, west along Holland Street to Miller Park Avenue (approximately 2 km's)
150579	Base	New build - Extend Bunting M81 Feeder, St.Catharines	1.5	11,461	System Service	Capacity (Lines)	Horizon	This project is to extend M81 feeder to supply new development and meet contigency condition in St. Catharines. This project will deal with ongoing capacity constraints in the North end of St.Catharines by bringing available supply from Bunting and Carlton TS's
103180	Base	Citrix Xen Virtualization Expansion - IT Infrastructure	0.1	11,299	General Plant	Information Technology	Multiple	Client computing virtualization (Citrix) is currently the standard delivery method for applications and desktops at Alectra. This system has had a tremendous uptake in the organization and requires an upgrade in back-end infrastructure to support the additional demand from the business.
150693	M-Factor	Blockchain	0.3	11,192	System Service	Distributed Energy Resources (DER)	Multiple	The project will prepare Alectra Utilities to engage with customers in a real-time and transparent process to record the flow of electricity to and from DERs, enabling the efficient procurement of distribution benefits, such as demand response and frequency regulation. The project will provide a robust settlement mechanism between Alectra and customers, backed by timely and efficient financial transactions, to enable overall trust and customer value delivery and leading to increased customer satisfaction.
151302	Base	Cable Injection Project - (HAM) - Rymal - Mud - Upper Centennial - Upper Red Hill Valley	0.6	11,132	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 8 failures, or 14 failures per 100km. This area includes the 331X & 341X feeders which were identified as a Worst Performing Feeder in 2018. The average cable installation year is 1989 in this project scope.
150342	M-Factor	HaLRT_New Stirton Feeder for TPSS#4 and 8852X load shedding, Hamilton	4.8	10,907	System Service	Capacity (Lines)	Horizon	The 8852X is the only 13.8kV feeder in the vicinity of the HaLRT TPSS#4 location and is at its utilization limit. To accommodate the new TPSS a new feeder from Stirton is to be built, and part of the 8852X load will also be transferred to this new feeder
150665	Base	Emerging Customer Initiated Work (West)	1.5	10,905	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
101562	Base	Arc Flash Mitigation Projects	0.0	10,619	System Service	Safety & Security	Powerstream	This project is to mitigate arc flash risk at East stations.
150653	Base	Road Authority West (St. Catharines)	0.8	10,217	System Access	Road Authority	Horizon	Mandatory - System Access Related Project
150615	Base	Metering Tools & Equipment - Central North	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Brampton	Replacement of Capital tools required to perform work
150616	Base	Metering Tools & Equipment - Central South	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
150613	Base	Metering Tools & Equipment - East	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
150614	Base	Metering Tools & Equipment - West	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of Capital tools required to perform work
151439	Base	2020 GUELPH - Remotely Controlled Switches	0.4	9,307	System Service	SCADA and Automation	Guelph	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
150261	Base	Cable Injection Project - (V38) - Rutherford and Weston, Vaughan	1.4	9,110	System Renewal	Underground Asset Renewal	Powerstream	From 2015-2018 customers in this area experienced 5 failures.
151063	Base	Pole Renewal - Central South	3.7	9,065	System Renewal	Overhead Asset Renewal	Enersource	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
100886	Base	Distribution Automation - East	1.2	9,041	System Service	SCADA and Automation	Powerstream	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
150808	Base	Implementation of Doble - Enoserv PowerBase and Enoserv RTS applications for Protection and Control Department	0.0	8,798	General Plant	Information Technology	Multiple	PowerBase is the premier application to manage and report on protection assets maintenance and engineering records. It manages workflow and connect with maintenance management systems such as Cascade. RTS is a vendor neutral software which allows connection to a variety of test sets. It offers an extensive relay test plan library.
151300	Base	Cable Injection Project - (HAM) - Millen - Barton - Fruitland	0.9	8,690	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 16 failures, or 44 failures per 100km. The average cable installation year is 1987 in this project scope.
150097	M-Factor	Line Protections and HMI Upgrade - KDU-10 Replacement - Markham TS#2	0.5	8,506	System Renewal	Substation Renewal	Powerstream	KDU-10 protection relay malfunction can cause an outage on the 230 kV supply of the station, resulting in a major power interruption. Replacement of this obsolete equipment is expected to provide improved reliability and will provide fault and event record information which will enable accurate diagnosis of system events and outage duration reductions.
101804	Base	Purchase of Major Tools	0.3	8,158	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
150773	M-Factor	New WiMAX Communications System - Central North	0.3	8,000	System Service	System Control, Comm'ns & Performance	Brampton	This project is to provide WiMax for Central North for secure data transfer of monitoring devices.
150509	Base	Installation of Transformer Bushing Monitoring Yarrow TS and MS txmrs-Multi Year -EAST	0.1	7,885	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of Transformer bushing monitoring system in Central North. Bushing monitoring unit provides real time condition monitoring of the transformer bushings.
150709	Base	Spare Station Transformer Bushing Conversion from PILC to XLPE - West	0.1	7,848	System Renewal	Substation Renewal	Horizon	This project involves converting the spare station transformer primary and secondary bushings/compartments from PILC to XLPE in the West Operating Area (former Horizon). The spare transformers are used when a failure occurs on a station transformer. The PILC cable will be replaced with XLPE at the station in order to improve station reliability and worker and equipment safety. The conversion of bushings is critical as primary bushing compartments have ruptured on multiple occasions in 2017 in the West Operating Area - causing oil spills larger than 200 liters.
102038	Base	Installation of Transformer Bushing Monitoring on TS and MS txmrs-Multi Year	0.1	7,735	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of installation of Transformer bushing monitoring system in East. bushing monitoring unit provides real time condition monitoring of the transformer bushings.
150785	M-Factor	New WiMAX Communications System - West	0.5	7,655	System Service	System Control, Comm'ns & Performance	Horizon	This project is to provide WiMax for West for secure data transfer of monitoring device.
150282	Base	Switchgear Renewal - Central North	0.5	7,521	System Renewal	Underground Asset Renewal	Brampton	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
150508	Base	Installation of Transformer Bushing Monitoring on MS txmrs-Multi Year -CENTRAL	0.2	7,509	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of Transformer bushing monitoring system in Central South. bushing monitoring unit provides real time condition monitoring of the transformer bushings.
151062	Base	Cable Replacement - (279) - 201 Silvercreek Pky N Subdivision, Guelph	0.7	7,505	System Renewal	Underground Asset Renewal	Guelph	
151121	Base	Cable Injection Project - (V43) - Hwy 7 and Pine Valley Dr, Vaughan	1.0	7,357	System Renewal	Underground Asset Renewal	Powerstream	From 2015-2016 customers in this area experienced 3 failures.
150284	Base	Pole Renewal - Central North	0.9	7,305	System Renewal	Overhead Asset Renewal	Brampton	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
150484	Base	25M8 27.6kV Feeder Extension Heritage Rd, South of Embleton Rd	0.4	7,282	System Service	Capacity (Lines)	Brampton	This project consists of 25M8 feeder extension to Hertitage road to supply new developments
102017	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear initiative-North & TS	0.3	7,275	System Service	Safety & Security	Powerstream	This project consists of Sorbweb Oil containment system in East. Protects the environment in the event of a transformer tank rupture

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150026	Base	Cable Injection Project - (M43) - John and Woodbine, Markham	1.0	6,955	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 38 years old and will be 39 when project starts (2020).
150343	M-Factor	Bathurst Street Widening	3.4	6,905	System Access	Road Authority	Powerstream	2020 portion of scope of the Bathurst Street road widening as per requirements of PSWHA.
150021	Base	Cable Injection Project - (V36) - Steeles and Pine Valley, Vaughan	0.6	6,822	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2017 customers in this area experienced 9 failures.
150714	Base	MS Transformer Tank and Radiator Reconditioning- Multi-year initiative - Central	0.1	6,819	System Renewal	Substation Renewal	Enersource	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the Central South Operating Area (former Enersource). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150713	Base	MS Transformer Tank and Radiator Reconditioning- Multi-year initiative - East	0.1	6,819	System Renewal	Substation Renewal	Brampton	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the Central North Operating Area (Brampton). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150715	Base	MS Transformer Tank and Radiator Reconditioning- Multi-year initiative - West	0.1	6,819	System Renewal	Substation Renewal	Horizon	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the West Operating Area (former Horizon). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150644	Base	Road Authority West (Hamilton)	1.4	6,689	System Access	Road Authority	Horizon	Mandatory - System Access Related Project
150507	Base	230kV TS Transformer Primary Bushing Monitoring Enablement-BPD Elimination - 4 TS Transformers-Multi-year initiative-TS	0.2	6,521	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to install primary bushing monitoring at TS in EAST
150352	Base	Voltage Conversion - Central MS, Hamilton	1.7	6,498	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 23 outages and had 1,060,300 customer minutes of interruption (75 mins per customer per year). The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail. Specifically Central MS is the only station remaining in service with oil breakers which are functionally obsolete with no spare parts readily available.
150357	Base	New build - 25M9 Extension to Derry Rd, Mississauga	0.5	6,401	System Service	Capacity (Lines)	Enersource	This project consists of 25M9 extension into Mississauga to provide additional 27.6KV capacity. It will offload Erindale TS in Mississauga and avoid building Mini-Britannia MS and also provides capacity back to Brampton using a link along Derry Rd.
151044	Base	Switch Renewal - Central South	0.3	6,319	System Renewal	Overhead Asset Renewal	Enersource	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacement units
150065	Base	Basement Flood Risk Mitigation - Richmond Hill TS#2	0.2	6,280	System Renewal	Substation Renewal	Powerstream	This project involves mitigating the flood risk at the Richmond Hill TS#2 where there is equipment installed in the basement by relocating or repositioning this equipment. This critical equipment includes DC system, AC and DC panels, feeder switches, UPS, ATS located in the basement of this station. Damage to this equipment due to flooding would cause extensive power interruptions to many customers.
103659	Base	Storm Hardening - Four-Circuit Poles	1.8	6,255	System Renewal	Overhead Asset Renewal	Powerstream	
150514	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear Initiative-WEST	0.3	6,213	System Service	Safety & Security	Horizon	This project consists of Sorbweb Oil containment system in West. Protects the environment in the event of a transformer tank rupture
151336	Base	Cable Replacement Project - (BA22) - Sunnidale and Anne, Barrie	1.0	6,208	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 2 failures in 2019.

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151086	Base	Insulator Replacements	0.1	5,949	System Renewal	Overhead Asset Renewal	Guelph	Replacement of non-polymer insulators (Areas are prioritized by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.
150066	Base	Basement Flood Risk Mitigation - Vaughan TS#2	0.1	5,867	System Renewal	Substation Renewal	Powerstream	This project involves mitigating the flood risk at the Vaughan TS#2 where there is equipment installed in the basement by relocating or repositioning this equipment. This critical equipment includes DC system, AC and DC panels, feeder switches, UPS, ATS located in the basement of this station. Damage to this equipment due to flooding would cause extensive power interruptions to many customers.
151176	Base	Cable Replacement Project - MS Argentia distribution feeder(s) upgrade	1.6	5,705	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 11 outages, the length is 1,587 m, and the average cable age is 30 years old.
150637	Base	Station Switchgear Replacement - MS10	2.6	5,499	System Renewal	Substation Renewal	Brampton	The existing switchgear at MS10 in Brampton is no longer suitable for service. The main project driver for replacement is the condition of the metal-clad switchgear housing the feeder breakers and bus-tie breakers. The manufacturer no longer supports this type of equipment and the design of the switchgear does not meet Alectra Utilities' current safety standards and presents a potential risk to its employees. An increasing failure risk will have a negative impact on Alectra Utilities' customers, and safety. Additionally, failure of the existing switchgear would warrant emergency replacement resulting in non-budgeted funding requirements and could result in lengthy customer interruptions.
150337	Base	Switch Renewal - West	0.4	5,476	System Renewal	Overhead Asset Renewal	Horizon	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacement units
151055	Base	Major Tools	0.1	5,432	General Plant	Tools, Shop and Garage Equipment	Guelph	Replacement of Capital tools required to perform work
150598	Base	Suite Metering - Renewals & Retrofits - PowerStream RZ	0.4	5,394	System Access	Metering	Powerstream	Multi-year project to purchase and install suite metering equipment in existing buildings upgraded from bulk metering.
150515	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear initiative-CENTRAL	0.3	5,352	System Service	Safety & Security	Enersource	This project consists of Sorbweb Oil containment system in Central South. Protects the environment in the event of a transformer tank rupture
150516	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear initiative-EAST	0.3	5,352	System Service	Safety & Security	Brampton	This project consists of Sorbweb Oil containment system in Central North. Protects the environment in the event of a transformer tank rupture
150744	Base	John Street underground parking renewal	0.3	5,343	General Plant	Facilities Management	Horizon	Repairs to the undergrown parking level that is in poor condition impacting builsing system below that support the building operations and craeting saftey risks. The building was built in 1950 and many of the building infrastructure is still original.
150336	Base	Transformer Renewal - West	0.6	5,294	System Renewal	Transformer Renewal	Horizon	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
150750	Base	Lines Central-North - Major Tools	0.1	5,234	General Plant	Tools, Shop and Garage Equipment	Brampton	Replacement of Capital tools required to perform work
150009	Base	Insulator Renewal - East	0.2	5,108	System Renewal	Overhead Asset Renewal	Powerstream	Replacement of non-polymer insulators (Areas are prioritized by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151203	Base	Capital Corrective Equipment Replacement - Stations South West	0.1	4,921	System Renewal	Substation Renewal	Guelph	This project is intended to provide capital for all unplanned station equipment replacements in the South West Operating Area (Guelph) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
102042	Base	Purchase and Installation of Animal Guards at Various Stations-Annual Multi-year initiative-North & TS	0.0	4,894	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of animal guard installation in East
150605	M-Factor	Residential "ICON F" Meter Replacement - PowerStream RZ	3.0	4,853	System Access	Metering	Powerstream	Multi-year project to replace Icon-F smart meters with secure encryption, last gasp and tamper detection capabilities.
151083	Base	Switchgear Renewal - West	0.4	4,684	System Renewal	Underground Asset Renewal	Horizon	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
151010	Base	Switch Renewal - Central North	0.6	4,604	System Renewal	Overhead Asset Renewal	Brampton	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacement units
150720	Base	Lines Central-South - Major Tools	0.2	4,591	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
151022	M-Factor	New Three Sector WiMAX Node - MS305	0.1	4,525	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to install three sector WiMax node at MS305. The node would provide last mile broadband connectivity to field devices such as intelligent overhead reclosers and padmounted switchgears, FIT monitoring data concentrators and Ethernet enabled revenue meters. The node would provide Transfer Trip capability to FIT generators.
150411	M-Factor	42M64 Feeder Extension Mississauga Rd, Williams Pkwy to Queen / Embleton	0.1	4,471	System Service	Capacity (Lines)	Brampton	42M64 Feeder Extension from Mississauga Rd from Queen St. to Embleton Rd to supply new developments on Embleton and provide relief to the existing feeder 25M8
151433	Base	Cable Injection- 008- AREA46 - Glen Erin & Aquitane, Mississauga	0.6	4,471	System Renewal	Underground Asset Renewal	Enersource	There are 6 outages, we are injecting a total of 19,827 m of cable for this project, and the average age of the cable is 33 years.
150677	Base	Station Switchgear Replacement - Aquitaine MS59 LV1	1.7	4,470	System Renewal	Substation Renewal	Enersource	The existing LV1 switchgear at Aquitaine MS59 station houses gas circuit breakers that utilize vintage technology to provide short circuit protection against faults. These circuit breakers are technically obsolete and are prone to failure. Also the switchgear is non-arc-resistant and poses a potential safety hazard to Alectra personnel and even to the general public who happen to be in the vicinity of the station during a failure event. Failure of the existing switchgear and breakers would warrant emergency replacement resulting in non-budgeted funding requirements and could result in lengthy customer interruptions. Therefore, proactive replacement of the existing switchgear and associated equipment is a prudent strategy as the restoration of the system could take 8-10 months due to long equipment lead times in the event of a failure.
151021	Base	Insulator Renewal - Central North	0.3	4,236	System Renewal	Overhead Asset Renewal	Brampton	Replacement of non-polymer insulators (Areas are prioritiezed by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.
150674	Base	Emerging Customer Initiated Work Central (Brampton)	0.1	4,184	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
101763	Base	Unforeseen Projects Initiated by the customer PS North	0.1	4,161	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150125	M-Factor	Aurora MS6 (AMS6) Transformer and Bus Protection Upgrade	0.1	4,156	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade transformer and bus protection at Aurora MS6 station from the current electromechnical KBCH relay.
150745	Base	John Street VAV Updating - Facilities	0.5	4,034	General Plant	Facilities Management	Horizon	Update main building ventilation systems that have surpass end of life and replacement apsrt ca no longer be obatined that support the main Alectra control room, customer services group and communications systesm.
150520	Base	Security Additions & Enhancements	0.2	4,024	General Plant	Information Technology	Multiple	As per Alectra Security roadmap to key IT systems.

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150541	Base	Business Support	0.2	4,022	General Plant	Information Technology	Multiple	The project will encompass a variety of sub projects for the purpose of investigating new and emerging technologies. Building a culture of innovation Alectra will need a continued effort in remaining ahead of the trends and implementing new and more efficient ways of doing business. The projects that are slated for this years budget are room Artificial Intelligence and Wearable Technology
150679	M-Factor	Alectra Drive for the Workplace	0.2	3,997	System Service	Capacity (Lines)	Multiple	Alectra Drive for the Workplace will demonstrate the value of integrating smart electric vehicle (EV) charging system at workplaces into the distribution grid such that mass uptake of electric vehicles can be managed in a safe and reliable manner. The planned investment will help manage the flow of electricity needed to serve the building and EV charging stations, so that electricity costs are minimized for commercial customers while EV drivers have an easy and accessible charging solution.
150320	M-Factor	Voltage Conversion - Dewitt MS , Hamilton	2.6	3,972	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 12 outages and had 888,434 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
150043	M-Factor	Rear Lot Renewal Project - East of Queen St. to Eastern Ave./North of Greenway St.	2.6	3,714	System Renewal	Rear Lot Conversion	Powerstream	This area has had an average of 1.7 outages lasting 9.7hrs per year based on a 3 year average.
102075	Base	Major repairs, refurbishment, or modifications to switches/switchgear	0.1	3,702	System Renewal	Underground Asset Renewal	Powerstream	Switchgear and Switches in stores that repair/refurbishment of the units can allow them to be returned to service
150535	Base	Network Segmentation - IT Infrastructure	0.3	3,636	General Plant	Information Technology	Multiple	As per Alectra Security roadmap to key IT systems with focus on network segmentation for corporate environments.
151200	M-Factor	Alectra Single Platform Website ongoing	0.1	3,548	General Plant	Information Technology	Multiple	Ongoing enhancements to the Alectra platform to improve functionality for customers
150498	Base	Capital Corrective Equipment Replacement - Stations Central South	0.3	3,535	System Renewal	Substation Renewal	Enersource	This project is intended to provide capital for all unplanned station equipment replacements in the Central South Operating Area (former Enersource) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
150499	Base	Capital Corrective Equipment Replacement - Stations Central North	0.3	3,535	System Renewal	Substation Renewal	Brampton	This project is intended to provide capital for all unplanned station equipment replacements in the Central North Operating Area (Brampton) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
150497	Base	Capital Corrective Equipment Replacement - Stations West	0.3	3,535	System Renewal	Substation Renewal	Horizon	This project is intended to provide capital for all unplanned station equipment replacements in the West Operating Area (former Horizon) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
151304	Base	Cable Injection Project - (HAM) - Stone Church - Garth - Lincoln M. Alexander	0.6	3,492	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 5 failures, or 18 failures per 100km. The average cable installation year is 1986 in this project scope.
150047	M-Factor	Rear Lot Renewal Project - Royal Orchard - North	1.8	3,478	System Renewal	Rear Lot Conversion	Powerstream	This area has had an average of 3 failures per year lasting 4 hours per year based on 3 year average.
150774	Base	Lines Central-North - Site Restorations	0.1	3,434	System Renewal	Overhead Asset Renewal	Brampton	

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150721	Base	Lines Central-South - Site Restorations	0.1	3,434	System Renewal	Underground Asset Renewal	Enersource	
150672	Base	Burden Allocation - System Service	0.1	3,353	System Service	Capacity (Lines)	Horizon	
150662	Base	Station Sustainment PI System Expansion for CASCADE CARE	0.1	3,302	General Plant	Information Technology	Multiple	Expanding the use of the PI System to enable more efficient interfaces with other enterprise systems such as OMS and SCADA; Cascade is used to drive maintenance and generate work orders for maintenance of grid equipment
150263	Base	Cable Replacement Project - East Left Behind Cable	1.3	3,237	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in these areas have experienced 11 failures.
150345	Base	Overhead Conductor Replacement - #6 Copper - Feeder WT10	0.4	3,210	System Service	Safety & Security	Horizon	This project consists of overhead conductor replacement to mitigate safety risk and provide additional capacity.
150601	Base	Advanced Metering Infrastructure (AMI) Security Audit - East	0.1	3,171	System Access	Metering	Powerstream	Multi-year project to renew meter data security to address emerging cyber threats.
151440	Base	2020 GUELPH - Transite Underground Duct Replacement	0.3	3,168	System Renewal	Underground Asset Renewal	Guelph	Replacement of Duct Structure which contains asbestoes a known carcinogen and impacts worker safety.
102065	Base	Capital Corrective Equipment Replacement - East	0.3	3,161	System Renewal	Substation Renewal	Powerstream	This project is intended to provide capital for all unplanned station equipment replacements in the East Operating Area (former PowerStream area) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
150611	Base	Transformer Tank and Radiator Reconditioning- Multi-year initiative - East	0.2	3,117	System Renewal	Substation Renewal	Powerstream	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the East Operating Area (former PowerStream). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150623	Base	Purchase and Installation of Animal Guarding-Annual Multi-year initiative-WEST	0.0	3,095	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of animal guard installation in West
150622	Base	Purchase and Installation of Animal Guarding-Annual Multi-year initiative-CENTRAL	0.0	3,093	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of Animal guard at Central South Stations
150621	Base	Purchase and Installation of Animal Guarding-Annual Multi-year initiative-EAST	0.0	3,082	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of Animal guard at East Stations
150348	Base	Overhead Conductor Replacement - #6 Copper - Feeder OT2	0.4	3,018	System Service	Safety & Security	Horizon	This project consists of overhead conductor replacement to mitigate safety risk and provide additional capacity
150089	M-Factor	Markham TS#3 T1/T2 "B" Differential Protections Upgrade	0.1	2,935	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to replace the T1/T2 GEC solid state Transformer "B" Differential Protection relays at Markham TS#3 with new relays having fault recording capabilities
150699	Base	Station Switchgear Replacement - Shawson MS43 LV1	1.1	2,878	System Renewal	Substation Renewal	Enersource	The existing LV1 switchgear at Shawson MS43 station houses gas circuit breakers that utilize vintage technology to provide short circuit protection against faults. These circuit breakers are technically obsolete and are prone to failure. Also the switchgear is non-arc-resistant and poses a potential safety hazard to Alectra personnel and even to the general public who happen to be in the vicinity of the station during a failure event. Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted funding requirements and could result in lengthy customer interruptions. Therefore, proactive replacement of the existing switchgear and associated equipment is a prudent strategy as the restoration of the system could take 8-10 months due to long equipment lead times in the event of a failure.

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101625	Base	Cyber Security Audit & Upgrades	0.1	2,865	General Plant	Information Technology	Multiple	This project would fund various activities and countermeasures to improve the cyber security posture of the Operations' Network. This will be a mandate for compliance to Ontario Cyber Security framework. The counter measures include: - an annual audit of the cyber security countermeasures in place; - implementation of new technologies to seal identified compromises; - replacement of deployed cyber security equipment deemed end of life or not able to deliver an expected level of service.
150783	Base	Fleet_Central South Vehicle Replacement-Pick ups	0.5	2,848	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150671	Base	Burden Allocation - System Renewal	1.7	2,831	System Renewal	Other System Renewal	Horizon	
151107	Base	Cable Replacement Project - 7143 Main Feeder	0.9	2,822	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 4 outages, the length is 1,325 m, and the average cable age is 39 years old.
150632	Base	AMI Gatekeeper Expansion - Brampton RZ	0.0	2,820	System Access	Metering	Brampton	Multi-year project to expand and upgrade AMI field communication equipment to service new connections.
150141	Base	Cable Replacement Project – (M49) - Steeles and Fairway Heights, Markham	2.9	2,807	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 37 years old and will be 38 when project starts (2020).
150572	Base	Cable Replacement Project - (J4) - Queen - Clark - Bramalea - Kensington - Knightsbridge, Brampton	1.1	2,794	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 9 outages due to cable failures from 2007 to 2017 with average duration of 127 minutes.
151144	Base	Cable Replacement Project and Transformers Replacement - Rathburn Rd. W, Mississauga	1.2	2,658	System Renewal	Underground Asset Renewal	Enersource	Tis project is split into 3 phases. 2 phases are being completed in 2019, the duct structure for third phase is expected to be completed in 2019 and the final phase is will be done in 2020.
150666	M-Factor	Facilities_John_Roof Deck – Rooftop Renovation	0.4	2,610	General Plant	Facilities Management	Horizon	Removal of cooling tower, chillers and lines that contain R-22 refrigerant (hazardous substance), replace emergency fire exit pathway on the roof from the Hughson St to the John St buildings to ensure employee safety and meet with City Bylaws. Repair roof as a result of the equipment removals.
150332	M-Factor	Non-Wires Alternative Pilot	0.8	2,537	System Service	Capacity (Stations)	Powerstream	The project will provide customers with increased flexibility to make decisions about their electricity consumption, generation, and costs; it leads to more efficient integration of DERs which yields greater benefits to customer, system reliability, and power quality. This project will also provide the opportunity to increase operational efficiency and improved asset management to enhance service to customer and defer and/or reduce infrastructure investment needs in York Region.
151042	Base	Markham TS1 Firewall Upgrade	0.2	2,531	System Service	System Control, Comm'ns & Performance	Powerstream	Markham TS1 Firewall Upgrade
150681	Base	Data Analytics - IT/OT Infrastructure	0.3	2,528	General Plant	Information Technology	Multiple	This project will develop a data analytics platform to provide enhanced customer value by implementing preventative measures to improve overall outage detection and prediction with use-cases focusing on Distributed Energy Resource (DER) monitoring, integration and optimization.
150580	Base	West Region Tools and Test Equipment	0.2	2,494	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of Capital tools required to perform work
150627	Base	Station Equipment Temperature Monitoring-EAST	0.1	2,479	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of Station Temperature Monitoring system in Central North and it enables controlled emergency loading beyond the nameplate rating.
150629	Base	Station Equipment Temperature Monitoring-WEST	0.1	2,479	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of Station Temperature Monitoring system in West and it enables controlled emergency loading beyond the nameplate rating.
151202	Base	Purchase of Major Station Tools - Multi-year	0.0	2,473	General Plant	Tools, Shop and Garage Equipment	Guelph	Replacement of Capital tools required to perform work
150625	Base	Purchase of Major Tools - Muliti Year-CENTRAL	0.0	2,395	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
150624	Base	Purchase of Major Tools - Muliti Year-EAST	0.0	2,395	General Plant	Tools, Shop and Garage Equipment	Brampton	Replacement of Capital tools required to perform work

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150626	Base	Purchase of Major Tools - Muliti Year-WEST	0.0	2,395	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of Capital tools required to perform work
150707	Base	Alectra Station Access Harmonization - Abloy CLIQ system expansion-CENTRAL	0.0	2,376	System Service	Safety & Security	Enersource	This project consists of upgrade to station access in Central South. Provides added security and risk mitigation for keys that are lost or stolen and provides a system that tracks key and lock cylinder usage as well provides the ability to activate and deactivate keys from an application
150705	Base	Alectra Station Access Harmonization - Abloy CLIQ system expansion-EAST	0.0	2,371	System Service	Safety & Security	Brampton	This project consists of upgrade to station access in Central North. Provides added security and risk mitigation for keys that are lost or stolen and provides a system that tracks key and lock cylinder usage as well provides the ability to activate and deactivate keys from an application
101761	Base	Unforeseen Projects Initiated by the customer PS South	0.4	2,365	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
151061	Base	Markham TS2 Firewall Upgrade	0.0	2,335	System Service	System Control, Comm'ns & Performance	Powerstream	Markham TS2 Firewall Upgrade
151098	Base	Station Switchgear Replacement - Battleford MS54 LV1	1.3	2,297	System Renewal	Substation Renewal	Enersource	The existing LV1 switchgear at Battleford MS54 station houses gas circuit breakers that utilize vintage technology to provide short circuit protection against faults. These circuit breakers are technically obsolete and are prone to failure. Also the switchgear is non-arc-resistant and poses a potential safety hazard to Alectra personnel and even to the general public who happen to be in the vicinity of the station during a failure event. Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted funding requirements and could result in lengthy customer interruptions. Therefore, proactive replacement of the existing switchgear and associated equipment is a prudent strategy as the restoration of the system could take 8-10 months due to long equipment lead times in the event of a failure.
151244	Base	Fault Indicators	0.0	2,243	System Service	System Control, Comm'ns & Performance	Guelph	The scope of this project is to install Fault Indicators in Guelph. The project would include the fault indicators communicating to the existing SCADA and will improve the fault locating and improve SAIDI
150708	Base	Alectra Station Access Harmonization - Abloy CLIQ system expansion-North&TS	0.1	2,235	System Service	Safety & Security	Powerstream	This project consists of upgrade to station access in East. Provides added security and risk mitigation for keys that are lost or stolen and provides a system that tracks key and lock cylinder usage as well provides the ability to activate and deactivate keys from an application
150542	Base	Meeting Room Transformation - IT/OT Infrastructure	0.3	2,223	General Plant	Information Technology	Multiple	The meeting room transformation project aim to leverage and deliver automation technology for better use of the meeting space; centralized control; consistent experiences across the enterprise; and standard design of the physical space. Efficiencies will be met when meeting rooms can start on time due to the ease of use and collaboration efforts will reduce travel and health and safety concerns. With Alectra being so geographically diverse, it imperative to keep the employees off the road as much as possible to reduce the risk of injury.
151181	Base	Cable Replacement Project - Left Behind Cable, Brampton	0.4	2,163	System Renewal	Underground Asset Renewal	Brampton	This project is to address cables which were part of a cable injection project but were ultimately not injectable at the time of project execution. These 'left behind' segments must be addressed, if they are left in the system they could cause a failure. Customers would not only experience an outage, but question the utilities work practices as we would have addressed only a portion of the cables instead of all the cables which could cause an outage.
151192	Base	Asset Register	0.5	2,082	General Plant	Information Technology	Multiple	Develop an enterprise asset register application to support Asset Management requirements to manage and track movement of assets, asset demographics, equipment failures, and support asset condition assessments and business case modelling.
150661	Base	SS2019-Purchase and Installation of Online Transformer tap Changer Filtration Systems - CENTRAL	0.0	2,056	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of transformer tap changer filtration system in Central South
150663	Base	Technology Changes in Control Room	0.3	2,052	General Plant	Facilities Management	Multiple	Replace aging equipment within the Control room to ensure optimal performance in managing the distribution assets

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
102728	Base	Station Switchgear Replacement - Big Bay Point MS304	0.2	2,051	System Renewal	Substation Renewal	Powerstream	This substation project consists of replacing the existing switchgear and associated equipment, as well as the primary circuit switcher at Big Bay Point MS304. The current line-up is technically obsolete, in poor condition, and is prone to failure. A failure could affect a large number of customers and potentially result in complete loss of supply from the station, requiring load transfer to another station. Proactive replacement of the existing equipment is a prudent strategy as system reliability would be greatly affected in the event of a failure. Additionally, the restoration of the system to normal conditions could take 8-10 months due to long equipment lead times.
150675	Base	Emerging Customer Inititated Work Central (Mississauga)	0.2	2,049	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
101764	Base	Road Authority Expenditure PS North	1.0	2,038	System Access	Road Authority	Powerstream	Mandatory - System Access Related Project
150604	Base	Smart Meter Network Expansion - PowerStream RZ	0.3	2,036	System Access	Metering	Powerstream	Multi-year project to expand and upgrade AMI field communication equipment to service new connections.
151092	Base	Distribution Automation - Central South	0.5	2,014	System Service	SCADA and Automation	Enersource	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151030	Base	Addition of Sensors to SCADA Controllable 44kV LISs in Brampton	0.3	2,013	System Service	System Control, Comm'ns & Performance	Brampton	This project is to add sensors to the 44KV switches in Central North
151068	Base	Return to Service of Smart Fault Indicators - East	0.2	1,998	System Renewal	Substation Renewal	Powerstream	This project involves making necessary modifications to 50 previously installed SMART Fault Indicators in the East Operating Area (former PowerStream) so as to return them to service. These devices will greatly improve monitoring capability and facilitate prompt decision making during emergency situations, thus reducing outage durations.
150694	M-Factor	Cityview microgrid enhancements	0.0	1,985	System Service	Capacity (Lines)	Powerstream	The project is to understand how microgrids can be integrated into the distribution grid in a safe and reliable manner. The microgrid is used to evaluate integration and connection to the distribution grid, while reducing the building's load, greenhouse gas emissions, and increasing its resiliency to grid outages.
100268	Base	Low Voltage Transformer Bushing Replacement - Markham TS#3 - T1/T2	0.3	1,883	System Renewal	Substation Renewal	Powerstream	This project involves replacing end-of-life low-voltage bushings on Markham TS#3 power transformers. Bushing failure would result in environmental risk due to spilled oil and in transformer failure causing an extended power interruption.
101013	Base	Planned Circuit Breaker Replacement Markham TS#3 - E & Z Buses	0.5	1,832	System Renewal	Substation Renewal	Powerstream	The existing 27.6 kV circuit breakers at Markham TS#3 have been identified in the Asset Condition Assessment (ACA) Model as requiring replacement due to obsolescence and historical failures. Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted funding requirements and could result in lengthy customer interruptions.
151224	Base	Cable Replacement - (920) - Scottsdale Drive Subdivision, Guelph	0.6	1,808	System Renewal	Underground Asset Renewal	Guelph	
150801	Base	Fleet_West_Vehicle Replacement_Bucket Truck 1-286	0.4	1,804	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150670	Base	SCADA FDIR	0.1	1,799	System Service	SCADA and Automation	Multiple	Fault Detection, Isolation, and Restoration implementation, next generation of distribution automation technology. This utilizes devices which are already automated and integrates them into the OMS system such that devices perform self healing after a fault. in some cases reducing the outage time to less then 1 minute.

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150680	M-Factor	Alectra Drive at Home	0.5	1,731	System Service	Capacity (Lines)	Multiple	Alectra Drive at Home will demonstrate the value of integrating smart electric vehicle (EV) charging system in multi rise buildings as well as residential homes into the distribution grid such that mass uptake of electric vehicles can be managed in a safe and reliable manner. It will also provide insight into the characteristics of EV Charging, how EVs can be aggregated and controlled to provide the benefit at the local, regional and provincial system levels, and customer response to these control and optimization strategies.
151201	Base	Purchase of New Critical Spare Parts - Guelph	0.0	1,728	System Renewal	Substation Renewal	Guelph	This project involves procurement of critical spare parts for stations in the South West Operating Area (Guelph) so as to facilitate prompt repair of failed assets during emergency situations.
150108	Base	Low Voltage Transformer Bushing Replacement - Vaughan TS#3 - T1/T2	0.3	1,677	System Renewal	Substation Renewal	Powerstream	This project involves replacing end-of-life low-voltage bushings on Vaughan TS#3 power transformers. Bushing failure would result in environmental risk due to spilled oil and in transformer failure causing an extended power interruption.
150619	Base	Purchase of Critical Spare Parts - West	0.0	1,649	System Renewal	Substation Renewal	Horizon	This project involves procurement of critical spare parts for stations in the West Operating Area (former Horizon) so as to facilitate prompt repair of failed assets during emergency situations.
151136	Base	C55 Alectra: Optimization of Business Practices	0.5	1,625	General Plant	Information Technology	Multiple	Optimizing the current software to communicate with other systems such as the ERP will allow for more efficient and effective budgeting processes and consolidation of information allowing for consistent reporting of the information from one system.
151137	Base	Cable Replacement Project - Main Fedeer(s) upgrade - 68F2, 68F4, 68F7, 83F5, 83F3	0.8	1,614	System Renewal	Underground Asset Renewal	Enersource	Only 2 outages on all of the feeders combined. If we can replace it with feeders with 4-5 failures, we can show better reliability analysis. The combined length of these feeders is 3,885 m.
151436	Base	Cable Injection-011 - Area 58 & 59- Winston Churchill & The Collegeway, Mississauga	1.7	1,614	System Renewal	Underground Asset Renewal	Enersource	There are 14 outages, we are injecting a total of 69,795 m of cable for this project, and the average age of the cable is 30 years.
150333	Base	Overhead Conductor Replacement - #6 Copper - Feeder OT8	0.7	1,611	System Service	Safety & Security	Horizon	This project consists of overhead conductor replacement to mitigate safety risk and provide additional capacity.
150902	Base	Unit # 396 Backhoe replacement	0.2	1,592	General Plant	Fleet Renewal	Powerstream	
150642	Base	Proactive Replacement of Remote Terminal Units - Central North	0.2	1,582	System Renewal	Substation Renewal	Brampton	This project involves replacement of end-of-life remote terminal units and communications equipment at stations in the Central-North Operating Area (Brampton). Replacement equipment can be leveraged to allow for Smart Grid initiatives such as quicker fault detection and automatic isolation and restoration. If existing equipment were to fail, the ability to remotely monitor and control switching devices would be lost, thus risking longer interruptions.
150617	Base	Purchase of Critical Spare Parts - Central North	0.0	1,569	System Renewal	Substation Renewal	Brampton	This project involves procurement of critical spare parts for municipal stations in the Central North Operating Area (Brampton) so as to facilitate prompt repair of failed assets during emergency situations.
151087	Base	Switchgear Replacement	0.2	1,559	System Renewal	Underground Asset Renewal	Guelph	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
150618	Base	Purchase of Critical Spare Parts - Central South	0.0	1,557	System Renewal	Substation Renewal	Enersource	This project involves procurement of critical spare parts for stations in the Central South Operating Area (former Enersource) so as to facilitate prompt repair of failed assets during emergency situations.
102077	Base	Major repair, refurbishment, or conversions of distribution transformers	0.0	1,541	System Renewal	Transformer Renewal	Powerstream	Transformers returned or in stores where repair/refurbishment of the unit can return it to service at a lower cost then purchase of a new unit
151222	Base	Concrete Structures	0.2	1,469	System Renewal	Underground Asset Renewal	Guelph	Replacement of lids on civil structures to avoid public risk
150410	M-Factor	42M66 OH Feeder Egress Mississauga Rd, Bovaird to CNR	0.1	1,458	System Service	Capacity (Lines)	Brampton	42M66 OH Feeder extension from Mississauga Rd from Bovaird Dr. to CNR Tracks to feed new developments in the area of Bovaird drive and Mississauga road.
150858	Base	Fleet_West_Vehicle Replacement_SUVs	0.3	1,426	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150334	Base	Distribution Automation - West	0.7	1,424	System Service	SCADA and Automation	Horizon	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
150019	Base	Cable Injection Project - (M41) - Woodbine and Elgin Mills, Markham	0.1	1,414	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 40 years old and will be 41 when project starts (2020).
151052	Base	Emerging Customer Initiated Work - Relocations	0.1	1,412	System Access	Customer Connections	Guelph	Mandatory - System Access Related Project
151207	Base	On-line Dissolved Gas Monitoring	0.1	1,386	System Service	System Control, Comm'ns & Performance	Guelph	This project consists of installation of Online DGA monitoring system at MS in Guelph. Online DGA has proven to be invaluable in diagnosing a potential transformer failure as well as assessing the health of a transformer
150751	Base	Facilities_East_Capital Replacement Investment Support	0.1	1,374	General Plant	Facilities Management	Powerstream	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
150641	Base	Replace 230kV Primary Switches - Jim Yarrow TS	0.2	1,373	System Renewal	Substation Renewal	Brampton	The primary switches at Jim Yarrow TS are non-standard, have a history of problems, particularly with alignment issues, and have no spare parts on hand. Failure of one of these switches could result in loss of supply to a 125 MVA power transformer.
151134	Base	Cable Replacement Project - Winston Churchill consolidation - 49F6 and 49F4	0.3	1,358	System Renewal	Underground Asset Renewal	Enersource	This project is already with design. We are not doing this like-for-like. Miron has completed D10-111-001 for removal of the bad feeders.
150349	Base	Overhead Conductor Replacement - #6 Copper - Feeder WL1	0.7	1,347	System Service	Safety & Security	Horizon	This project consists of overhead conductor replacement to mitigate safety risk and provide additional capacity
150830	Base	Fleet_West_Vehicle Replacement_Dump Truck_1-330	0.1	1,345	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151296	Base	Cable Injection Project - (SCH) - Welland - Bunting - Carlton - Cushman	0.3	1,345	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 2 failures, or 48 failures per 100km. The average cable installation year is 1989 in this project scope.
150335	Base	Pole Renewal - West	2.2	1,338	System Renewal	Overhead Asset Renewal	Horizon	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
150362	M-Factor	Voltage Conversion - Dufferin St S, between MS431 and Albert St S, Alliston	0.4	1,328	System Renewal	Overhead Asset Renewal	Powerstream	Customers in this area experienced 11 outages and had 15,031,879 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
102102	Base	Enterprise File Synchronization and Sharing Platform	0.0	1,308	General Plant	Information Technology	Multiple	Alectra is looking for a secure Enterprise File Synchronization and Sharing solution that will increase productivity of internal and external teams by facilitating seamless collaboration of corporate data anywhere , anytime, and on any device without the restrictions of having to connect to the Alectra network. The overarching goal of this implementation will be to provide a balance between delivering business productivity and securing enterprise information.
150502	Base	On-Line Dissolved Gas Oil Monitoring of 10 MS Transformers - EAST	0.1	1,293	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of Online DGA monitoring system at MS in East. Online DGA has proven to be invaluable in diagnosing a potential transformer failure as well as assessing the health of a transformer
150738	Base	Facilities_West_Capital Replacement Investment Support	0.8	1,289	General Plant	Facilities Management	Horizon	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
150573	Base	Oracle ULA Extension	1.5	1,265	General Plant	Information Technology	Multiple	MULTI ANSWER

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150350	Base	Overhead Conductor Replacement - #6 Copper - Feeder WL4	0.8	1,261	System Service	Safety & Security	Horizon	This project consists of overhead conductor replacement to mitigate safety risk and provide additional capacity
151138	M-Factor	Voltage Conversion - MS-2 Church St, Brampton	3.0	1,255	System Renewal	Overhead Asset Renewal	Brampton	From 2015-2017 customers in this area experienced 11 outages and had 20,372 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
102241	Base	Proactive Replacement of Remote Terminal Units - East	0.1	1,240	System Renewal	Substation Renewal	Powerstream	This project involves replacement of end-of-life remote terminal units and communications equipment at stations in the East Operating Area (former PowerStream). Replacement equipment can be leveraged to allow for Smart Grid initiatives such as quicker fault detection and automatic isolation and restoration. If existing equipment were to fail, the ability to remotely monitor and control switching devices would be lost, thus risking longer interruptions.
151183	Base	OH Rebuild Project - Church Street	0.8	1,239	System Renewal	Overhead Asset Renewal	Enersource	This project involves the replacment of 55 poles, 35 which are in very poor and poor condition. Due to the significantly high population of poor poles this area is a candidate for multi-pole line faliure under high winds.
151146	Base	Cable Replacement and Transformers Replacement - Project - Folkway, Mississauga	4.0	1,229	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 34 outages, the length is 10,432 m
150814	Base	Fleet_West_Vehicle Replacement_Step Vans 1-279 & 1-281	0.4	1,179	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151064	Base	Secondary Pedestals -St. Catharines	0.2	1,154	System Service	Safety & Security	Horizon	This project involves the replacment of above grade steel secondary pedestals which pose a safety risk to the general public
150044	M-Factor	Rear Lot Renewal Project - Blake/Kempenfelt	0.3	1,144	System Renewal	Rear Lot Conversion	Powerstream	This area has had an average of 0.66 outages lasting 2.2hrs per year based on a 3 year average.
150254	M-Factor	Cable Replacement Project - (A02) - Steeplechase Ave, Aurora	2.9	1,133	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 outages to date. Cable is 45 years old and beyond EUL
101125	Base	Lines Mobile Equipment - IT/OT Infrastructure	0.1	1,119	General Plant	Information Technology	Multiple	This budget covers the deployment of mobile technology - laptops/field tablets and accessories - within the Lines Department to gain efficiencies in field operations. By deploying this technology, the Lines area can move away from a paper-based to a more electronic environment. In future, it is envisioned that, for example, mobile applications will facilitate the electonic transmission of work orders and electronic record keeping (asset tracking, tailboards, switching orders, timesheets). This will allow for streamlined operational processes and record-keeping, thereby supporting corporate technological initiatives such as the GIS, Outage Management System, and future Workforce Management system. At present, all Lines Management personnel and Subforemen have laptops, facilitating activities such as viewing of the GIS, electronic Asset Tracking Forms, and use of OMS Responder Mobile. Expenditures in this area will allow for more deployment of field devices among Lines crews and for the implementation of more computerized processes.
150500	Base	On-Line Dissolved Gas Oil Monitoring of 10 MS Transformers - WEST	0.1	1,117	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of installation of Transformer bushing monitoring system in West
150856	Base	Fleet_West_Vehicle Replacement_Dump/Cargo Truck	0.1	1,115	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150908	Base	Fleet East Unit # 103 Bucket truck replacement	0.3	1,107	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150139	Base	Cable Replacement Project – (B19) - Donald St and Simcoe Terrace, Barrie	0.6	1,102	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 44 years old and will be 45 when project starts (2020).
150570	Base	Alectra West Substation Ground Grid Installations	0.3	1,091	System Service	Safety & Security	Horizon	This project is to install ground grid at East Stations

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151204	Base	Upgrade to Station Facilities (Buildings/Civil work) Multi-year	0.0	1,089	General Plant	Facilities Management	Guelph	This project involves work involving structural components of stations, including windows, brickwork, roofs, foundations, drainage, doors, etc. at stations in the SouthWest Operational Area. Not keeping up with this work would result in advanced deterioration resulting in even greater maintenance costs, potential safety concerns and potential failure of the electrical equipment in the building causing power interruptions.
150879	Base	Fleet East Vehicle replacement - Pickup 2500	0.2	1,087	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150752	Base	Cityview back up generator replacement	0.4	1,072	General Plant	Facilities Management	Powerstream	
151041	Base	Protection Logic Upgrades - East MSs (North)	0.1	1,061	System Service	System Control, Comm'ns & Performance	Powerstream	
150578	Base	Alectra - Microsoft Software	0.1	1,021	General Plant	Information Technology	Multiple	Compliance for Alectra employees for Microsoft application suite of products to perform daily operation .
150776	Base	Fleet_Central South Equipment Replacement-forklift	0.0	1,006	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150257	M-Factor	Cable Replacement Project - (V15) - Jardin Dr, Vaughan	2.9	1,004	System Renewal	Underground Asset Renewal	Powerstream	From 2017-2019 YTD customers in this area experienced 5 outages.
150392	Base	Storage Upgrade	0.7	995	General Plant	Information Technology	Multiple	Upgrade on premise Enterprise Storage platform in addition to increased capacity requirements as a result of employee and customer demand for data retention. Off Premise storage costs (SharePoint Online, One Drive, Development, test and production environments)
150916	Base	Fleet East Vehicle replacement - Extended Vans	0.1	987	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151091	Base	Switchgear Renewal - Central South	3.6	982	System Renewal	Underground Asset Renewal	Enersource	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
150882	Base	Fleet East Vehicle replacement - Pickup 3500	0.2	973	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150890	Base	Fleet East Vehicle replacement - Work van	0.1	967	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151159	Base	Fault Indicator Installation and Replacement - Hamilton and St. Catharines	0.3	966	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of fault indicator installation in West
151294	Base	Cable Injection Project - (SCH) - Lakeshore - Stanley - Parnell - Chancery	0.1	954	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 2 failures, or 55 failures per 100km. The average cable installation year is 1985 in this project scope.
151065	Base	Manhole Lid Replacement	0.3	925	System Renewal	Underground Asset Renewal	Horizon	Replacement of lids on civil structures to avoid public risk
150911	Base	Fleet East Unit # 81 Single bucket truck replacement	0.5	923	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151280	Base	Cable Injection Project - (SCH) - Millward - Jeanette Drive - Trevor	0.0	909	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 2 failures, or 333 failures per 100km. The average cable installation year is 1992 in this project scope.
150819	Base	Fleet_West_Vehicle Replacement_Cargo Vans 1-347, 1-350, 1-368, 1-349, 1-110, 1-111, 1-114	0.4	890	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150892	Base	Fleet East Vehicle replacement - Van pool vans	0.1	875	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150317	M-Factor	Voltage Conversion - Deerhurst MS, Hamilton	3.0	869	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 6 outages and had 121,838 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
150923	Base	Fleet_Central North Vehicle Replacement-DBL.Bucket 49	0.6	855	General Plant	Fleet Renewal	Brampton	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150904	Base	Fleet East Yearly Light and Misc equipment	0.0	847	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150780	Base	Fleet_Central South Replacement-DBL>Bucket 234-05	0.6	845	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150907	Base	Fleet East Unit # 361 digger truck	0.6	840	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150834	Base	Fleet East Vehicle replacement - Unit # 500 SUV	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150835	Base	Fleet East Vehicle replacement -Unit # 507 SUV	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150836	Base	Fleet East Vehicle replacement -Unit # 515 SUV	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150837	Base	Fleet East Vehicle replacement -Unit # 522 SUV	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150838	Base	Fleet East Vehicle replacement -Unit # 534 SUV	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150867	Base	Fleet East Vehicle replacement -Unit # 535 SUV	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150840	Base	Fleet East Vehicle replacement -Unit # 536 SUV	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150841	Base	Fleet East Vehicle replacement -Unit # 537 SUV	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150845	Base	Fleet East Vehicle replacement -Unit # 549 SUV	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150829	Base	Fleet East Vehicle replacement -Unit # 553 SUV	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151149	Base	Fleet East Vehicle replacement - Unit 523 SUV	0.0	825	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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150915	Base	Fleet East Vehicle replacement - Pickup truck 1500	0.0	824	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150917	Base	Fleet East Vehicle replacement - Passenger Van	0.0	821	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150788	Base	Fleet_Central South Vehicle Replacement-Arrowboard	0.0	766	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
101622	Base	DACS Inverters and RTU's removal - East	0.0	765	System Renewal	Substation Renewal	Powerstream	This project involves removal of obsolete and out-of-service DACs inverters, RTUs and associated wiring at stations in the East Operating Area (former PowerStream) so as to remove clutter, thus simplifying future work and freeing up space for future station upgrades.
150824	Base	Fleet_West_Vehicle Replacement_Pickups.	0.2	759	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
101632	Base	Obsolete Revenue Metering Removal from TSs	0.0	740	System Service	Safety & Security	Powerstream	Evolution of the distribution system to permit more efficient integration of DERs to yield 18
151072	M-Factor	Station Service Transfer Upgrade - Vaughan TS#3	0.1	726	System Renewal	Substation Renewal	Powerstream	This project involves replacing the manual station service transfer switch with an automatic transfer switch. This work will mitigate the risk of loss of the entire station due to DC system failure as occurred in March 2016, thus avoiding another major lengthy power interruption.
151178	M-Factor	Cable Replacement Project - Mason Heights	0.7	716	System Renewal	Underground Asset Renewal	Enersource	From 2015-2017 customers in this area experienced 5 outages. 1 cable with 4 failures. 2 cables with 2 failures.
150827	Base	Fleet_West_Equipment Replacement_Backhoe	0.1	699	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150869	Base	Fleet_ Central North Vehicle Replacement-Puller/tensioner 194	0.3	693	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151082	Base	SCADA Infrastructure	0.1	688	System Service	System Control, Comm'ns & Performance	Guelph	
150706	Base	Alectra Station Access Harmonization - Abloy CLIQ system expansion-WEST	0.0	686	System Service	Safety & Security	Horizon	This project consists of upgrade to station access in West
151058	Base	Distribution Transformer Replacements & Upgrades	0.3	683	System Renewal	Transformer Renewal	Guelph	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
150719	Base	Upgrade of JMUX Optical Interfaces - Alectra East SONET Ring	0.3	676	System Service	System Control, Comm'ns & Performance	Powerstream	
150669	Base	Burden Allocation - System Access	0.6	670	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151048	Base	Station Switchgear Replacement - City Centre North MS47 HV1	0.3	656	System Renewal	Substation Renewal	Enersource	City Centre North MS is located centrally adjacent to Square One shopping mall, and feeds a large number of customers. It also provides back up to City Centre South MS – hence, reliability is very important. This substation project consists of replacing the HV1 44 kV switchgear and associated breaker and protection in City Centre North MS47. The current transformer protection device consists of a vintage 1973 Markham Electric oil with spring actuator type 44 kV circuit breaker. Station subject matter experts have identified this breaker as problematic. Parts are no longer available and this equipment is prone to failure. Proactive replacement of the LV switchgear, circuit breakers and protective equipment is a prudent strategy as system reliability would be greatly affected in the event of a failure. Additionally, the restoration of the system to normal conditions could take 8-10 months due to long equipment lead times.
102166	Base	SQL Expansion - IT Infrastructure	0.1	636	General Plant	Information Technology	Multiple	Expand existing SQL infrastructure to meet project demands and natural growth of database. Add system capacity, improve performance, and reduce the risk of downtime due resource constraints.
150203	Base	Station Equipment Temperature Monitoring-NORTH & TS	0.1	614	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of Station Temperature Monitoring system in East and it enables controlled emergency loading beyond the nameplate rating.
150871	M-Factor	Fleet_Central North Vehicle Replacement-Step Van 8108	0.2	595	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150496	Base	iPass Project Management – Planned Capital - West	0.7	589	System Renewal	Underground Asset Renewal	Horizon	Help in optimizing DER performance and efficiency to improve addressing overall energy needs.
150846	M-Factor	Fleet_West_Vehicle Replacement_Step Vans	0.4	589	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150732	Base	Vault Cover Rehabilitation	0.1	582	System Renewal	Underground Asset Renewal	Powerstream	Replacement of lids on civil structures to avoid public risk
102046	Base	Purchase of Major Tools - Muliti Year-North & TS	0.0	565	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
150905	Base	Fleet East Multi Year Shop tools	0.0	544	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of tools and shop equipment required to repair and maintain vehicles to ensure vehicle availability to support capital systems projects.
101816	Base	Alectra East (South), Fault Indicator Installation and Replacement Multi-year initiative	0.2	542	System Service	System Control, Comm'ns & Performance	Powerstream	This project is installtion of fault indictor in East - North Region which will result improved outage response, operational efficiency, and reliability
151085	M-Factor	Rear Lot Conversions	0.1	531	System Renewal	Rear Lot Conversion	Guelph	
101134	Base	Alectra East (North), Fault Indicator Installation and Replacement Multi-year initiative	0.2	527	System Service	System Control, Comm'ns & Performance	Powerstream	This project is installtion of fault indictor in East - South Region which will result improved outage response, operational efficiency, and reliability
150437	Base	OT GIS & OMS Enhancements	0.3	520	General Plant	Information Technology	Multiple	Ongoing productivity enhancements to core GIS and OMS platforms to meet internal and customer demand for functionality.
151179	M-Factor	Cable Replacement Project - Area of Erin Mills Parkway and South Millway	0.5	482	System Renewal	Underground Asset Renewal	Enersource	From 2015-2017 customers in this area experienced 4 outages. 1 cable with 4 failures.
150602	Base	Smart Meter Test Facility - PowerStream RZ	0.0	471	System Access	Metering	Powerstream	Multi-year project to expand the capability of the Meter Test Facility to test increasing types of meters and AMI systems before they are placed into production.
150782	M-Factor	Fleet_Central South Vehicle Replacement-Step Van	0.2	439	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151141	M-Factor	Cable Replacement and Transformers replacement - Project - Windjammer, Mississauga	2.7	432	System Renewal	Underground Asset Renewal	Enersource	From 2005-2019 YTD customers in this area experienced 32 failures. This area has had an average of 2.3 outages per year.
102027	Base	Purchase of Critical Spare Parts - Multiyear - East	0.1	428	System Renewal	Substation Renewal	Powerstream	This project involves procurement of critical spare parts for transformer and municipal stations in the East Operating Area (former PowerStream) so as to facilitate prompt repair of failed assets during emergency situations.

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
101781	Base	iPass Project Management – Planned Capital - East	0.4	409	System Renewal	Overhead Asset Renewal	Powerstream	Estimating the effects of DER contribution at the feeder and region levels to further optimize the energy flows between the Utility and its consumers,
150494	Base	iPass Project Management – Planned Capital - Central-North	0.4	409	System Renewal	Overhead Asset Renewal	Brampton	Predicting the influence of weather conditions and DER contribution simultaneously on the power grid, for proactively mitigating local outages,
150495	Base	iPass Project Management – Planned Capital - Central-South	0.4	409	System Renewal	Overhead Asset Renewal	Enersource	Enable better visibility towards preventive equipment maintenance needs arising due to DER penetration which will further help mitigate outage risks,
150607	M-Factor	Station LED Lighting Upgrades - Central	0.0	408	System Renewal	Substation Renewal	Enersource	Replacement of inefficient lighting fixtures and lamps at stations in the Central Operational Area will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
150606	M-Factor	Station LED Lighting Upgrades - EAST	0.0	408	System Renewal	Substation Renewal	Brampton	Replacement of inefficient lighting fixtures and lamps at stations in this Operational Area will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
151158	M-Factor	Fleet_Central South_Vehicle Replacement -Vans	0.1	407	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150786	M-Factor	Fleet_Central South Vehicle Replacement-SUV	0.0	403	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150868	M-Factor	Fleet_Central North Vehicle Replacement-180 Loader	0.3	400	General Plant	Fleet Renewal	Brampton	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150920	M-Factor	Fleet East Vehicle addition - Van pool van	0.0	387	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150831	M-Factor	Fleet_West_Vehicle Replacement_SUVs_1-268,1-226,1-227	0.1	376	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150513	Base	Installation of SWI Video security system at 4 MS stations per year - Annual Multi-year initiative-EAST	0.2	372	System Service	Safety & Security	Brampton	This project consists of installation of SWI Video security system in CentralNorth
102034	Base	Upgrade to Station Facilities (Building / Civil work) Multi-year - East	0.1	340	System Renewal	Substation Renewal	Powerstream	MULTI ANSWER
150549	Base	ServiceNow Expansion - IT Infrastructure	0.1	323	General Plant	Information Technology	Multiple	Building and adding features within ServiceNow we will eliminate outdated processes by automating more tasks and decisions allowing us to be more efficient and productive. Enhancements include the automation of the flow of data between other systems and across programs used by various departments and ServiceNow. Servicebots will be used as ServiceNow learns from past patterns, in order to predict future outcomes, including determining risks, assigning owners, and categorizing work. Learned models set the category of the IT request and assign the task to the right team, as well as calculate associated risk of action or inaction. This capability will improve the speed and efficiency of IT service delivery.
150712	Base	New JMUX Node at AMS4	0.1	311	System Service	System Control, Comm'ns & Performance	Powerstream	New JMUX Node at AMS4

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
102537	Base	Insulator Replacement - 44kV Multi year project	0.2	295	System Renewal	Overhead Asset Renewal	Powerstream	Replacement of non-polymer insulators (Areas are prioritiezed by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.
150100	Base	Convert Three MS's in Bradford to WiMax Communications	0.0	294	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of conversion of three Bradford MS to Wimax communication
150101	Base	Convert Three MS's in Alliston to WiMax Communications	0.0	294	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of conversion of three Alliston MS to Wimax communication
150610	M-Factor	Driveway Paving - Various Stations - Multi-year initiative - Central	0.0	290	System Renewal	Substation Renewal	Enersource	Existing driveways at stations in the Central Operational Area that are covered in gravel and require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150609	M-Factor	Driveway Paving - Various Stations - Multi-year initiative - East	0.0	290	System Renewal	Substation Renewal	Brampton	Existing driveways in this Operational Area that are covered in gravel require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150612	M-Factor	Driveway Paving - Various Stations - Multi-year initiative - West	0.0	290	System Renewal	Substation Renewal	Horizon	Existing driveways in the West Operational Area that are covered in gravel require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150870	M-Factor	Fleet_Central North Vehicle Replacement-Van 5910	0.1	289	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
102050	Base	Various Stations-Station Lighting Upgrade/Retrofit-Energy Efficiency Lighting-initiative Multi-year - East	0.1	240	System Renewal	Substation Renewal	Powerstream	Replacement of inefficient indoor and outdoor lighting fixtures and lamps at stations in the East Operating Area (former PowerStream) will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
103028	Base	Installation of a New JMUX Node at VTS1-T1T2	0.1	238	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of installation of JMUX node at Vaughan TS1
150391	Base	Wireless LAN Upgrade	0.5	235	General Plant	Information Technology	Multiple	Corporate Wireless LAN upgrade to replace end of life wireless infrastructure in corporate and operation center locations.
151075	Base	Fuel Pump Replacement Nebo Rd.	0.0	234	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of systems that have surpass end of life, are consistently down for repairs and parts are difficult to obtain, impacting fuel of vehicles to support capital systems projects and customer emergencies responses.
151155	M-Factor	Fleet_Central South Vehicle Replacement-Pick ups	0.1	227	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151164	Base	Fleet_Central South _key box replacement	0.0	223	General Plant	Fleet Renewal	Enersource	Adopted the current vehicles key management system at all sites to ensure access to vehicles when required. This ensure access to vehicles after hours and tracking of vehceil keys.
151038	Base	Fleet_West_Equipment_Key Boxes	0.0	223	General Plant	Fleet Renewal	Horizon	Adopted the current vehicles key management system at all sites to ensure access to vehicles when required. This ensure access to vehicles after hours and tracking of vehceil keys.
151059	Base	Station Switchgear Replacement - City Centre North MS47 HV2	0.3	199	System Renewal	Substation Renewal	Enersource	City Centre North MS is located centrally adjacent to Square One shopping mall, and feeds a large number of customers. It also provides back up to City Centre South MS – hence, reliability is very important. The current transformer protection device consists of a vintage 1973 Markham Electric oil with spring actuator type 44 kV circuit breaker. Station subject matter experts have identified this breaker as problematic. Additionally, due to obsolescence, it is no longer supported by the manufacturer and parts are difficult to come by.
151145	M-Factor	Cable Replacement Project - Bough Beeches Blvd.	0.7	197	System Renewal	Underground Asset Renewal	Enersource	From 2015-2017 customers in this area experienced 5 outages. 3 cables with 3 failures each.
150686	Base	Rockwood MS - Station RTU and Protection Relays Upgrade	0.1	191	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of bus, line and transformer protection at Richmond Hill TS
150510	Base	Upgrade/Retrofit SWI Video Security System at Jim Yarrow TS station	0.1	148	System Service	Safety & Security	Brampton	This project consists of installation of SWI Video security system at Jim Yarrow TS
103030	Base	Technology Upgrades Improving the System Control Room Environment	0.1	148	General Plant	Information Technology	Multiple	This project will continue to build on the original capital project whose scope was focused on the replacement of computers used as Operator WorkStations. The scope of this program has been expanded to account for all technology purchases required for the Control Room theater.
151438	Base	2020 GUELPH - Fleet	0.7	146	General Plant	Fleet Renewal	Guelph	Replacement of end of life asset due to poor conditions, high mileage and engine hours and age. Vehicle experiencing more down time at the shop for repairs and maintenance impacting vehicle availability.
151108	Base	Office Equipment	0.1	144	General Plant	Facilities Management	Guelph	Replace aging equipment within the Guelph operational centre to ensure optimal performance in managing the distribution assets
150687	Base	Woodlands MS - Station RTU & Protection Relays Replacement	0.1	141	System Service	System Control, Comm'ns & Performance	Enersource	Woodlands MS - Station RTU & Protection Relays Replacement
151245	M-Factor	Capacitor Bank Installations	0.0	135	System Service	System Control, Comm'ns & Performance	Guelph	This project consists of capacitor bank installation to increase power factor, capacity and reduce losses.
102931	Base	Paving of 3 MS & TS Station Driveways per year - Annual Multi-year initiative - East	0.0	125	System Renewal	Substation Renewal	Powerstream	Existing driveways at stations in the East Operating Area (former PowerStream) are covered in gravel and require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150597	Base	Lock Box Installs - East	0.0	116	System Access	Metering	Powerstream	Multi-year project to install lock boxes at ICI properties with restricted access to eliminate need for a customer appointment for access.
151143	M-Factor	Cable Replacement and Transformers Replacement -Project - Shelter Bay Rd. Mississauga	1.1	112	System Renewal	Underground Asset Renewal	Enersource	From 2017-2019 YTD customers in this area experienced 6 failures.
150462	Base	MV90 Upgrade	0.2	98	General Plant	Information Technology	Multiple	Enhancement to MV90 systems application to support process improvement requirements. As the MV90 system is one of the core applications of the organization, operational enhancements come in from a number of venues and thereby feedback into the other downstream systems. These enhancements are considered for the overall customer and organizational benefits.
150569	Base	Server OS Upgrades - IT Infrastructure	0.1	95	General Plant	Information Technology	Multiple	Operating system upgrades to support IT infrastructure.

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Project Number	Funding	Project Name	2020 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150737	Base	Facilities_East Region_Reactive Capital	0.3	92	General Plant	Facilities Management	Powerstream	Approved capital funds available to address any unforeseen and unbudgeted asset replacements/demands. Having these funds available for immediate use is critical for Facilities building operations to restore equipment/assets back to normal operations a.s.a.p.
150736	Base	Facilities_West Region_Reactive Capital	0.3	92	General Plant	Facilities Management	Horizon	Approved capital funds available to address any unforeseen and unbudgeted asset replacements/demands. Having these funds available for immediate use is critical for Facilities building operations to restore equipment/assets back to normal operations a.s.a.p.
150734	Base	Facilities_Central Region_Reactive Capital	0.3	92	General Plant	Facilities Management	Multiple	Approved capital funds available to address any unforeseen and unbudgeted asset replacements/demands. Having these funds available for immediate use is critical for Facilities building operations to restore equipment/assets back to normal operations a.s.a.p.
150464	M-Factor	Fieldworker Upgrade - IT/OT Infrastructure	0.3	91	General Plant	Information Technology	Multiple	Upgrade to increase functionality for the metering field staff to improve response times for customers
150676	Base	Mobile Devices - IT Infrastructure	0.0	88	General Plant	Information Technology	Multiple	
151078	Base	Fleet West Major Equipment & Tools	0.1	81	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of tools and shop equipment required to repair and maintain vehicles to ensure vehicle availability to support capital systems projects.
103171	Base	Implementation of a new Alectra Network Operations Voice Radio System	0.0	79	General Plant	Information Technology	Multiple	
151069	Base	PI Upgrades & Enhancements - IT/OT Infrastructure	0.1	63	General Plant	Information Technology	Multiple	Partner with OSIsoft (creator of PI) implement next level predictive analytics using AI (artificial intelligence) and ML (machine learning).
102922	Base	Installation/Retrofit of SWI Video Security System at 3 TS stations	0.0	48	System Service	Safety & Security	Powerstream	This project consists of installation of SWI Video security system at 3 Transformer Station in West
150906	Base	Vehicle key box system	0.0	43	General Plant	Fleet Renewal	Powerstream	
150747	M-Factor	Net Zero Energy Emissions	0.3	35	System Service	Distributed Energy Resources (DER)	Powerstream	The project will help Alectra Utilities to ensure that growing DER challenges are met through building expertise and capability in real time monitoring, integrating and optimizing of DERs in line with customer preferences. This will lead to a system that can safely integrate and optimize value from DERs for the benefit of customers.
151053	Base	Building Sustainment	0.2	32	General Plant	Facilities Management	Guelph	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
150704	Base	Feeder Protection Migration to DNP - Jim Yarrow TS	0.3	16	System Renewal	Substation Renewal	Brampton	This is part of a multi-phase project to upgrade aging and failure-prone protection systems at Jim Yarrow TS to the current protection standards. Proper protection to distribution feeders will provide protection to the assets in the case of faults.
151031	Base	Fleet Shop equipment refurbishment and replacement	0.1	13	General Plant	Fleet Renewal	Enersource	For the refurbishment of trailers, shop compressors and hoists to extend the life of the assets instead of replacement to reduce the need fro capital expenditures.
150678	Base	P&C Specific Tools & Testing Equipment - West	0.0	12	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
102999	Base	P&C Specific Tools and Testing Equipment	0.0	12	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
102157	Base	Server Refresh - IT Infrastructure	1.0	10	General Plant	Information Technology	Multiple	Ongoing server refresh to support applications.
150396	Base	Network Refresh - IT Infrastructure	0.4	10	General Plant	Information Technology	Multiple	Replacement of existing network infrastructure that is unsupported (or soon to be) including further rationalization and design modifications to support the delivery of services throughout the Alectra Environment.

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Project Number	Funding	Project Name	2021 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150404	Base	Kenilworth TS Power Factor Correction	0.9	184,357	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of capacitor bank installation at Kenilworth TS to improve PF and to comply with IESO market rules.
150725	Base	Lines Central-North - Reactive Renewal	1.2	181,454	System Renewal	Reactive Capital	Brampton	Replacement of assets which have failured and requires replacement in order to restore power to customers
150690	Base	Lines Central-South - Reactive Renewal	3.1	171,818	System Renewal	Reactive Capital	Enersource	Replacement of assets which have failured and requires replacement in order to restore power to customers
150682	Base	Remote Fault Indicator Deployment	0.4	164,221	System Service	System Control, Comm'ns & Performance	Multiple	This project consists of remote fault indictor deployment which will result improved outage response, operational efficiency, and reliability
150259	Base	Barrie TS Upgrade Feeders and Metering	2.2	127,868	System Access	Transmitter Related Upgrades	Powerstream	Hydro One will be rebuilding and reconfiguring its Barrie TS. As part of this upgrade, Hydro One plans to increase the capacity from 55/92 MVA to 75/125MVA and upgrade the E/4B transmission line from 115KV to 230KV. The feeder egress relocation and additional feeder will require integration reconfiguration for the six Alectra Utilities feeders (13M3 to 13M8) emanating from the station
102247	Base	Interest Capitalization	1.2	104,304	General Plant	Other General Plant	Powerstream	
150596	Base	Meter Renewal - all types but Suite - PowerStream RZ	0.1	94,470	System Access	Metering	Powerstream	Multi-year project to renew existing residential (except suite) metering equipment.
101871	Base	Services (New and Upgrades) - Layouts – East North - Commercial Services	0.0	94,398	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150600	Base	Firmware Upgrades for Smart Meters - East	0.0	94,363	System Access	Metering	Powerstream	Multi-year project to renew residential Smart meter firmware to improve communication performance.
151169	Base	Central-South - Capitalization of Locates	0.0	94,345	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
151174	Base	West Lines - Capitalization locates	0.0	94,319	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150631	Base	Transformer Station Metering - Central North	0.1	94,246	System Access	Metering	Brampton	Multi-year project to purchase, install and renew wholesale metering equipment.
101696	Base	Subdivision - North Underground Residential Distribution System Final Close out and Inspection.	0.0	94,197	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
103381	Base	East Lines - Capitalization locates	0.1	94,145	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101870	Base	Services (New and Upgrades) - Layouts – East South - Commercial Services	0.1	94,022	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101869	Base	Services (New and Upgrades) - Layouts – East North - New Residential	0.1	93,989	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150650	Base	Replace PCB Risk PT's - Enersource RZ	0.1	93,977	System Access	Metering	Enersource	Multi-year project to replace metering transformers identified with unacceptable levels of PCB's, to prevent hazardous spills.
101919	Base	New Services (new and upgrades) - Commercial, Industrial and Institutional (ICI) Projects - NORTH	0.1	93,955	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150647	Base	Transformer Station Metering - Enersource RZ	0.3	93,884	System Access	Metering	Enersource	Multi-year project to purchase, install and renew wholesale metering equipment.
151049	Base	Commercial, Industrial, Institutional, Apartment Connections	0.1	93,830	System Access	Customer Connections	Guelph	Mandatory - System Access Related Project
101685	Base	Subdivision - South Underground Residential Distribution System Final Close out and Inspection.	0.1	93,778	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150457	Base	Services (New and Upgrades) - Layouts – St Catharines	0.2	93,519	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
151162	Base	Non Recoverable replacement of Distribution Equipment due to accident/vandalism	0.2	93,457	System Renewal	Reactive Capital	Horizon	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
101924	Base	Mulit Unit Metering for New Buildings NORTH - PowerStream RZ	0.2	93,421	System Access	Metering	Powerstream	Multi-year project to purchase and install suite metering in new buildings in northern area of territory.
150588	Base	New Residential Subdivision Development - Alectra West	0.3	93,266	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
101791	Base	New Services - new and upgrades - COMMERCIAL, INDUSTRIAL, INSTITUTIONAL (ICI) SERVICES - SOUTH	0.2	92,878	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101812	Base	Reactive Capital, Alectra East - LIS	0.3	92,710	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
150754	Base	Lines Central-North - Non-Recoverable Replacements	0.4	92,705	System Renewal	Reactive Capital	Brampton	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
150726	Base	Lines Central-South - Non-Recoverable Replacements	0.4	92,705	System Renewal	Reactive Capital	Enersource	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)

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Project Number	Funding	Project Name	2021 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
101820	Base	Reactive Capital, Alectra East - Non-Recoverable Replacement	0.3	92,583	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
150389	Base	Services (New and Upgrades) - Layouts – Central North	0.4	92,563	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
150651	Base	C & I Metering - Renewal- Brampton RZ	0.1	92,561	System Access	Metering	Brampton	Multi-year project to renew existing ICI metering equipment.
150386	Base	New Service (new and upgrades) - Commercial and Institutional (ICI) Projects - Central North	0.4	92,424	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
150453	Base	CIS CC&B Modifications(Regulatory Enhancements)	0.9	92,261	General Plant	Information Technology	Multiple	Enhancements to the CIS (CC&B) application needed to meet any regulatory requirements Such requirements in the past have been Ontario Energy Savings Program (OESP) as well as the Monthly Billing projects.
150649	Base	Suite Metering - Enersource RZ	0.5	91,838	System Access	Metering	Enersource	Multi-year project to purchase, install and renew suite metering equipment.
150654	Base	C & I Metering - New Services - Brampton RZ	0.5	91,553	System Access	Metering	Brampton	Multi-year project to purchase and install ICI metering equipment on new services.
150595	Base	C & I and Wholesale Metering - PowerStream RZ	0.5	91,530	System Access	Metering	Powerstream	Multi-year project to purchase, install, and renew ICI and wholesale metering equipment.
101868	Base	Services (New and Upgrades) - Layouts – East South - New Residential	0.4	91,488	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101795	Base	Multi Unit Metering for New Buildings SOUTH - PowerStream RZ	0.5	91,273	System Access	Metering	Powerstream	Multi-year project to purchase and install suite metering in new buildings in southern area of territory.
101873	Base	Services (New and Upgrades) - Layouts – East North - Residential Upgrades	0.5	91,023	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
151051	Base	System Relocations Road Authorities	0.7	91,002	System Access	Road Authority	Guelph	Mandatory - System Access Related Project
150652	Base	New Residential Subdivision Development - Alectra Central South	1.0	90,948	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
150388	Base	Services (New and Upgrades) - Layouts – Central South	0.7	90,774	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
150692	Base	New Feeder in Residential Subdivision Development - Alectra Central North	0.8	90,609	System Service	Capacity (Lines)	Brampton	This expenditure is required to meet the needs of the development community that construct municipal approved residential subdivisions in Alectra Utilities' Central North service territory
150599	Base	Suite Meter - Reverification - PowerStream RZ	0.1	90,368	System Access	Metering	Powerstream	Multi-year project to renew Measurement Canada seal dates on existing suite metering equipment.
150455	Base	Services (New and Upgrades) - Commercial, Industrial and Institutional (ICI) Projects - St Catharines	0.9	90,201	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150659	Base	Residential Meters - by Metering - Brampton RZ	0.9	90,096	System Access	Metering	Brampton	Multi-year project to purchase, install and renew residential metering equipment. Work carried out by Metering.
150456	Base	Services (New and Upgrades) - Layouts – Hamilton	0.9	89,962	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150630	Base	New Residential Subdivision Development - Alectra Central North	0.7	89,952	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
101828	Base	Reactive Capital, Alectra East - Recoverable Replacement	0.7	89,766	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover some costs for (i.e. pole hit, vehicle at scene of accicent, Alectra Utilities obtains most of costs (near $0 impact too budget))
101896	Base	New Institutional/Commercial/Industrial Subdivision Development - Alectra East	0.9	89,347	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101872	Base	Services (New and Upgrades) - Layouts – East South - Residential Upgrades	0.8	89,345	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101800	Base	Reactive Capital, Alectra East - Storm Damage	1.2	86,549	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
151047	Base	Subdivisions	0.7	85,393	System Access	Customer Connections	Guelph	Mandatory - System Access Related Project
150620	Base	Metering Renewal - all types - Horizon RZ	2.0	84,064	System Access	Metering	Horizon	Multi-year project to purchase, install, and renew residential, ICI and wholesale metering equipment.
101808	Base	Reactive Capital, Alectra East - Switchgears	1.8	83,304	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
150648	Base	Metering Renewal - all types but Suite - Enersource RZ	2.3	82,569	System Access	Metering	Enersource	Multi-year project to purchase, install and renew residential (except suite) and ICI metering equipment.
101892	Base	New Subdivision Development - Secondary Service Lateral - Alectra East	2.7	80,776	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150384	Base	New Service (new and upgrades) - Commercial and Institutional (ICI) Projects - Central South	3.2	77,904	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project

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150449	Base	Services (New and Upgrades) - Commercial, Industrial and Institutional (ICI) Projects - Hamilton	5.0	69,328	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
151095	Base	Reactive Restoration	1.0	63,547	System Renewal	Reactive Capital	Guelph	Replacement of assets which have failured and requires replacement in order to restore power to customers
101824	Base	Reactive Capital, Alectra East - Distribution Equipment	5.3	58,190	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
151161	Base	Joint Use Pole Removal	0.1	57,200	System Renewal	Overhead Asset Renewal	Horizon	This project is for the removal of poles in the field after third party (joint use) attachements have been removed or transferred for projects already closed by Alectra Utilities.
150463	Base	Customer Self Service Portal Enhancements	0.3	56,341	General Plant	Information Technology	Multiple	Enhancement to CIS (CC&B) self service portal application to support process improvement requirements.The self service portal is the means by which Alecra customers can obtain their customer related information, interact with a CSR, post questions. The enhancements will allow Alectra customers a better experience when interacting with Alectra through the web portal channel.
151050	Base	Metering - all types - Guelph RZ	0.4	55,986	System Access	Metering	Guelph	Multi-year project to purchase, install, and renew residential, ICI and wholesale metering equipment in Guelph RZ.
150469	Base	ERP JD Edwards Enhancements	1.1	55,715	General Plant	Information Technology	Multiple	Allocation of capital funds to provide 3rd party assistance on capital work, along with creating system enhancements to the JD Edwards ERP and supporting Systems.
150325	Base	CIS CC&B Enhancements	0.8	55,520	General Plant	Information Technology	Multiple	Enhancement to CIS (CC&B) application to support process improvement requirements.As the CIS (CC&B) system is one of the core applications of the organization, operational enhancements come in from a number of venues and thereby feedback into the other downstream systems. These enhancements are considered for the overall customer and organizational benefits.
101832	Base	Joint Use Pole Removal	0.6	54,024	System Renewal	Overhead Asset Renewal	Powerstream	This project is for the removal of poles in the field after third party (joint use) attachements have been removed or transferred for projects already closed by Alectra Utilities.
101887	Base	New Residential Subdivision Development - Alectra East	9.4	44,864	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
100859	Base	Switchgear Renewal - East	2.7	43,705	System Renewal	Underground Asset Renewal	Powerstream	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
151117	M-Factor	Vansickle TS True-up Payment (CCRA), St.Catharines	1.6	43,573	General Plant	Connection and Cost Recovery Agreements	Horizon	In accordance with the Connection Cost Recovery Agreement, a 10 year true-up is required for Vansickle TS.
151089	Base	Overhead Rebuilds	1.2	39,246	System Renewal	Overhead Asset Renewal	Guelph	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
150369	M-Factor	New build - 44kV Feeder Extension York/Meadowpine, Mississauga	1.8	37,795	System Service	Capacity (Lines)	Enersource	There is no 44KV circuit on Meadowpine Blvd. and it is expected that the large customers will be connecting to the 44KV circuit. In addition 16MVA of connected load is on radial supply. This project will address the capacity constraints as well as eliminatethe current radial supply configuration for 16MVA of load.
101508	Base	Transformer Renewal - East	2.5	37,474	System Renewal	Transformer Renewal	Powerstream	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
150673	Base	Road Authority Central (Mississauga)	3.9	35,001	System Access	Road Authority	Enersource	Mandatory - System Access Related Project
150134	Base	Cable Injection Project - (V37) - Langstaff and Weston, Vaughan	1.6	34,877	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 20 failures.

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Project Number	Funding	Project Name	2021 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
102387	M-Factor	Install 44kV & 13.8kV Bryne Drive	1.1	34,654	System Service	Capacity (Lines)	Powerstream	The City of Barrie has identified 64 acres north of Harvie Road along Bryne Drive for development of industrial/commercial/residential. Another 34 acres south of Harvie Road along Bryne Drive has been identified for industrial/commercial development. The developable areas will result in 4MVA of new load north of Harvie Road and 2.2MVA of load south of Harvie Road. There is currently no existing 44kV or 13.8kV supply along Bryne Drive between P6231 and SC13487.
150405	Base	25M9 Jim Yarrow TS Extensions	0.3	33,741	System Service	Capacity (Lines)	Brampton	Jim Yarrow TS extension with new underground line extending 25M9 from Winston Churchill Blvd utility corridor to Steeles Ave in order to back up 25M8 & 25M10 to accomodate future load growth in Churchill Business Community Park and residential developments between Steeles Ave & Embleton Rd
150645	Base	Road Authority Central (Brampton)	4.7	31,814	System Access	Road Authority	Brampton	Mandatory - System Access Related Project
150828	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-West	0.9	31,592	System Renewal	Overhead Asset Renewal	Horizon	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151452	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-West	0.9	31,590	System Renewal	Underground Asset Renewal	Horizon	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
101762	Base	Road Authority Expenditure PS South	4.1	31,544	System Access	Road Authority	Powerstream	Mandatory - System Access Related Project
101355	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-East	0.9	31,425	System Renewal	Overhead Asset Renewal	Powerstream	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151450	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-East	0.9	31,425	System Renewal	Underground Asset Renewal	Powerstream	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
103633	M-Factor	Install Two 27.6kV Ccts on 16th Ave from Hwy 404 to Woodbine Ave	5.5	30,531	System Service	Capacity (Lines)	Powerstream	This project is to reroute two 27.6kV feeders along 16th Ave from Woodbine Ave in Markham to Leslie St Richmond Hill to supply new load in Richmond Hill. The customers on Leslie St north of 16th Ave in Richmond Hill are supplied by feeder 12M5, 12M7, and 12M12. There is only 290A or 14 MVA capacity left on these feeders for future development.
151363	Base	Cable Injection Project - (M25) - 14th - McCowan - Steeles - Old Kennedy, Markham	0.8	27,519	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 14 failures.
150072	M-Factor	Markham TS#3 Bus Differential & Overcurrent Protections Upgrades	0.1	27,028	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the Markham TS#3 Bus Differential & Overcurrent Protections Upgrades with new relays having fault recording capabilities.
100867	Base	Pole Renewal - East	5.0	25,595	System Renewal	Overhead Asset Renewal	Powerstream	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
151074	Base	Reactive renewal	3.3	25,136	System Renewal	Reactive Capital	Horizon	Replacement of assets which have failured and requires replacement in order to restore power to customers
151362	Base	Cable Injection Project - (M39) - 16th - Warden - Hwy 7 - Woodbine, Markham	0.7	23,714	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 8 failures.
151360	Base	Cable Injection Project - (M31) - 14th - Old Kennedy - Steeles - Warden, Markham	0.8	23,641	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 38 failures.
150070	M-Factor	Markham TS#1 Bus Differential & Overcurrent Protections Upgrades	0.2	22,500	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the Markham TS#1 Bus Differential & Overcurrent Protections Upgrades with new relays having fault recording capabilities.
151043	Base	Transformer Renewal - Central South	1.9	21,870	System Renewal	Transformer Renewal	Enersource	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.

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150467	M-Factor	CIS CC&B upgrade	6.5	21,392	General Plant	Information Technology	Multiple	Aligns with Alectra customer experience plan requirements and enhanced services and emerging channels. Comprised of third party integration support, hardware, resources, testing to support existing Alectra platform as the current version 2.5 support ends in 2022. Project ensures enhanced functionality, compatibility with ancillary systems, security upgrades, automation and rate billing engine to support future utility DER integration.
150688	Base	Station Sustainment & Protection & Control CASCADE Expansion	0.0	20,717	General Plant	Information Technology	Multiple	Expand the use of the CASCADE system to be used by the Protection and Control asset in addition to the Station assets
150371	M-Factor	New build - 27.6kV Feeder Extension Traders, Mississauga	2.8	19,792	System Service	Capacity (Lines)	Enersource	Install new feeders in the Traders area between Hurontario St and Kennedy Rd from Matheson Blvd to Britannia Rd required to meet demand due to intensification and to ensure the reliability of current customers.
150664	Base	Residential Meters - by Lines - Brampton RZ	0.7	18,167	System Access	Metering	Brampton	Multi-year project to purchase, install and renew residential metering equipment. Work carried out by Lines.
151109	Base	Switch Replacement	0.2	18,145	System Renewal	Overhead Asset Renewal	Guelph	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacment units
150458	Base	MAS upgrade - IT Infrastructure	0.1	17,426	General Plant	Information Technology	Multiple	Metering Automation System for smart grid Upgrade to be implemented in a phased approach over the next 4 years as smart grid continues to evolve work in conjunction with the metering team to analyze and implement leverage new technologies to provide better more accurate meter readings be responsive to the issues first not reactive when a customer calls
151104	Base	Distribution Automation - Central North	0.5	17,389	System Service	SCADA and Automation	Brampton	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151318	Base	Cable Injection Project - (I3) -Bovaird - Dixie - Queen - Hwy 410, Brampton	0.4	16,119	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 6 outages due to cable failures from 2014 to 2015 with average duration of 71 minutes.
151216	Base	Purchase & Installation of Station DC System Monitoring - South West	0.0	15,958	System Renewal	Substation Renewal	Guelph	This project involves the installation of real-time monitoring at Arlen TS in the South West Operating Area (Guelph) that eliminates required on-site maintenance activities such as routine manual battery testing. By the addition of DC System monitoring, it will ensure that any potential problems will be immediately reported via SCADA/PI System Notification and help to avoid a station outage due to DC system failure as occurred at Vaughan TS#3. It will also reduce the human interaction with the dangerous DC Equipment and dramatically reduce the hazard/risk to the worker by eliminating the need to perform battery testing.
150639	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-CENTRAL	0.0	15,736	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of DC charging system for Central South Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
150638	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-East	0.0	15,736	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of DC charging system for Central North Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
150636	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-North & TS	0.0	15,736	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of installation of DC charging system for East Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
150640	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-WEST	0.0	15,736	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of installation of DC charging system for West Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion

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Project Number	Funding	Project Name	2021 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150285	Base	Transformer Renewal - Central North	0.8	14,492	System Renewal	Transformer Renewal	Brampton	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
101027	Base	Switch Renewal - East	0.7	14,309	System Renewal	Overhead Asset Renewal	Powerstream	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacment units
150504	Base	Purchase and Installation of 10 Self Recharging Transformer Air Breathers on TS and MS Transformers - Multi-year initiative-WEST	0.1	14,105	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of installation of transformer air breather at TS and MS stations in East .Moisture in transformer oil is a major cause of acceleration of transformer ageing and internal failure of transformers. By elimination of moisture ingress through the transformer breather, and having the breather perform this task automatically without human intervention ensures that the transformer oil moisture is minimal.
102098	Base	Client - IT Infrastructure	1.2	13,761	General Plant	Information Technology	Multiple	To upgrade desktop/laptop/mobile devices that are 5 years or older (Approximately 20% of our equipment). Net new equipment for mobile computing as well as upgrades and replacements for damaged devices. Request made by various business units. This budget also includes RSA tokens\Licenses, monitors, mice, keyboards, docking stations, tablets and small non-MFP printers. Out of Scope: Large MFP Printers
151214	Base	Purchase & Install Self Re-Charging Transformer Air Breathers	0.0	13,524	System Service	System Control, Comm'ns & Performance	Guelph	This project consists of installation of transformer air breather at TS and MS stations in Guelph. Moisture in transformer oil is a major cause of acceleration of transformer ageing and internal failure of transformers. By elimination of moisture ingress through the transformer breather, and having the breather perform this task automatically without human intervention ensures that the transformer oil moisture is minimal.
151247	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-Guelph	0.6	13,414	System Renewal	Overhead Asset Renewal	Guelph	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
102232	Base	Capital Funds for Emergency P&C Purchases - East	0.0	13,271	System Renewal	Substation Renewal	Powerstream	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the East Operating Area (former PowerStream). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.
150683	Base	Capital Funds for Emergency P&C Purchases - Central North	0.0	13,185	System Renewal	Substation Renewal	Brampton	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the Central North Operating Area (Brampton). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.

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Project Number	Funding	Project Name	2021 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150685	Base	Capital Funds for Emergency P&C Purchases - West	0.0	13,185	System Renewal	Substation Renewal	Horizon	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the West Operating Area (former Horizon). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.
150684	Base	Capital Funds for Emergency P&C Purchases - Central South	0.0	13,185	System Renewal	Substation Renewal	Enersource	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the Central South Operating Area (former Mississauga). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.
150784	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-Central North	0.7	12,968	System Renewal	Overhead Asset Renewal	Brampton	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151453	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-Guelph	0.6	12,922	System Renewal	Underground Asset Renewal	Guelph	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
150823	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-Central South	0.7	12,655	System Renewal	Overhead Asset Renewal	Enersource	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
102099	Base	Printer & Copier Fleet Replacement	0.0	12,636	General Plant	Information Technology	Multiple	Replacement of existing fleet of printers/copiers that are 5 or more years old. This will include non-MFP printers. Replacement to be determined by an evaluation of evolving needs and corporate requirements as well as age of equipment.
151449	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-Central North	0.9	12,176	System Renewal	Underground Asset Renewal	Brampton	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
103211	Base	Misc Software Upgrades (FormScape, AutoCAD, etc.) - IT/OT Infrastructure	0.0	12,021	General Plant	Information Technology	Multiple	Upgrade/ acquire software as required / requested by business.
151451	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-Central South	0.9	11,936	System Renewal	Underground Asset Renewal	Enersource	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151233	M-Factor	New Construction - Campbell TS 36M63 Feeder PHASE 1 & 2, Guelph	1.2	11,851	System Service	Capacity (Lines)	Guelph	This project identifies a new 13.8kV feeder required from Campbell TS to bring additional load support to NW section of the city as the existing 13.8kV feeders in the area are unable to accommodate the additional load growth
150579	Base	New build - Extend Bunting M81 Feeder, St.Catharines	1.5	11,461	System Service	Capacity (Lines)	Horizon	This project is to extend M81 feeder to supply new development and meet contigency condition in St. Catharines. This project will deal with ongoing capacity constraints in the North end of St.Catharines by bringing available supply from Bunting and Carlton TS's
103180	Base	Citrix Xen Virtualization Expansion - IT Infrastructure	0.1	11,299	General Plant	Information Technology	Multiple	Client computing virtualization (Citrix) is currently the standard delivery method for applications and desktops at Alectra. This system has had a tremendous uptake in the organization and requires an upgrade in back-end infrastructure to support the additional demand from the business.

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Project Number	Funding	Project Name	2021 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150693	M-Factor	Blockchain	0.4	11,192	System Service	Distributed Energy Resources (DER)	Multiple	The project will prepare Alectra Utilities to engage with customers in a real-time and transparent process to record the flow of electricity to and from DERs, enabling the efficient procurement of distribution benefits, such as demand response and frequency regulation. The project will provide a robust settlement mechanism between Alectra and customers, backed by timely and efficient financial transactions, to enable overall trust and customer value delivery and leading to increased customer satisfaction.
151302	Base	Cable Injection Project - (HAM) - Rymal - Mud - Upper Centennial - Upper Red Hill Valley	0.9	11,132	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 8 failures, or 14 failures per 100km. This area includes the 331X & 341X feeders which were identified as a Worst Performing Feeder in 2018. The average cable installation year is 1989 in this project scope.
151314	Base	Cable Injection Project - (G2) -Wanless - Kennedy - Bovaird - Main, Brampton	0.3	11,046	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 4 outages due to cable failures from 2013 to 2017 with average duration of 125 minutes.
150665	Base	Emerging Customer Initiated Work (West)	1.5	10,905	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
151465	M-Factor	Cable Replacement - Mississauga Left Behind Cable	0.4	10,857	System Renewal	Underground Asset Renewal	Enersource	This project is to address cables which were part of a cable injection project but were ultimately not injectable at the time of project execution. These 'left behind' segments must be addressed, if they are left in the system they could cause a failure. Customers would not only experience an outage, but question the utilities work practices as we would have addressed only a portion of the cables instead of all the cables which could cause an outage.
101562	Base	Arc Flash Mitigation Projects	0.0	10,619	System Service	Safety & Security	Powerstream	This project is to mitigate arc flash risk at East stations.
151299	Base	Cable Replacement Project - (HAM) - Millen - Barton - Fruitland	1.1	10,342	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 16 failures, or 44 failures per 100km. The average cable installation year is 1970 in this project scope.
150653	Base	Road Authority West (St. Catharines)	0.9	10,217	System Access	Road Authority	Horizon	Mandatory - System Access Related Project
150615	Base	Metering Tools & Equipment - Central North	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Brampton	Replacement of Capital tools required to perform work
150616	Base	Metering Tools & Equipment - Central South	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
150613	Base	Metering Tools & Equipment - East	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
150614	Base	Metering Tools & Equipment - West	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of Capital tools required to perform work
151402	Base	Cable Replacement Project- Montevideo & Treviso (19a), Mississauga	5.2	9,918	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 10 outages, the length is 14,151 m, and the average cable age is 34 years old.
151456	M-Factor	Cable Injection Project - (V50) - Hwy 7 - Kipling - Steeles - Hwy 27, Vaughan	0.9	9,188	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 3 failures in 2018.
151063	Base	Pole Renewal - Central South	3.9	9,065	System Renewal	Overhead Asset Renewal	Enersource	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
100886	Base	Distribution Automation - East	1.3	9,041	System Service	SCADA and Automation	Powerstream	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151275	Base	Cable Injection Project - (SCH) - QEW - Highway 406 - Martindale Road	0.6	8,905	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 3 failures, or 11 failures per 100km. The average cable installation year is 1988 in this project scope.
150808	Base	Implementation of Doble - Enoserv PowerBase and Enoserv RTS applications for Protection and Control Department	0.0	8,798	General Plant	Information Technology	Multiple	PowerBase is the premier application to manage and report on protection assets maintenance and engineering records. It manages workflow and connect with maintenance management systems such as Cascade. RTS is a vendor neutral software which allows connection to a variety of test sets. It offers an extensive relay test plan library.

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151300	Base	Cable Injection Project - (HAM) - Millen - Barton - Fruitland	0.7	8,690	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 16 failures, or 44 failures per 100km. The average cable installation year is 1987 in this project scope.
151389	Base	2021 GUELPH - Remotely Controlled Switches	0.4	8,628	System Service	SCADA and Automation	Guelph	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
150418	Base	42M62 Extension Bovaird Dr, Mississauga Rd to Heritage Rd	0.4	8,351	System Service	Capacity (Lines)	Brampton	This project consists of 42M62 extension on Bovaird drive from Mississauga Road to Heritage Road. The 42M62 circuit extension will supply industrial on Heritage Road, as well as new residential developments
101804	Base	Purchase of Major Tools	0.4	8,158	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
150509	Base	Installation of Transformer Bushing Monitoring Yarrow TS and MS txmrs-Multi Year -EAST	0.1	7,885	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of Transformer bushing monitoring system in Central North. Bushing monitoring unit provides real time condition monitoring of the transformer bushings.
150709	Base	Spare Station Transformer Bushing Conversion from PILC to XLPE - West	0.1	7,848	System Renewal	Substation Renewal	Horizon	This project involves converting the spare station transformer primary and secondary bushings/compartments from PILC to XLPE in the West Operating Area (former Horizon). The spare transformers are used when a failure occurs on a station transformer. The PILC cable will be replaced with XLPE at the station in order to improve station reliability and worker and equipment safety. The conversion of bushings is critical as primary bushing compartments have ruptured on multiple occasions in 2017 in the West Operating Area - causing oil spills larger than 200 liters.
151313	Base	Cable Injection Project - (F5) - Steeles - Main - Hwy 407 - McLaughlin, Brampton	0.3	7,751	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 5 outages due to cable failures from 2007 to 2016 with average duration of 80 minutes.
102038	Base	Installation of Transformer Bushing Monitoring on TS and MS txmrs-Multi Year	0.1	7,735	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of installation of Transformer bushing monitoring system in East. bushing monitoring unit provides real time condition monitoring of the transformer bushings.
151349	Base	Cable Injection Project - (V16) - Langstaff - Dufferin - Steeles - Jane, Vaughan	0.9	7,572	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 23 failures.
150282	Base	Switchgear Renewal - Central North	0.5	7,521	System Renewal	Underground Asset Renewal	Brampton	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
150508	Base	Installation of Transformer Bushing Monitoring on MS txmrs-Multi Year -CENTRAL	0.2	7,509	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of Transformer bushing monitoring system in Central South. bushing monitoring unit provides real time condition monitoring of the transformer bushings.
151325	Base	Cable Replacement Project - (M31) - 14th - Old Kennedy - Steeles - Warden, Markham	3.5	7,412	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 38 failures.
151316	Base	Cable Injection Project - (H2) - Wanless - Heart Lake - Bovaird - Kennedy, Brampton	0.3	7,371	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 4 outages due to cable failures from 2009 to 2017 with average duration of 107 minutes.
150284	Base	Pole Renewal - Central North	2.1	7,305	System Renewal	Overhead Asset Renewal	Brampton	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
102017	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear initiative-North & TS	0.3	7,275	System Service	Safety & Security	Powerstream	This project consists of Sorbweb Oil containment system in East. Protects the environment in the event of a transformer tank rupture
150714	Base	MS Transformer Tank and Radiator Reconditioning- Multi-year initiative - Central	0.1	6,819	System Renewal	Substation Renewal	Enersource	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the Central South Operating Area (former Enersource). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.

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150713	Base	MS Transformer Tank and Radiator Reconditioning- Multi-year initiative - East	0.1	6,819	System Renewal	Substation Renewal	Brampton	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the Central North Operating Area (Brampton). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150715	Base	MS Transformer Tank and Radiator Reconditioning- Multi-year initiative - West	0.1	6,819	System Renewal	Substation Renewal	Horizon	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the West Operating Area (former Horizon). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150644	Base	Road Authority West (Hamilton)	1.5	6,689	System Access	Road Authority	Horizon	Mandatory - System Access Related Project
150507	Base	230kV TS Transformer Primary Bushing Monitoring Enablement-BPD Elimination - 4 TS Transformers-Multi-year initiative-TS	0.5	6,521	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to install primary bushing monitoring at TS in EAST
150352	Base	Voltage Conversion - Central MS, Hamilton	1.5	6,498	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 23 outages and had 1,060,300 customer minutes of interruption (75 mins per customer per year). The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail. Specifically Central MS is the only station remaining in service with oil breakers which are functionally obsolete with no spare parts readily available.
151310	Base	Cable Injection Project - (E4) - Queen - McLaughlin - Steeles - Chinguacousy, Brampton	0.3	6,421	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 4 outages due to cable failures from 2008 to 2016 with average duration of 104 minutes.
150357	Base	New build - 25M9 Extension to Derry Rd, Mississauga	1.7	6,401	System Service	Capacity (Lines)	Enersource	This project consists of 25M9 extension into Mississauga to provide additional 27.6KV capacity. It will offload Erindale TS in Mississauga and avoid building Mini-Britannia MS and also provides capacity back to Brampton using a link along Derry Rd.
151044	Base	Switch Renewal - Central South	0.3	6,319	System Renewal	Overhead Asset Renewal	Enersource	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacement units
103659	Base	Storm Hardening - Four-Circuit Poles	1.9	6,255	System Renewal	Overhead Asset Renewal	Powerstream	
150514	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear Initiative-WEST	0.3	6,213	System Service	Safety & Security	Horizon	This project consists of Sorbweb Oil containment system in West. Protects the environment in the event of a transformer tank rupture
151336	Base	Cable Replacement Project - (BA22) - Sunnidale and Anne, Barrie	1.9	6,208	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 2 failures in 2019.
151086	Base	Insulator Replacements	0.1	5,949	System Renewal	Overhead Asset Renewal	Guelph	Replacement of non-polymer insulators (Areas are prioritized by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.
102128	M-Factor	Aurora MS6 Expansion	0.8	5,910	System Service	Capacity (Lines)	Powerstream	2C land is currently supplied by a 13.8kV feeder 5F2. It had a peak of 269A in 2018 and does not have sufficient capacity to supply future growth in the 2C lands. New feeder capacity is required to supply the additional load.
150066	Base	Basement Flood Risk Mitigation - Vaughan TS#2	0.1	5,867	System Renewal	Substation Renewal	Powerstream	This project involves mitigating the flood risk at the Vaughan TS#2 where there is equipment installed in the basement by relocating or repositioning this equipment. This critical equipment includes DC system, AC and DC panels, feeder switches, UPS, ATS located in the basement of this station. Damage to this equipment due to flooding would cause extensive power interruptions to many customers.
150351	M-Factor	Voltage Conversion - Aberdeen MS, Hamilton	2.1	5,675	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 16 outages and had 500,475 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.

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151404	Base	Cable Replacement Project- Central Pk E & Miss. Valley (28)	8.4	5,611	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 11 outages, the length is 7,100 m, and the average cable age is 42 years old. There are 27 backlot transformers that we are also replacing.
150337	Base	Switch Renewal - West	0.4	5,476	System Renewal	Overhead Asset Renewal	Horizon	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacement units
151055	Base	Major Tools	0.1	5,432	General Plant	Tools, Shop and Garage Equipment	Guelph	Replacement of Capital tools required to perform work
150067	Base	Basement Flood Risk Mitigation - Markham TS#4	0.1	5,410	System Renewal	Substation Renewal	Powerstream	This project involves mitigating the flood risk at the Markham TS#4 where there is equipment installed in the basement by relocating or repositioning this equipment. This critical equipment includes DC system, AC and DC panels, feeder switches, UPS, ATS located in the basement of this station. Damage to this equipment due to flooding would cause extensive power interruptions to many customers.
150598	Base	Suite Metering - Renewals & Retrofits - PowerStream RZ	0.4	5,394	System Access	Metering	Powerstream	Multi-year project to purchase and install suite metering equipment in existing buildings upgraded from bulk metering.
150515	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear initiative-CENTRAL	0.3	5,352	System Service	Safety & Security	Enersource	This project consists of Sorbweb Oil containment system in Central South. Protects the environment in the event of a transformer tank rupture
150516	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear initiative-EAST	0.3	5,352	System Service	Safety & Security	Brampton	This project consists of Sorbweb Oil containment system in Central North. Protects the environment in the event of a transformer tank rupture
150336	Base	Transformer Renewal - West	0.7	5,294	System Renewal	Transformer Renewal	Horizon	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
150750	Base	Lines Central-North - Major Tools	0.1	5,234	General Plant	Tools, Shop and Garage Equipment	Brampton	Replacement of Capital tools required to perform work
150009	Base	Insulator Renewal - East	0.2	5,108	System Renewal	Overhead Asset Renewal	Powerstream	Replacement of non-polymer insulators (Areas are prioritized by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.
151203	Base	Capital Corrective Equipment Replacement - Stations South West	0.1	4,921	System Renewal	Substation Renewal	Guelph	This project is intended to provide capital for all unplanned station equipment replacements in the South West Operating Area (Guelph) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
102042	Base	Purchase and Installation of Animal Guards at Various Stations-Annual Multi-year initiative-North & TS	0.0	4,894	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of animal guard installation in East
150605	M-Factor	Residential "ICON F" Meter Replacement - PowerStream RZ	4.2	4,853	System Access	Metering	Powerstream	Multi-year project to replace Icon-F smart meters with secure encryption, last gasp and tamper detection capabilities.
151403	Base	Cable Replacement Project- Montevideo & Battleford (19b), Mississauga	1.7	4,849	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 12 outages, the length is 5,013 m, and the average cable age is 39 years old.
151328	Base	Cable Replacement Project- (21a) Darcel & Brandon Gate, Mississauga	1.4	4,689	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 6 outages, the length is 4,087 m, and the average cable age is 46 years old.
151083	Base	Switchgear Renewal - West	0.4	4,684	System Renewal	Underground Asset Renewal	Horizon	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
151010	Base	Switch Renewal - Central North	0.6	4,604	System Renewal	Overhead Asset Renewal	Brampton	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacement units

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150720	Base	Lines Central-South - Major Tools	0.2	4,591	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
151433	Base	Cable Injection- 008- AREA46 - Glen Erin & Aquitane, Mississauga	0.6	4,471	System Renewal	Underground Asset Renewal	Enersource	There are 6 outages, we are injecting a total of 19,827 m of cable for this project, and the average age of the cable is 33 years.
151401	Base	Cable Replacement Project- (21b) Sigsbee & Morning Star, Mississauga	1.0	4,296	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 7 outages, the length is 2,956 m, and the average cable age is 46 years old.
151021	Base	Insulator Renewal - Central North	0.4	4,236	System Renewal	Overhead Asset Renewal	Brampton	Replacement of non-polymer insulators (Areas are prioritiezed by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.
150536	Base	Implement database security - IT Infrastructure	0.1	4,195	General Plant	Information Technology	Multiple	This project will address security risks related to data-at-rest.
150674	Base	Emerging Customer Initiated Work Central (Brampton)	0.2	4,184	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
101763	Base	Unforeseen Projects Initiated by the customer PS North	0.1	4,161	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150679	M-Factor	Alectra Drive for the Workplace	0.2	3,997	System Service	Capacity (Lines)	Multiple	Alectra Drive for the Workplace will demonstrate the value of integrating smart electric vehicle (EV) charging system at workplaces into the distribution grid such that mass uptake of electric vehicles can be managed in a safe and reliable manner. The planned investment will help manage the flow of electricity needed to serve the building and EV charging stations, so that electricity costs are minimized for commercial customers while EV drivers have an easy and accessible charging solution.
150320	M-Factor	Voltage Conversion - Dewitt MS , Hamilton	1.0	3,972	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 12 outages and had 888,434 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
151348	Base	Cable Injection Project - (M20) - Hwy 7 - Markham - 14th - McCowan, Markham	0.4	3,971	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 14 failures.
150408	Base	42M71 Feeder Egress Salvation Rd, West, Creditview, Wanless	0.4	3,769	System Service	Capacity (Lines)	Brampton	This project consists of 42M71 feeder egress and ties to 42M61 and 42M43 will provide contingency to circuits nearing planning limits.
151430	Base	Cable Injection- 005- AREA 38- Bristol & Creditview, Mississauga	0.9	3,746	System Renewal	Underground Asset Renewal	Enersource	There is 1 outage, we are injecting a total of 11,193 m of cable for this project, and the average age of the cable is 32 years.
102075	Base	Major repairs, refurbishment, or modifications to switches/switchgear	0.1	3,702	System Renewal	Underground Asset Renewal	Powerstream	Switchgear and Switches in stores that repair/refurbishment of the units can allow them to be returned to service
150521	Base	Security Additions & Enhancements	0.2	3,700	General Plant	Information Technology	Multiple	As per Alectra Security roadmap to key IT systems.
150376	Base	New build - Hamilton South Mountain feeders capacity relief, Hamilton	1.1	3,694	System Service	Capacity (Lines)	Horizon	This project is build new feeder to alleviate capacity in South Hamilton and to alleviate on the four feeders which are over the planning limit
150415	Base	42M65 Feeder Egress Pleasant TS to SG20-1438	0.5	3,641	System Service	Capacity (Lines)	Brampton	This project consists of 42M65 feeder egress out of Pleasant TS and will supply the redvelopments in downtown.
151428	Base	Cable Injection- 002- AREA 30- Eglinton Ave W & Miss Rd, Mississauga	0.6	3,632	System Renewal	Underground Asset Renewal	Enersource	There are 2 outages, we are injecting a total of 14,541 m of cable for this project, and the average age of the cable is 31 years.
151276	Base	Cable Injection Project - (SCH) - Vansickle	0.4	3,556	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 2 failures, or 11 failures per 100km. The average cable installation year is 1990 in this project scope.
151200	M-Factor	Alectra Single Platform Website ongoing	0.1	3,548	General Plant	Information Technology	Multiple	Ongoing enhancements to the Alectra platform to improve functionality for customers
150498	Base	Capital Corrective Equipment Replacement - Stations Central South	0.3	3,535	System Renewal	Substation Renewal	Enersource	This project is intended to provide capital for all unplanned station equipment replacements in the Central South Operating Area (former Enersource) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.

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150499	Base	Capital Corrective Equipment Replacement - Stations Central North	0.3	3,535	System Renewal	Substation Renewal	Brampton	This project is intended to provide capital for all unplanned station equipment replacements in the Central North Operating Area (Brampton) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
150497	Base	Capital Corrective Equipment Replacement - Stations West	0.3	3,535	System Renewal	Substation Renewal	Horizon	This project is intended to provide capital for all unplanned station equipment replacements in the West Operating Area (former Horizon) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
150047	M-Factor	Rear Lot Renewal Project - Royal Orchard - North	1.0	3,478	System Renewal	Rear Lot Conversion	Powerstream	This area has had an average of 3 failures per year lasting 4 hours per year based on 3 year average.
151462	M-Factor	Cable Injection Project - (G1) - Hwy 410 - Kennedy - Wanless - Main, Brampton	0.3	3,438	System Renewal	Underground Asset Renewal	Brampton	From 2000-2018 customers in this area experienced 2 failures. Exact number of failures in recent years is unknown at this moment.
150774	Base	Lines Central-North - Site Restorations	0.1	3,434	System Renewal	Overhead Asset Renewal	Brampton	
150721	Base	Lines Central-South - Site Restorations	0.1	3,434	System Renewal	Underground Asset Renewal	Enersource	
151344	Base	Cable Injection Project - (R16) - Major Mackenzie - Bayview - 16th - Yonge, Richmond Hill	0.3	3,397	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 16 failures.
150672	Base	Burden Allocation - System Service	0.1	3,353	System Service	Capacity (Lines)	Horizon	
150537	Base	Cyber Security - Upgrade access management controls	0.3	3,321	General Plant	Information Technology	Multiple	As per Alectra Security roadmap to key IT systems with focus on end user access management controls.
150390	M-Factor	New build - Waterdown 3rd Feeder, Hamilton	1.7	3,248	System Service	Capacity (Lines)	Horizon	This project is to alleviate capacity issues in the Waterdown area of Hamilton, primarily served by two Dundas 27.6kV feeders
150263	Base	Cable Replacement Project - East Left Behind Cable	2.7	3,237	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in these areas have experienced 11 failures.
102065	Base	Capital Corrective Equipment Replacement - East	0.3	3,161	System Renewal	Substation Renewal	Powerstream	This project is intended to provide capital for all unplanned station equipment replacements in the East Operating Area (former PowerStream area) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
150611	Base	Transformer Tank and Radiator Reconditioning- Multi-year initiative - East	0.2	3,117	System Renewal	Substation Renewal	Powerstream	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the East Operating Area (former PowerStream). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150623	Base	Purchase and Installation of Animal Guarding-Annual Multi-year initiative-WEST	0.0	3,095	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of animal guard installation in West
150622	Base	Purchase and Installation of Animal Guarding-Annual Multi-year initiative-CENTRAL	0.0	3,093	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of Animal guard at Central South Stations
150621	Base	Purchase and Installation of Animal Guarding-Annual Multi-year initiative-EAST	0.0	3,082	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of Animal guard at East Stations
150089	M-Factor	Markham TS#3 T1/T2 "B" Differential Protections Upgrade	0.1	2,935	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to replace the T1/T2 GEC solid state Transformer "B" Differential Protection relays at Markham TS#3 with new relays having fault recording capabilities

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151393	Base	2021 GUELPH - Transite Underground Duct Replacement	0.3	2,918	System Renewal	Underground Asset Renewal	Guelph	Replacement of Duct Structure which contains asbestoes a known carcinogen and impacts worker safety.
151286	Base	Cable Replacement Project - (H2) - Wanless - Heart Lake - Bovaird - Kennedy, Brampton	0.4	2,868	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 6 outages due to cable failures from 2011 to 2017 with an average duration of 126 minutes
101625	Base	Cyber Security Audit & Upgrades	0.1	2,865	General Plant	Information Technology	Multiple	This project would fund various activities and countermeasures to improve the cyber security posture of the Operations' Network. This will be a mandate for compliance to Ontario Cyber Security framework. The counter measures include: - an annual audit of the cyber security countermeasures in place; - implementation of new technologies to seal identified compromises; - replacement of deployed cyber security equipment deemed end of life or not able to deliver an expected level of service.
150783	Base	Fleet_Central South Vehicle Replacement-Pick ups	0.1	2,848	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150671	Base	Burden Allocation - System Renewal	1.7	2,831	System Renewal	Other System Renewal	Horizon	
150632	Base	AMI Gatekeeper Expansion - Brampton RZ	0.0	2,820	System Access	Metering	Brampton	Multi-year project to expand and upgrade AMI field communication equipment to service new connections.
151346	Base	Cable Injection Project - (M45) - Hwy 7 and Woodbine, Markham	0.3	2,650	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 9 failures.
150079	M-Factor	Markham TS#1 T1/T2 "B" Overcurrent Protections and HMI Upgrade	0.2	2,596	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade Markham TS#1 T1/T2 "B" Overcurrent Protections with fault recording ability and HMI Upgrade
151427	Base	Cable Injection- 001- AREA 11- Truscott & Southdown, Mississauga	0.4	2,550	System Renewal	Underground Asset Renewal	Enersource	There are 2 outages, we are injecting a total of 21,576 m of cable for this project, and the average age of the cable is 32 years.
150332	M-Factor	Non-Wires Alternative Pilot	0.8	2,537	System Service	Capacity (Stations)	Powerstream	The project will provide customers with increased flexibility to make decisions about their electricity consumption, generation, and costs; it leads to more efficient integration of DERs which yields greater benefits to customer, system reliability, and power quality. This project will also provide the opportunity to increase operational efficiency and improved asset management to enhance service to customer and defer and/or reduce infrastructure investment needs in York Region.
150681	Base	Data Analytics - IT/OT Infrastructure	0.4	2,528	General Plant	Information Technology	Multiple	This project will develop a data analytics platform to provide enhanced customer value by implementing preventative measures to improve overall outage detection and prediction with use-cases focusing on Distributed Energy Resource (DER) monitoring, integration and optimization.
150580	Base	West Region Tools and Test Equipment	0.2	2,494	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of Capital tools required to perform work
150627	Base	Station Equipment Temperature Monitoring-EAST	0.1	2,479	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of Station Temperature Monitoring system in Central North and it enables controlled emergency loading beyond the nameplate rating.
150629	Base	Station Equipment Temperature Monitoring-WEST	0.1	2,479	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of Station Temperature Monitoring system in West and it enables controlled emergency loading beyond the nameplate rating.
151202	Base	Purchase of Major Station Tools - Multi-year	0.0	2,473	General Plant	Tools, Shop and Garage Equipment	Guelph	Replacement of Capital tools required to perform work
151342	Base	Cable Injection Project - (M40) - Major Mackenzie - Warden - 16th - Woodbine, Markham	0.2	2,470	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 16 failures.
150625	Base	Purchase of Major Tools - Muliti Year-CENTRAL	0.0	2,395	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
150624	Base	Purchase of Major Tools - Muliti Year-EAST	0.0	2,395	General Plant	Tools, Shop and Garage Equipment	Brampton	Replacement of Capital tools required to perform work
150626	Base	Purchase of Major Tools - Muliti Year-WEST	0.0	2,395	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of Capital tools required to perform work

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151221	Base	Metering - AMI Hardware Upgrade	0.4	2,384	System Access	Metering	Guelph	Multi-year project to expand and upgrade AMI field communication equipment to service new connections, in Guelph RZ.
101761	Base	Unforeseen Projects Initiated by the customer PS South	0.4	2,365	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
151061	Base	Markham TS2 Firewall Upgrade	0.2	2,335	System Service	System Control, Comm'ns & Performance	Powerstream	Markham TS2 Firewall Upgrade
151290	Base	Cable Replacement Project - (I3) - Bovaird - Dixie - Queen - Hwy 410, Brampton	0.7	2,280	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 8 outages due to cable failures from 2007 to 2018 with average duration of 133 minutes.
151347	Base	Cable Injection Project - (V40) - Teston - Weston - Major Mackenzie - Pine Valley, Vaughan	0.2	2,274	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 7 failures.
151244	Base	Fault Indicators	0.0	2,243	System Service	System Control, Comm'ns & Performance	Guelph	The scope of this project is to install Fault Indicators in Guelph. The project would include the fault indicators communicating to the existing SCADA and will improve the fault locating and improve SAIDI
151281	Base	Cable Replacement Project - (SCH) - Lake - Linwell - Geneva - Scott	1.0	2,227	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 6 failures, or 189 failures per 100km. The average cable installation year is 1976 in this project scope.
151181	Base	Cable Replacement Project - Left Behind Cable, Brampton	0.5	2,163	System Renewal	Underground Asset Renewal	Brampton	This project is to address cables which were part of a cable injection project but were ultimately not injectable at the time of project execution. These 'left behind' segments must be addressed, if they are left in the system they could cause a failure. Customers would not only experience an outage, but question the utilities work practices as we would have addressed only a portion of the cables instead of all the cables which could cause an outage.
151070	Base	Markham TS3 Firewall Upgrade	0.0	2,149	System Service	System Control, Comm'ns & Performance	Powerstream	Markham TS3 Firewall Upgrade
150321	M-Factor	Voltage Conversion - Galbraith MS, Hamilton	1.0	2,140	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 4 outages and had 77,467 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
151341	Base	Cable Injection Project - (M15) - 16th - Markham - 9th - Hwy 7, Markham	0.2	2,076	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 30 failures.
151345	Base	Cable Injection Project - (M51) - 14th - Bayview - Steeles - Yonge, Markham	0.2	2,071	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 9 failures.
151343	Base	Cable Injection Project - (M14) - Hwy 7 - Markham - 9th - 14th, Markham	0.2	2,070	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 10 failures.
102728	Base	Station Switchgear Replacement - Big Bay Point MS304	0.8	2,051	System Renewal	Substation Renewal	Powerstream	This substation project consists of replacing the existing switchgear and associated equipment, as well as the primary circuit switcher at Big Bay Point MS304. The current line-up is technically obsolete, in poor condition, and is prone to failure. A failure could affect a large number of customers and potentially result in complete loss of supply from the station, requiring load transfer to another station. Proactive replacement of the existing equipment is a prudent strategy as system reliability would be greatly affected in the event of a failure. Additionally, the restoration of the system to normal conditions could take 8-10 months due to long equipment lead times.
150675	Base	Emerging Customer Inititated Work Central (Mississauga)	0.2	2,049	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
150558	Base	OT Hardware Refresh	0.7	2,049	General Plant	Information Technology	Multiple	Current routers in PS backbone are limited to 100Mbps ports. Backbone with new hardware is operating at 1gbps. New routers need to operate at that capacity. Equipment in Barrie office is at end of life and hasn't been upgraded since before BHDI merger with PS in 2008. Equipment in Sandalwood is consumer grade unmanaged switches Mavis brocade switches will be nearing end of life. Replace unmanaged Linksys switches in LegHZ datacentres
151329	Base	Cable Replacement Project - (V51) - Langstaff - Kipling - Hwy 7 - Hwy 27, Vaughan	2.2	2,049	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 5 failures.
101764	Base	Road Authority Expenditure PS North	1.5	2,038	System Access	Road Authority	Powerstream	Mandatory - System Access Related Project

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Project Number	Funding	Project Name	2021 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150604	Base	Smart Meter Network Expansion - PowerStream RZ	0.2	2,036	System Access	Metering	Powerstream	Multi-year project to expand and upgrade AMI field communication equipment to service new connections.
151092	Base	Distribution Automation - Central South	0.5	2,014	System Service	SCADA and Automation	Enersource	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151030	Base	Addition of Sensors to SCADA Controllable 44kV LISs in Brampton	0.3	2,013	System Service	System Control, Comm'ns & Performance	Brampton	This project is to add sensors to the 44KV switches in Central North
150694	M-Factor	Cityview microgrid enhancements	0.0	1,985	System Service	Capacity (Lines)	Powerstream	The project is to understand how microgrids can be integrated into the distribution grid in a safe and reliable manner. The microgrid is used to evaluate integration and connection to the distribution grid, while reducing the building's load, greenhouse gas emissions, and increasing its resiliency to grid outages.
151330	Base	Cable Replacement Project - (A01) - Henderson - Yonge - Bloomington - Bathurst, Aurora	1.8	1,905	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 3 failures.
151321	Base	Cable Injection Project - (J5) - Steeles - Bramalea - Hwy 407 - Dixie, Brampton	0.1	1,903	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 0 outage due to cable failures to date. Cables are 31 to 33 years old and will be at the injection eligibility threshold by the time of project execution in 2021.
101013	Base	Planned Circuit Breaker Replacement Markham TS#3 - E & Z Buses	0.5	1,832	System Renewal	Substation Renewal	Powerstream	The existing 27.6 kV circuit breakers at Markham TS#3 have been identified in the Asset Condition Assessment (ACA) Model as requiring replacement due to obsolescence and historical failures. Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted funding requirements and could result in lengthy customer interruptions.
150670	Base	SCADA FDIR	0.1	1,799	System Service	SCADA and Automation	Multiple	Fault Detection, Isolation, and Restoration implementation, next generation of distribution automation technology. This utilizes devices which are already automated and integrates them into the OMS system such that devices perform self healing after a fault. in some cases reducing the outage time to less then 1 minute.
150764	Base	Fleet_West_Vehicle Replacement_Bucket Truck 1-285	0.4	1,780	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151283	Base	Cable Replacement Project - (HAM) - Mohawk	0.8	1,740	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 1 failure, or 20 failures per 100km. This area includes the 2D2X feeder which was identified as a Worst Performing Feeder in 2018. The average cable installation year is 1953 in this project scope.
150680	M-Factor	Alectra Drive at Home	0.5	1,731	System Service	Capacity (Lines)	Multiple	Alectra Drive at Home will demonstrate the value of integrating smart electric vehicle (EV) charging system in multi rise buildings as well as residential homes into the distribution grid such that mass uptake of electric vehicles can be managed in a safe and reliable manner. It will also provide insight into the characteristics of EV Charging, how EVs can be aggregated and controlled to provide the benefit at the local, regional and provincial system levels, and customer response to these control and optimization strategies.
151201	Base	Purchase of New Critical Spare Parts - Guelph	0.0	1,728	System Renewal	Substation Renewal	Guelph	This project involves procurement of critical spare parts for stations in the South West Operating Area (Guelph) so as to facilitate prompt repair of failed assets during emergency situations.
150912	Base	Unit # 362 Palfinger crane truck	0.5	1,660	General Plant	Fleet Renewal	Powerstream	
150619	Base	Purchase of Critical Spare Parts - West	0.0	1,649	System Renewal	Substation Renewal	Horizon	This project involves procurement of critical spare parts for stations in the West Operating Area (former Horizon) so as to facilitate prompt repair of failed assets during emergency situations.

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Project Number	Funding	Project Name	2021 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150839	Base	Fleet_West_Vehicle Replacement_ Bucket Truck 1-346	0.6	1,642	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151295	Base	Cable Replacement Project - (SCH) - Welland - Bunting - Carlton - Cushman	0.2	1,635	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 2 failures, or 48 failures per 100km. The average cable installation year is 1975 in this project scope.
151385	Base	Cable Replacement - (892) - 30-250 Janefield Ave Subdivision, Guelph	0.7	1,630	System Renewal	Underground Asset Renewal	Guelph	
151136	Base	C55 Alectra: Optimization of Business Practices	0.6	1,625	General Plant	Information Technology	Multiple	Optimizing the current software to communicate with other systems such as the ERP will allow for more efficient and effective budgeting processes and consolidation of information allowing for consistent reporting of the information from one system.
151436	Base	Cable Injection-011 - Area 58 & 59- Winston Churchill & The Collegeway, Mississauga	1.9	1,614	System Renewal	Underground Asset Renewal	Enersource	There are 14 outages, we are injecting a total of 69,795 m of cable for this project, and the average age of the cable is 30 years.
151331	Base	Cable Replacement Project - (V41) - Stephanie Blvd, Vaughan	1.5	1,604	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 2 failures.
150842	Base	Fleet_West_Vehicle Replacement_Bucket Truck 1-365	0.4	1,585	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150642	Base	Proactive Replacement of Remote Terminal Units - Central North	0.2	1,582	System Renewal	Substation Renewal	Brampton	This project involves replacement of end-of-life remote terminal units and communications equipment at stations in the Central-North Operating Area (Brampton). Replacement equipment can be leveraged to allow for Smart Grid initiatives such as quicker fault detection and automatic isolation and restoration. If existing equipment were to fail, the ability to remotely monitor and control switching devices would be lost, thus risking longer interruptions.
150617	Base	Purchase of Critical Spare Parts - Central North	0.0	1,569	System Renewal	Substation Renewal	Brampton	This project involves procurement of critical spare parts for municipal stations in the Central North Operating Area (Brampton) so as to facilitate prompt repair of failed assets during emergency situations.
151292	Base	Cable Replacement Project- (K4) - Queen - Torbram - Steeles - Bramalea	1.3	1,568	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 0 cable failure to date. Cables are 41 to 50 years old and beyond EUL.
151087	Base	Switchgear Replacement	0.2	1,559	System Renewal	Underground Asset Renewal	Guelph	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
150618	Base	Purchase of Critical Spare Parts - Central South	0.0	1,557	System Renewal	Substation Renewal	Enersource	This project involves procurement of critical spare parts for stations in the Central South Operating Area (former Enersource) so as to facilitate prompt repair of failed assets during emergency situations.
102077	Base	Major repair, refurbishment, or conversions of distribution transformers	0.0	1,541	System Renewal	Transformer Renewal	Powerstream	Transformers returned or in stores where repair/refurbishment of the unit can return it to service at a lower cost then purchase of a new unit
150368	M-Factor	New build - North Central feeders capacity (Carlton TS to Linwell Rd/Lake St) relief, St.Catharines	1.0	1,481	System Service	Capacity (Lines)	Horizon	This project is to alleviate capacity issues in the North and Central section of St.Catharines, primarily served by Carlton BY bus feeders which are over the planning limit.
151222	Base	Concrete Structures	0.2	1,469	System Renewal	Underground Asset Renewal	Guelph	Replacement of lids on civil structures to avoid public risk
150334	Base	Distribution Automation - West	0.7	1,424	System Service	SCADA and Automation	Horizon	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151371	Base	Cable Replacement - (87) - Marksam Rd/ Rhonda Rd Subdivision, Guelph	0.6	1,423	System Renewal	Underground Asset Renewal	Guelph	
151052	Base	Emerging Customer Initiated Work - Relocations	0.1	1,412	System Access	Customer Connections	Guelph	Mandatory - System Access Related Project

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Project Number	Funding	Project Name	2021 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150751	Base	Facilities_East_Capital Replacement Investment Support	1.2	1,374	General Plant	Facilities Management	Powerstream	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
151288	Base	Cable Replacement Project - (H4) - Queen - Hwy 410 - Steeles - Kennedy, Brampton	0.6	1,354	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 4 outages due to cable failures from 2009 to 2018 with average duration of 189 minutes.
150335	Base	Pole Renewal - West	2.4	1,338	System Renewal	Overhead Asset Renewal	Horizon	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
150795	Base	Fleet_Central South Vehicle Replacement- 244-08 S Bucket	0.5	1,329	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151326	Base	Cable Replacement Project - (V44) - Hayhoe - Islington - Hwy 7, Vaughan	0.8	1,312	System Renewal	Underground Asset Renewal	Powerstream	From 2016-2019YTD customers in this area experienced 6 failures.
102102	Base	Enterprise File Synchronization and Sharing Platform	0.0	1,308	General Plant	Information Technology	Multiple	Alectra is looking for a secure Enterprise File Synchronization and Sharing solution that will increase productivity of internal and external teams by facilitating seamless collaboration of corporate data anywhere , anytime, and on any device without the restrictions of having to connect to the Alectra network. The overarching goal of this implementation will be to provide a balance between delivering business productivity and securing enterprise information.
150502	Base	On-Line Dissolved Gas Oil Monitoring of 10 MS Transformers - EAST	0.1	1,293	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of Online DGA monitoring system at MS in East. Online DGA has proven to be invaluable in diagnosing a potential transformer failure as well as assessing the health of a transformer
150738	Base	Facilities_West_Capital Replacement Investment Support	0.3	1,289	General Plant	Facilities Management	Horizon	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
150573	Base	Oracle ULA Extension	1.5	1,265	General Plant	Information Technology	Multiple	MULTI ANSWER
150790	Base	Fleet_Central South Vehicle Replacement-Puller/Tensioner	0.2	1,265	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151138	M-Factor	Voltage Conversion - MS-2 Church St, Brampton	1.4	1,255	System Renewal	Overhead Asset Renewal	Brampton	From 2015-2017 customers in this area experienced 11 outages and had 20,372 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
102241	Base	Proactive Replacement of Remote Terminal Units - East	0.1	1,240	System Renewal	Substation Renewal	Powerstream	This project involves replacement of end-of-life remote terminal units and communications equipment at stations in the East Operating Area (former PowerStream). Replacement equipment can be leveraged to allow for Smart Grid initiatives such as quicker fault detection and automatic isolation and restoration. If existing equipment were to fail, the ability to remotely monitor and control switching devices would be lost, thus risking longer interruptions.
151282	Base	Cable Replacement Project - (SCH) - Weiden	0.2	1,218	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 6 failures, or 962 failures per 100km. The average cable installation year is 1978 in this project scope.
151064	Base	Secondary Pedestals -St. Catharines	0.2	1,154	System Service	Safety & Security	Horizon	This project involves the replacment of above grade steel secondary pedestals which pose a safety risk to the general public

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Project Number	Funding	Project Name	2021 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150862	Base	Fleet_Central North Vehicle Replacement-RBD 57	0.6	1,125	General Plant	Fleet Renewal	Brampton	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151322	Base	Cable Injection Project - (K4) - Queen - Torbram - Steeles - Bramalea, Brampton	0.1	1,125	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 1 outage due to cable failure in 2007.
101125	Base	Lines Mobile Equipment - IT/OT Infrastructure	0.1	1,119	General Plant	Information Technology	Multiple	This budget covers the deployment of mobile technology - laptops/field tablets and accessories - within the Lines Department to gain efficiencies in field operations. By deploying this technology, the Lines area can move away from a paper-based to a more electronic environment. In future, it is envisioned that, for example, mobile applications will facilitate the electonic transmission of work orders and electronic record keeping (asset tracking, tailboards, switching orders, timesheets). This will allow for streamlined operational processes and record-keeping, thereby supporting corporate technological initiatives such as the GIS, Outage Management System, and future Workforce Management system. At present, all Lines Management personnel and Subforemen have laptops, facilitating activities such as viewing of the GIS, electronic Asset Tracking Forms, and use of OMS Responder Mobile. Expenditures in this area will allow for more deployment of field devices among Lines crews and for the implementation of more computerized processes.
150500	Base	On-Line Dissolved Gas Oil Monitoring of 10 MS Transformers - WEST	0.2	1,117	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of installation of Transformer bushing monitoring system in West
151405	Base	Cable Replacement Project- Erin Mills & N.Sheridan (16), Mississauga	1.2	1,105	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 8 outages, the length is 3,326 m, and the average cable age is 45 years old.
150570	Base	Alectra West Substation Ground Grid Installations	0.3	1,091	System Service	Safety & Security	Horizon	This project is to install ground grid at East Stations
151204	Base	Upgrade to Station Facilities (Buildings/Civil work) Multi-year	0.0	1,089	General Plant	Facilities Management	Guelph	This project involves work involving structural components of stations, including windows, brickwork, roofs, foundations, drainage, doors, etc. at stations in the SouthWest Operational Area. Not keeping up with this work would result in advanced deterioration resulting in even greater maintenance costs, potential safety concerns and potential failure of the electrical equipment in the building causing power interruptions.
151293	Base	Cable Replacement Project - (SCH) - Lakeshore - Stanley - Parnell - Chancery	0.9	1,081	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 2 failures, or 55 failures per 100km. The average cable installation year is 1978 in this project scope.
151327	Base	Cable Replacement Project - (BR6) - 8th and Dissette, Bradford	0.4	1,077	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 6 failures.
151041	Base	Protection Logic Upgrades - East MSs (North)	0.1	1,061	System Service	System Control, Comm'ns & Performance	Powerstream	
150859	Base	Fleet_West_Vehicle Replacement_Cargo Vans	0.2	1,060	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150865	Base	Fleet_West_Vehicle Replacement_Pickups	0.2	1,055	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151406	Base	Cable Replacement Project- Rathburn Rd W & Queenbridge (8), Mississauga	0.3	1,053	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 4 outages, the length is 857 m, and the average cable age is 40 years old.
150762	Base	Facilities_Reno_Patterson - Service Centre Upgrades	0.1	1,036	General Plant	Facilities Management	Powerstream	Repairs to building envelop/walls to prevent further damage to the build infrastructure and systems that are supporting critical operational systems such as control rooms, server rooms, customer services groups, etc.
100919	M-Factor	Install 2nd 27.6 kV Cct on Woodbine Ave from Elgin Mills Rd to 19th Ave	0.6	1,028	System Service	Capacity (Lines)	Powerstream	This project is to add one additional 27.6kV cct on the existing pole line from Elgin Mills Rd to 19th Ave that has provision for 2nd cct to increase capacity in the 19th and woodbine area as well as the Future Urban area

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151157	Base	Fleet_West_Vehicle Replacement_Dump/Cargo Truck	0.2	1,025	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150578	Base	Alectra - Microsoft Software	0.1	1,021	General Plant	Information Technology	Multiple	Compliance for Alectra employees for Microsoft application suite of products to perform daily operation .
151334	Base	Cable Replacement Project - (BA13) - Dunlop and Miller, Barrie	0.4	1,010	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 41 years old and will be 43 when project starts (2021).
150392	Base	Storage Upgrade	0.3	995	General Plant	Information Technology	Multiple	Upgrade on premise Enterprise Storage platform in addition to increased capacity requirements as a result of employee and customer demand for data retention. Off Premise storage costs (SharePoint Online, One Drive, Development, test and production environments)
151091	Base	Switchgear Renewal - Central South	3.7	982	System Renewal	Underground Asset Renewal	Enersource	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
151159	Base	Fault Indicator Installation and Replacement - Hamilton and St. Catharines	0.3	966	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of fault indicator installation in West
150628	Base	Station Equipment Temperature Monitoring-CENTRAL	0.1	965	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of Station Temperature Monitoring system in Central South and this enables controlled emergency loading beyond the nameplate rating.
150929	Base	Fleet East Vehicle replacement - Pickup truck 3500	0.5	957	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151287	Base	Cable Replacement Project - (SCH) - Bolger - Elma - Dorothy - The Meadows	0.4	953	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 10 failures, or 322 failures per 100km. The average cable installation year is 1976 in this project scope.
151065	Base	Manhole Lid Replacement	0.3	925	System Renewal	Underground Asset Renewal	Horizon	Replacement of lids on civil structures to avoid public risk
150317	M-Factor	Voltage Conversion - Deerhurst MS, Hamilton	2.6	869	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 6 outages and had 121,838 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
150904	Base	Fleet East Yearly Light and Misc equipment	0.0	847	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150914	Base	Fleet East Vehicle replacement - Pickup truck 1500	0.0	842	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150910	Base	Fleet East Unit # 91 Single bucket truck replacement	0.5	839	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150866	Base	Fleet_ Central North Vehicle Replacement -Forklift 178	0.1	792	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
101622	Base	DACS Inverters and RTU's removal - East	0.0	765	System Renewal	Substation Renewal	Powerstream	This project involves removal of obsolete and out-of-service DACs inverters, RTUs and associated wiring at stations in the East Operating Area (former PowerStream) so as to remove clutter, thus simplifying future work and freeing up space for future station upgrades.
150779	Base	Fleet_Central South Replacement-DBL.Bucket 228-05	0.6	763	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150864	Base	Fleet_Central North Vehicle Replacement_Loader 175	0.1	762	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
101632	Base	Obsolete Revenue Metering Removal from TSs	0.0	740	System Service	Safety & Security	Powerstream	Evolution of the distribution system to permit more efficient integration of DERs to yield 18

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150921	Base	Fleet East Unit # 123 83' Double Bucket	0.6	718	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150922	Base	Fleet East Unit # 59 digger truck	0.6	714	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150925	Base	Fleet East Vehicle replacement - Cube Vans	0.2	701	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151082	Base	SCADA Infrastructure	0.1	688	System Service	System Control, Comm'ns & Performance	Guelph	
151058	Base	Distribution Transformer Replacements & Upgrades	0.3	683	System Renewal	Transformer Renewal	Guelph	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
150719	Base	Upgrade of JMUX Optical Interfaces - Alectra East SONET Ring	0.3	676	System Service	System Control, Comm'ns & Performance	Powerstream	
150669	Base	Burden Allocation - System Access	0.6	670	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
102166	Base	SQL Expansion - IT Infrastructure	0.5	636	General Plant	Information Technology	Multiple	Expand existing SQL infrastructure to meet project demands and natural growth of database. Add system capacity, improve performance, and reduce the risk of downtime due resource constraints.
150863	Base	Fleet_Central North Vehicle Replacement-S/Bucket 70	0.5	620	General Plant	Fleet Renewal	Brampton	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150203	Base	Station Equipment Temperature Monitoring-NORTH & TS	0.1	614	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of Station Temperature Monitoring system in East and it enables controlled emergency loading beyond the nameplate rating.
150496	Base	iPass Project Management – Planned Capital - West	0.7	589	System Renewal	Underground Asset Renewal	Horizon	Help in optimizing DER performance and efficiency to improve addressing overall energy needs.
150876	M-Factor	Fleet_Central North Vehicle Replacement_ Step Vans 6310	0.3	568	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
102046	Base	Purchase of Major Tools - Muliti Year-North & TS	0.0	565	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
150793	M-Factor	Fleet_Central South Vehicle Replacement-210-09 S/bucket	0.5	560	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151206	Base	Installation of SWI Video Security System	0.0	544	System Service	Safety & Security	Guelph	This project consists of installation of SWI Video security system in SouthWest. The implementation of video monitoring will ensure that station security and safety related issues can be easily identified and addressed immediately
150905	Base	Fleet East Multi Year Shop tools	0.0	544	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of tools and shop equipment required to repair and maintain vehicles to ensure vehicle availability to support capital systems projects.
101816	Base	Alectra East (South), Fault Indicator Installation and Replacement Multi-year initiative	0.2	542	System Service	System Control, Comm'ns & Performance	Powerstream	This project is installtion of fault indictor in East - North Region which will result improved outage response, operational efficiency, and reliability
151085	M-Factor	Rear Lot Conversions	0.1	531	System Renewal	Rear Lot Conversion	Guelph	
101134	Base	Alectra East (North), Fault Indicator Installation and Replacement Multi-year initiative	0.2	527	System Service	System Control, Comm'ns & Performance	Powerstream	This project is installtion of fault indictor in East - South Region which will result improved outage response, operational efficiency, and reliability

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Project Number	Funding	Project Name	2021 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150437	Base	OT GIS & OMS Enhancements	0.4	520	General Plant	Information Technology	Multiple	Ongoing productivity enhancements to core GIS and OMS platforms to meet internal and customer demand for functionality.
150602	Base	Smart Meter Test Facility - PowerStream RZ	0.0	471	System Access	Metering	Powerstream	Multi-year project to expand the capability of the Meter Test Facility to test increasing types of meters and AMI systems before they are placed into production.
102027	Base	Purchase of Critical Spare Parts - Multiyear - East	0.1	428	System Renewal	Substation Renewal	Powerstream	This project involves procurement of critical spare parts for transformer and municipal stations in the East Operating Area (former PowerStream) so as to facilitate prompt repair of failed assets during emergency situations.
150494	Base	iPass Project Management – Planned Capital - Central-North	0.4	409	System Renewal	Overhead Asset Renewal	Brampton	Predicting the influence of weather conditions and DER contribution simultaneously on the power grid, for proactively mitigating local outages,
150495	Base	iPass Project Management – Planned Capital - Central-South	0.4	409	System Renewal	Overhead Asset Renewal	Enersource	Enable better visibility towards preventive equipment maintenance needs arising due to DER penetration which will further help mitigate outage risks,
101781	Base	iPass Project Management – Planned Capital - East	0.4	409	System Renewal	Overhead Asset Renewal	Powerstream	Estimating the effects of DER contribution at the feeder and region levels to further optimize the energy flows between the Utility and its consumers,
150607	M-Factor	Station LED Lighting Upgrades - Central	0.0	408	System Renewal	Substation Renewal	Enersource	Replacement of inefficient lighting fixtures and lamps at stations in the Central Operational Area will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
150606	M-Factor	Station LED Lighting Upgrades - EAST	0.0	408	System Renewal	Substation Renewal	Brampton	Replacement of inefficient lighting fixtures and lamps at stations in this Operational Area will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
150513	Base	Installation of SWI Video security system at 4 MS stations per year - Annual Multi-year initiative-EAST	0.1	372	System Service	Safety & Security	Brampton	This project consists of installation of SWI Video security system in CentralNorth
150951	M-Factor	Fleet East Vehicle addition - Van pool van	0.0	345	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
102034	Base	Upgrade to Station Facilities (Building / Civil work) Multi-year - East	0.1	340	System Renewal	Substation Renewal	Powerstream	MULTI ANSWER
150550	Base	ServiceNow Expansion - IT Infrastructure	0.1	325	General Plant	Information Technology	Multiple	Building and adding features within ServiceNow we will eliminate outdated processes by automating more tasks and decisions allowing us to be more efficient and productive. Enhancements include the automation of the flow of data between other systems and across programs used by various departments and ServiceNow. Servicebots will be used as ServiceNow learns from past patterns, in order to predict future outcomes, including determining risks, assigning owners, and categorizing work. Learned models set the category of the IT request and assign the task to the right team, as well as calculate associated risk of action or inaction. This capability will improve the speed and efficiency of IT service delivery.
150575	Base	OT Scada map Cleanup	0.5	316	General Plant	Information Technology	Multiple	SCADA Map clean up program to ensure accuracy and safety in the SCADA environment.
150873	M-Factor	Fleet_Central North Vehicle Replacement_Vans	0.1	308	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150884	M-Factor	Fleet_Central North Vehicle Replacement Pick up 9514	0.1	299	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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Project Number	Funding	Project Name	2021 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150610	M-Factor	Driveway Paving - Various Stations - Multi-year initiative - Central	0.0	290	System Renewal	Substation Renewal	Enersource	Existing driveways at stations in the Central Operational Area that are covered in gravel and require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150609	M-Factor	Driveway Paving - Various Stations - Multi-year initiative - East	0.0	290	System Renewal	Substation Renewal	Brampton	Existing driveways in this Operational Area that are covered in gravel require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150612	M-Factor	Driveway Paving - Various Stations - Multi-year initiative - West	0.0	290	System Renewal	Substation Renewal	Horizon	Existing driveways in the West Operational Area that are covered in gravel require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150800	M-Factor	Fleet_Central South Vehicle Replacement- trailer	0.0	288	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
102050	Base	Various Stations-Station Lighting Upgrade/Retrofit-Energy Efficiency Lighting-initiative Multi-year - East	0.1	240	System Renewal	Substation Renewal	Powerstream	Replacement of inefficient indoor and outdoor lighting fixtures and lamps at stations in the East Operating Area (former PowerStream) will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
150961	Base	Fleet_West_Vehicle Replacement_Forklift	0.2	220	General Plant	Fleet Renewal	Horizon	Asset replacement due to poor conditions and age and lack of parts replacement. Equipment not as available to support capital system renewal projects and respond to emergencies with material handling. .
150787	M-Factor	Fleet_Central South Vehicle Replacement- Van	0.1	183	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
103030	Base	Technology Upgrades Improving the System Control Room Environment	0.1	148	General Plant	Information Technology	Multiple	This project will continue to build on the original capital project whose scope was focused on the replacement of computers used as Operator WorkStations. The scope of this program has been expanded to account for all technology purchases required for the Control Room theater.
151108	Base	Office Equipment	0.1	144	General Plant	Facilities Management	Guelph	Replace aging equipment within the Guelph operational centre to ensure optimal performance in managing the distribution assets
151381	Base	2021 GUELPH - Fleet	0.7	138	General Plant	Fleet Renewal	Guelph	Replacement of end of life asset due to poor conditions, high mileage and engine hours and age. Vehicle experiencing more down time at the shop for repairs and maintenance impacting vehicle availability.
151245	M-Factor	Capacitor Bank Installations	0.0	135	System Service	System Control, Comm'ns & Performance	Guelph	This project consists of capacitor bank installation to increase power factor, capacity and reduce losses.

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Project Number	Funding	Project Name	2021 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
102931	Base	Paving of 3 MS & TS Station Driveways per year - Annual Multi-year initiative - East	0.0	125	System Renewal	Substation Renewal	Powerstream	Existing driveways at stations in the East Operating Area (former PowerStream) are covered in gravel and require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
151039	Base	Fleet_West_Equipment_Key Box	0.0	124	General Plant	Fleet Renewal	Horizon	Adopted the current vehicles key management system at all sites to ensure access to vehicles when required. This ensure access to vehicles after hours and tracking of vehceil keys.
150655	Base	Maingate MS - Station RTU and Protection Relays Upgrade	0.2	124	System Service	System Control, Comm'ns & Performance	Enersource	This project consist of RTU and protection relay upgrade at Maingate MS
150689	Base	Rogers MS - Station RTU and Protection Relays Upgrade	0.2	124	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of bus, line and transformer protection at Richmond Hill TS
151076	Base	Fuel Pump Replacement Vansickle Rd.	0.0	123	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of systems that have surpass end of life, are consistently down for repairs and parts are difficult to obtain, impacting fuel of vehicles to support capital systems projects and customer emergencies responses.
150597	Base	Lock Box Installs - East	0.0	116	System Access	Metering	Powerstream	Multi-year project to install lock boxes at ICI properties with restricted access to eliminate need for a customer appointment for access.
150569	Base	Server OS Upgrades - IT Infrastructure	0.1	95	General Plant	Information Technology	Multiple	Operating system upgrades to support IT infrastructure.
150737	Base	Facilities_East Region_Reactive Capital	0.3	92	General Plant	Facilities Management	Powerstream	Approved capital funds available to address any unforeseen and unbudgeted asset replacements/demands. Having these funds available for immediate use is critical for Facilities building operations to restore equipment/assets back to normal operations a.s.a.p.
150736	Base	Facilities_West Region_Reactive Capital	0.3	92	General Plant	Facilities Management	Horizon	Approved capital funds available to address any unforeseen and unbudgeted asset replacements/demands. Having these funds available for immediate use is critical for Facilities building operations to restore equipment/assets back to normal operations a.s.a.p.
150734	Base	Facilities_Central Region_Reactive Capital	0.3	92	General Plant	Facilities Management	Multiple	Approved capital funds available to address any unforeseen and unbudgeted asset replacements/demands. Having these funds available for immediate use is critical for Facilities building operations to restore equipment/assets back to normal operations a.s.a.p.
151079	Base	Fleet West Major Equipment & Tools	0.1	91	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of tools and shop equipment required to repair and maintain vehicles to ensure vehicle availability to support capital systems projects.
150676	Base	Mobile Devices - IT Infrastructure	0.0	88	General Plant	Information Technology	Multiple	
103171	Base	Implementation of a new Alectra Network Operations Voice Radio System	0.0	79	General Plant	Information Technology	Multiple	
150563	Base	OT SCADA upgrade cycle 3	0.2	46	General Plant	Information Technology	Multiple	Planned hardware updrades for monitors and workstations on enterprise SCADA platform.
150747	M-Factor	Net Zero Energy Emissions	0.3	35	System Service	Distributed Energy Resources (DER)	Powerstream	The project will help Alectra Utilities to ensure that growing DER challenges are met through building expertise and capability in real time monitoring, integrating and optimizing of DERs in line with customer preferences. This will lead to a system that can safely integrate and optimize value from DERs for the benefit of customers.
151053	Base	Building Sustainment	0.2	32	General Plant	Facilities Management	Guelph	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
150562	Base	OT Firewall Upgrade	0.2	20	General Plant	Information Technology	Multiple	Hardware upgrade cycle for OT platform.

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Project Number	Funding	Project Name	2021 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150704	Base	Feeder Protection Migration to DNP - Jim Yarrow TS	0.2	16	System Renewal	Substation Renewal	Brampton	This is part of a multi-phase project to upgrade aging and failure-prone protection systems at Jim Yarrow TS to the current protection standards. Proper protection to distribution feeders will provide protection to the assets in the case of faults.
151031	Base	Fleet Shop equipment refurbishment and replacement	0.1	13	General Plant	Fleet Renewal	Enersource	For the refurbishment of trailers, shop compressors and hoists to extend the life of the assets instead of replacement to reduce the need fro capital expenditures.
150678	Base	P&C Specific Tools & Testing Equipment - West	0.0	12	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
102999	Base	P&C Specific Tools and Testing Equipment	0.0	12	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
102157	Base	Server Refresh - IT Infrastructure	0.4	10	General Plant	Information Technology	Multiple	Ongoing server refresh to support applications.
150396	Base	Network Refresh - IT Infrastructure	0.4	10	General Plant	Information Technology	Multiple	Replacement of existing network infrastructure that is unsupported (or soon to be) including further rationalization and design modifications to support the delivery of services throughout the Alectra Environment.

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150404	Base	Kenilworth TS Power Factor Correction	0.6	184,357	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of capacitor bank installation at Kenilworth TS to improve PF and to comply with IESO market rules.
150725	Base	Lines Central-North - Reactive Renewal	1.2	181,454	System Renewal	Reactive Capital	Brampton	Replacement of assets which have failured and requires replacement in order to restore power to customers
150690	Base	Lines Central-South - Reactive Renewal	3.2	171,818	System Renewal	Reactive Capital	Enersource	Replacement of assets which have failured and requires replacement in order to restore power to customers
150682	Base	Remote Fault Indicator Deployment	0.4	164,221	System Service	System Control, Comm'ns & Performance	Multiple	This project consists of remote fault indictor deployment which will result improved outage response, operational efficiency, and reliability
102247	Base	Interest Capitalization	1.2	104,304	General Plant	Other General Plant	Powerstream	
150596	Base	Meter Renewal - all types but Suite - PowerStream RZ	0.1	94,470	System Access	Metering	Powerstream	Multi-year project to renew existing residential (except suite) metering equipment.
101871	Base	Services (New and Upgrades) - Layouts – East North - Commercial Services	0.0	94,398	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
151180	Base	Central-North - Capitalization of Locates	0.0	94,387	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
150600	Base	Firmware Upgrades for Smart Meters - East	0.0	94,363	System Access	Metering	Powerstream	Multi-year project to renew residential Smart meter firmware to improve communication performance.
151169	Base	Central-South - Capitalization of Locates	0.0	94,345	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
151174	Base	West Lines - Capitalization locates	0.0	94,319	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150631	Base	Transformer Station Metering - Central North	0.1	94,246	System Access	Metering	Brampton	Multi-year project to purchase, install and renew wholesale metering equipment.
101696	Base	Subdivision - North Underground Residential Distribution System Final Close out and Inspection.	0.0	94,197	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
103381	Base	East Lines - Capitalization locates	0.1	94,145	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101870	Base	Services (New and Upgrades) - Layouts – East South - Commercial Services	0.1	94,022	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101869	Base	Services (New and Upgrades) - Layouts – East North - New Residential	0.1	93,989	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150650	Base	Replace PCB Risk PT's - Enersource RZ	0.1	93,977	System Access	Metering	Enersource	Multi-year project to replace metering transformers identified with unacceptable levels of PCB's, to prevent hazardous spills.
101919	Base	New Services (new and upgrades) - Commercial, Industrial and Institutional (ICI) Projects - NORTH	0.1	93,955	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150647	Base	Transformer Station Metering - Enersource RZ	0.1	93,884	System Access	Metering	Enersource	Multi-year project to purchase, install and renew wholesale metering equipment.
151049	Base	Commercial, Industrial, Institutional, Apartment Connections	0.1	93,830	System Access	Customer Connections	Guelph	Mandatory - System Access Related Project
101685	Base	Subdivision - South Underground Residential Distribution System Final Close out and Inspection.	0.1	93,778	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150457	Base	Services (New and Upgrades) - Layouts – St Catharines	0.2	93,519	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
151162	Base	Non Recoverable replacement of Distribution Equipment due to accident/vandalism	0.3	93,457	System Renewal	Reactive Capital	Horizon	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
101924	Base	Mulit Unit Metering for New Buildings NORTH - PowerStream RZ	0.2	93,421	System Access	Metering	Powerstream	Multi-year project to purchase and install suite metering in new buildings in northern area of territory.
150588	Base	New Residential Subdivision Development - Alectra West	0.2	93,266	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
101791	Base	New Services - new and upgrades - COMMERCIAL, INDUSTRIAL, INSTITUTIONAL (ICI) SERVICES - SOUTH	0.2	92,878	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101812	Base	Reactive Capital, Alectra East - LIS	0.3	92,710	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
150754	Base	Lines Central-North - Non-Recoverable Replacements	0.4	92,705	System Renewal	Reactive Capital	Brampton	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
150726	Base	Lines Central-South - Non-Recoverable Replacements	0.4	92,705	System Renewal	Reactive Capital	Enersource	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
101820	Base	Reactive Capital, Alectra East - Non-Recoverable Replacement	0.3	92,583	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
150389	Base	Services (New and Upgrades) - Layouts – Central North	0.4	92,563	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150651	Base	C & I Metering - Renewal- Brampton RZ	0.1	92,561	System Access	Metering	Brampton	Multi-year project to renew existing ICI metering equipment.
150386	Base	New Service (new and upgrades) - Commercial and Institutional (ICI) Projects - Central North	0.4	92,424	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
150453	Base	CIS CC&B Modifications(Regulatory Enhancements)	0.9	92,261	General Plant	Information Technology	Multiple	Enhancements to the CIS (CC&B) application needed to meet any regulatory requirements Such requirements in the past have been Ontario Energy Savings Program (OESP) as well as the Monthly Billing projects.
150649	Base	Suite Metering - Enersource RZ	0.6	91,838	System Access	Metering	Enersource	Multi-year project to purchase, install and renew suite metering equipment.
150654	Base	C & I Metering - New Services - Brampton RZ	0.6	91,553	System Access	Metering	Brampton	Multi-year project to purchase and install ICI metering equipment on new services.
150595	Base	C & I and Wholesale Metering - PowerStream RZ	0.6	91,530	System Access	Metering	Powerstream	Multi-year project to purchase, install, and renew ICI and wholesale metering equipment.
101868	Base	Services (New and Upgrades) - Layouts – East South - New Residential	0.5	91,488	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101795	Base	Multi Unit Metering for New Buildings SOUTH - PowerStream RZ	0.5	91,273	System Access	Metering	Powerstream	Multi-year project to purchase and install suite metering in new buildings in southern area of territory.
101873	Base	Services (New and Upgrades) - Layouts – East North - Residential Upgrades	0.6	91,023	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
151051	Base	System Relocations Road Authorities	0.7	91,002	System Access	Road Authority	Guelph	Mandatory - System Access Related Project
150652	Base	New Residential Subdivision Development - Alectra Central South	1.1	90,948	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
150388	Base	Services (New and Upgrades) - Layouts – Central South	0.8	90,774	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
150692	Base	New Feeder in Residential Subdivision Development - Alectra Central North	0.7	90,609	System Service	Capacity (Lines)	Brampton	This expenditure is required to meet the needs of the development community that construct municipal approved residential subdivisions in Alectra Utilities' Central North service territory
150599	Base	Suite Meter - Reverification - PowerStream RZ	0.1	90,368	System Access	Metering	Powerstream	Multi-year project to renew Measurement Canada seal dates on existing suite metering equipment.
150455	Base	Services (New and Upgrades) - Commercial, Industrial and Institutional (ICI) Projects - St Catharines	0.9	90,201	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150659	Base	Residential Meters - by Metering - Brampton RZ	0.9	90,096	System Access	Metering	Brampton	Multi-year project to purchase, install and renew residential metering equipment. Work carried out by Metering.
150456	Base	Services (New and Upgrades) - Layouts – Hamilton	0.9	89,962	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150630	Base	New Residential Subdivision Development - Alectra Central North	1.1	89,952	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
101828	Base	Reactive Capital, Alectra East - Recoverable Replacement	0.7	89,766	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover some costs for (i.e. pole hit, vehicle at scene of accicent, Alectra Utilities obtains most of costs (near $0 impact too budget))
101896	Base	New Institutional/Commercial/Industrial Subdivision Development - Alectra East	0.9	89,347	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101872	Base	Services (New and Upgrades) - Layouts – East South - Residential Upgrades	0.8	89,345	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101800	Base	Reactive Capital, Alectra East - Storm Damage	1.2	86,549	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
151047	Base	Subdivisions	0.4	85,393	System Access	Customer Connections	Guelph	Mandatory - System Access Related Project
150620	Base	Metering Renewal - all types - Horizon RZ	2.1	84,064	System Access	Metering	Horizon	Multi-year project to purchase, install, and renew residential, ICI and wholesale metering equipment.
101808	Base	Reactive Capital, Alectra East - Switchgears	1.8	83,304	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
150648	Base	Metering Renewal - all types but Suite - Enersource RZ	2.3	82,569	System Access	Metering	Enersource	Multi-year project to purchase, install and renew residential (except suite) and ICI metering equipment.
101892	Base	New Subdivision Development - Secondary Service Lateral - Alectra East	2.8	80,776	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150384	Base	New Service (new and upgrades) - Commercial and Institutional (ICI) Projects - Central South	3.4	77,904	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
150449	Base	Services (New and Upgrades) - Commercial, Industrial and Institutional (ICI) Projects - Hamilton	5.2	69,328	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
151095	Base	Reactive Restoration	1.0	63,547	System Renewal	Reactive Capital	Guelph	Replacement of assets which have failured and requires replacement in order to restore power to customers

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
101824	Base	Reactive Capital, Alectra East - Distribution Equipment	5.4	58,190	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
151161	Base	Joint Use Pole Removal	0.1	57,200	System Renewal	Overhead Asset Renewal	Horizon	This project is for the removal of poles in the field after third party (joint use) attachements have been removed or transferred for projects already closed by Alectra Utilities.
151050	Base	Metering - all types - Guelph RZ	0.4	55,986	System Access	Metering	Guelph	Multi-year project to purchase, install, and renew residential, ICI and wholesale metering equipment in Guelph RZ.
150469	Base	ERP JD Edwards Enhancements	1.8	55,715	General Plant	Information Technology	Multiple	Allocation of capital funds to provide 3rd party assistance on capital work, along with creating system enhancements to the JD Edwards ERP and supporting Systems.
101832	Base	Joint Use Pole Removal	0.6	54,024	System Renewal	Overhead Asset Renewal	Powerstream	This project is for the removal of poles in the field after third party (joint use) attachements have been removed or transferred for projects already closed by Alectra Utilities.
100159	M-Factor	Hydro One Asset Purchase - Alliston	0.5	52,601	System Service	Capacity (Lines)	Powerstream	Purchase the 44 kV pole line along Industrial Parkway (approx 4.5 km's). The pole line is required for the new Alliston 10MVA substation 13.8kV integration (101571).
101887	Base	New Residential Subdivision Development - Alectra East	10.2	44,864	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
100859	Base	Switchgear Renewal - East	2.8	43,705	System Renewal	Underground Asset Renewal	Powerstream	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
151089	Base	Overhead Rebuilds	1.2	39,246	System Renewal	Overhead Asset Renewal	Guelph	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
150471	Base	ERP JD Edwards Hardware Upgrades	0.6	38,646	General Plant	Information Technology	Multiple	Hardware upgrade to support ERP refresh cycle.
101508	Base	Transformer Renewal - East	2.9	37,474	System Renewal	Transformer Renewal	Powerstream	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
150673	Base	Road Authority Central (Mississauga)	4.2	35,001	System Access	Road Authority	Enersource	Mandatory - System Access Related Project
150134	Base	Cable Injection Project - (V37) - Langstaff and Weston, Vaughan	1.7	34,877	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 20 failures.
150073	M-Factor	Vaughan TS#1 Bus Differential & Overcurrent Protections Upgrades	0.3	34,014	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the Vaughan TS#1 Bus Differential & Overcurrent Protections Upgrades with new relays having fault recording capabilities.
150645	Base	Road Authority Central (Brampton)	5.0	31,814	System Access	Road Authority	Brampton	Mandatory - System Access Related Project
150828	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-West	0.9	31,592	System Renewal	Overhead Asset Renewal	Horizon	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151452	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-West	0.9	31,590	System Renewal	Underground Asset Renewal	Horizon	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
101762	Base	Road Authority Expenditure PS South	4.1	31,544	System Access	Road Authority	Powerstream	Mandatory - System Access Related Project
101355	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-East	1.0	31,425	System Renewal	Overhead Asset Renewal	Powerstream	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151450	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-East	1.0	31,425	System Renewal	Underground Asset Renewal	Powerstream	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151363	Base	Cable Injection Project - (M25) - 14th - McCowan - Steeles - Old Kennedy, Markham	0.8	27,519	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 14 failures.
150364	M-Factor	New build - Port Credit Village East (Marina) 27.6kV Feeders, Mississauga	4.4	25,989	System Service	Capacity (Lines)	Enersource	The Port Credit East development requires a 27.6kV circuit expansion in order to provide capacity and contingency for the Mid-rise mixed residential/commercial development.
100867	Base	Pole Renewal - East	5.3	25,595	System Renewal	Overhead Asset Renewal	Powerstream	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151074	Base	Reactive renewal	3.3	25,136	System Renewal	Reactive Capital	Horizon	Replacement of assets which have failured and requires replacement in order to restore power to customers
151362	Base	Cable Injection Project - (M39) - 16th - Warden - Hwy 7 - Woodbine, Markham	1.3	23,714	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 8 failures.
151360	Base	Cable Injection Project - (M31) - 14th - Old Kennedy - Steeles - Warden, Markham	0.8	23,641	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 38 failures.
150070	M-Factor	Markham TS#1 Bus Differential & Overcurrent Protections Upgrades	0.1	22,500	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the Markham TS#1 Bus Differential & Overcurrent Protections Upgrades with new relays having fault recording capabilities.
151043	Base	Transformer Renewal - Central South	1.9	21,870	System Renewal	Transformer Renewal	Enersource	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
150467	M-Factor	CIS CC&B upgrade	6.8	21,392	General Plant	Information Technology	Multiple	Aligns with Alectra customer experience plan requirements and enhanced services and emerging channels. Comprised of third party integration support, hardware, resources, testing to support existing Alectra platform as the current version 2.5 support ends in 2022. Project ensures enhanced functionality, compatibility with ancillary systems, security upgrades, automation and rate billing engine to support future utility DER integration.
101480	M-Factor	Build double ccts 27.6kV pole line on 19th Ave between Leslie St and Bayview Ave	1.3	20,987	System Service	Capacity (Lines)	Powerstream	This project is to build 2 ccts pole line on 19th Ave from Leslie St to Bayview Ave to supply the new subdivision in Leslie North that is bounded by Elgin Mills Rd., Leslie St., 19th Avenue and Bayview Avenue. There will be new houses along 19th Ave between Bayview Ave and Leslie St as the subdivision secondary plan, however, there is no pole line now.
150371	M-Factor	New build - 27.6kV Feeder Extension Traders, Mississauga	2.8	19,792	System Service	Capacity (Lines)	Enersource	Install new feeders in the Traders area between Hurontario St and Kennedy Rd from Matheson Blvd to Britannia Rd required to meet demand due to intensification and to ensure the reliability of current customers.
151303	Base	Cable Replacement Project - (HAM) - Stone Church - Garth - Lincoln M. Alexander	2.4	19,665	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 5 failures, or 18 failures per 100km. The average cable installation year is 1976 in this project scope.
150664	Base	Residential Meters - by Lines - Brampton RZ	0.6	18,167	System Access	Metering	Brampton	Multi-year project to purchase, install and renew residential metering equipment. Work carried out by Lines.
151109	Base	Switch Replacement	0.2	18,145	System Renewal	Overhead Asset Renewal	Guelph	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacment units
150458	Base	MAS upgrade - IT Infrastructure	0.1	17,426	General Plant	Information Technology	Multiple	Metering Automation System for smart grid Upgrade to be implemented in a phased approach over the next 4 years as smart grid continues to evolve work in conjunction with the metering team to analyze and implement leverage new technologies to provide better more accurate meter readings be responsive to the issues first not reactive when a customer calls
151104	Base	Distribution Automation - Central North	0.5	17,389	System Service	SCADA and Automation	Brampton	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151318	Base	Cable Injection Project - (I3) -Bovaird - Dixie - Queen - Hwy 410, Brampton	0.3	16,119	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 6 outages due to cable failures from 2014 to 2015 with average duration of 71 minutes.

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150639	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-CENTRAL	0.0	15,736	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of DC charging system for Central South Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
150638	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-East	0.0	15,736	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of DC charging system for Central North Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
150636	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-North & TS	0.0	15,736	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of installation of DC charging system for East Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
150640	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-WEST	0.0	15,736	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of installation of DC charging system for West Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
151460	M-Factor	Cable Injection Project - (V17) - Langstaff - Keele - Rutherford - Dufferin, Vaughan	0.6	15,317	System Renewal	Underground Asset Renewal	Powerstream	From 2017-2019 YTD customers in this area experienced 3 failures. From 2015-2019 YTD customers in this area experienced 4 failures.
150285	Base	Transformer Renewal - Central North	1.0	14,492	System Renewal	Transformer Renewal	Brampton	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
101027	Base	Switch Renewal - East	0.7	14,309	System Renewal	Overhead Asset Renewal	Powerstream	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacment units
150504	Base	Purchase and Installation of 10 Self Recharging Transformer Air Breathers on TS and MS Transformers - Multi-year initiative-WEST	0.1	14,105	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of installation of transformer air breather at TS and MS stations in East .Moisture in transformer oil is a major cause of acceleration of transformer ageing and internal failure of transformers. By elimination of moisture ingress through the transformer breather, and having the breather perform this task automatically without human intervention ensures that the transformer oil moisture is minimal.
102098	Base	Client - IT Infrastructure	1.2	13,761	General Plant	Information Technology	Multiple	To upgrade desktop/laptop/mobile devices that are 5 years or older (Approximately 20% of our equipment). Net new equipment for mobile computing as well as upgrades and replacements for damaged devices. Request made by various business units. This budget also includes RSA tokens\Licenses, monitors, mice, keyboards, docking stations, tablets and small non-MFP printers. Out of Scope: Large MFP Printers
151247	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-Guelph	0.6	13,414	System Renewal	Overhead Asset Renewal	Guelph	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
102232	Base	Capital Funds for Emergency P&C Purchases - East	0.0	13,271	System Renewal	Substation Renewal	Powerstream	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the East Operating Area (former PowerStream). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150683	Base	Capital Funds for Emergency P&C Purchases - Central North	0.0	13,185	System Renewal	Substation Renewal	Brampton	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the Central North Operating Area (Brampton). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.
150685	Base	Capital Funds for Emergency P&C Purchases - West	0.0	13,185	System Renewal	Substation Renewal	Horizon	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the West Operating Area (former Horizon). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.
150684	Base	Capital Funds for Emergency P&C Purchases - Central South	0.0	13,185	System Renewal	Substation Renewal	Enersource	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the Central South Operating Area (former Mississauga). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.
150784	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-Central North	0.7	12,968	System Renewal	Overhead Asset Renewal	Brampton	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151453	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-Guelph	0.7	12,922	System Renewal	Underground Asset Renewal	Guelph	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
150823	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-Central South	0.7	12,655	System Renewal	Overhead Asset Renewal	Enersource	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
102099	Base	Printer & Copier Fleet Replacement	0.0	12,636	General Plant	Information Technology	Multiple	Replacement of existing fleet of printers/copiers that are 5 or more years old. This will include non-MFP printers. Replacement to be determined by an evaluation of evolving needs and corporate requirements as well as age of equipment.
151449	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-Central North	0.9	12,176	System Renewal	Underground Asset Renewal	Brampton	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
103211	Base	Misc Software Upgrades (FormScape, AutoCAD, etc.) - IT/OT Infrastructure	0.1	12,021	General Plant	Information Technology	Multiple	Upgrade/ acquire software as required / requested by business.
151451	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-Central South	0.9	11,936	System Renewal	Underground Asset Renewal	Enersource	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151233	M-Factor	New Construction - Campbell TS 36M63 Feeder PHASE 1 & 2, Guelph	1.2	11,851	System Service	Capacity (Lines)	Guelph	This project identifies a new 13.8kV feeder required from Campbell TS to bring additional load support to NW section of the city as the existing 13.8kV feeders in the area are unable to accommodate the additional load growth
103180	Base	Citrix Xen Virtualization Expansion - IT Infrastructure	0.1	11,299	General Plant	Information Technology	Multiple	Client computing virtualization (Citrix) is currently the standard delivery method for applications and desktops at Alectra. This system has had a tremendous uptake in the organization and requires an upgrade in back-end infrastructure to support the additional demand from the business.

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150693	M-Factor	Blockchain	0.6	11,192	System Service	Distributed Energy Resources (DER)	Multiple	The project will prepare Alectra Utilities to engage with customers in a real-time and transparent process to record the flow of electricity to and from DERs, enabling the efficient procurement of distribution benefits, such as demand response and frequency regulation. The project will provide a robust settlement mechanism between Alectra and customers, backed by timely and efficient financial transactions, to enable overall trust and customer value delivery and leading to increased customer satisfaction.
151302	Base	Cable Injection Project - (HAM) - Rymal - Mud - Upper Centennial - Upper Red Hill Valley	0.5	11,132	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 8 failures, or 14 failures per 100km. This area includes the 331X & 341X feeders which were identified as a Worst Performing Feeder in 2018. The average cable installation year is 1989 in this project scope.
151314	Base	Cable Injection Project - (G2) -Wanless - Kennedy - Bovaird - Main, Brampton	0.2	11,046	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 4 outages due to cable failures from 2013 to 2017 with average duration of 125 minutes.
151409	Base	Cable Replacement Project- Central Parkway & Bloor (29), Mississauga	10.9	10,937	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there are 9 outages, the length is 12,462 m, and the average cable age is 48 years old. There are 35 backlot transformers that we are also replacing.
150740	Base	Facilities_Nebo_ Roof Replacement	0.0	10,933	General Plant	Facilities Management	Horizon	2019 Project and to be completed by Dec 2019. Not sure why we have $9K in 2022.
150665	Base	Emerging Customer Initiated Work (West)	1.6	10,905	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
101562	Base	Arc Flash Mitigation Projects	0.0	10,619	System Service	Safety & Security	Powerstream	This project is to mitigate arc flash risk at East stations.
151299	Base	Cable Replacement Project - (HAM) - Millen - Barton - Fruitland	1.6	10,342	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 16 failures, or 44 failures per 100km. The average cable installation year is 1970 in this project scope.
150653	Base	Road Authority West (St. Catharines)	1.0	10,217	System Access	Road Authority	Horizon	Mandatory - System Access Related Project
150615	Base	Metering Tools & Equipment - Central North	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Brampton	Replacement of Capital tools required to perform work
150616	Base	Metering Tools & Equipment - Central South	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
150613	Base	Metering Tools & Equipment - East	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
150614	Base	Metering Tools & Equipment - West	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of Capital tools required to perform work
102263	M-Factor	Work Force Management / Mobile Dispatch	2.4	9,762	General Plant	Information Technology	Multiple	Enterprise wide field crew management system that will enable more efficient use of crews and improve visibility to job progress enabling better communication of expectations to customers
151456	M-Factor	Cable Injection Project - (V50) - Hwy 7 - Kipling - Steeles - Hwy 27, Vaughan	0.4	9,188	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 3 failures in 2018.
151063	Base	Pole Renewal - Central South	3.5	9,065	System Renewal	Overhead Asset Renewal	Enersource	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
100886	Base	Distribution Automation - East	1.4	9,041	System Service	SCADA and Automation	Powerstream	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151275	Base	Cable Injection Project - (SCH) - QEW - Highway 406 - Martindale Road	0.8	8,905	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 3 failures, or 11 failures per 100km. The average cable installation year is 1988 in this project scope.
151298	Base	Cable Injection Project - (HAM) - Govenors - Old Ancaster	0.4	8,842	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 3 failures, or 10 failures per 100km. The average cable installation year is 1989 in this project scope.
101804	Base	Purchase of Major Tools	0.4	8,158	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151390	Base	2022 GUELPH - Remotely Controlled Switches	0.4	8,052	System Service	SCADA and Automation	Guelph	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151213	Base	Installation of Transformer Bushing Monitoring	0.1	8,001	System Service	System Control, Comm'ns & Performance	Guelph	This project consists of installation of Transformer bushing monitoring system in Guelph. bushing monitoring unit provides real time condition monitoring of the transformer bushings.
151313	Base	Cable Injection Project - (F5) - Steeles - Main - Hwy 407 - McLaughlin, Brampton	0.2	7,751	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 5 outages due to cable failures from 2007 to 2016 with average duration of 80 minutes.
151352	Base	Cable Injection Project - (M38) - Hwy 7 - Warden - 14th - Woodbine, Markham	1.0	7,548	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 18 failures.
150282	Base	Switchgear Renewal - Central North	0.5	7,521	System Renewal	Underground Asset Renewal	Brampton	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
150508	Base	Installation of Transformer Bushing Monitoring on MS txmrs-Multi Year -CENTRAL	0.2	7,509	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of Transformer bushing monitoring system in Central South. bushing monitoring unit provides real time condition monitoring of the transformer bushings.
151407	Base	Cable Replacement Project- Glen Erin & Burnhamthorpe (12), Mississauga	7.3	7,414	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 10 outages, the length is 22,109 m, and the average cable age is 34 years old.
151325	Base	Cable Replacement Project - (M31) - 14th - Old Kennedy - Steeles - Warden, Markham	3.5	7,412	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 38 failures.
151457	M-Factor	Cable Injection Project - (V25) - Major Mackenzie - Keele - Rutherford - Jane, Vaughan	0.9	7,410	System Renewal	Underground Asset Renewal	Powerstream	From 2017-2019 YTD customers in this area experienced 2 failures. From 2015-2019 YTD customers in this area experienced 3 failures.
151339	Base	Cable Replacement Project - (BA19) - Letitia - Anne - Edgehill - Ferndale, Barrie	7.3	7,397	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 2 failures in 2018.
151316	Base	Cable Injection Project - (H2) - Wanless - Heart Lake - Bovaird - Kennedy, Brampton	0.2	7,371	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 4 outages due to cable failures from 2009 to 2017 with average duration of 107 minutes.
150284	Base	Pole Renewal - Central North	2.8	7,305	System Renewal	Overhead Asset Renewal	Brampton	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
102017	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear initiative-North & TS	0.3	7,275	System Service	Safety & Security	Powerstream	This project consists of Sorbweb Oil containment system in East. Protects the environment in the event of a transformer tank rupture
151351	Base	Cable Injection Project - (M32) - Hwy 7 - Main - 14th - Warden, Markham	0.9	6,971	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 17 failures.
150714	Base	MS Transformer Tank and Radiator Reconditioning- Multi-year initiative - Central	0.1	6,819	System Renewal	Substation Renewal	Enersource	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the Central South Operating Area (former Enersource). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150713	Base	MS Transformer Tank and Radiator Reconditioning- Multi-year initiative - East	0.1	6,819	System Renewal	Substation Renewal	Brampton	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the Central North Operating Area (Brampton). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150715	Base	MS Transformer Tank and Radiator Reconditioning- Multi-year initiative - West	0.1	6,819	System Renewal	Substation Renewal	Horizon	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the West Operating Area (former Horizon). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150644	Base	Road Authority West (Hamilton)	1.7	6,689	System Access	Road Authority	Horizon	Mandatory - System Access Related Project
150507	Base	230kV TS Transformer Primary Bushing Monitoring Enablement-BPD Elimination - 4 TS Transformers-Multi-year initiative-TS	0.5	6,521	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to install primary bushing monitoring at TS in EAST

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150352	Base	Voltage Conversion - Central MS, Hamilton	1.8	6,498	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 23 outages and had 1,060,300 customer minutes of interruption (75 mins per customer per year). The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail. Specifically Central MS is the only station remaining in service with oil breakers which are functionally obsolete with no spare parts readily available.
151310	Base	Cable Injection Project - (E4) - Queen - McLaughlin - Steeles - Chinguacousy, Brampton	0.2	6,421	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 4 outages due to cable failures from 2008 to 2016 with average duration of 104 minutes.
151044	Base	Switch Renewal - Central South	0.3	6,319	System Renewal	Overhead Asset Renewal	Enersource	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacement units
103659	Base	Storm Hardening - Four-Circuit Poles	2.0	6,255	System Renewal	Overhead Asset Renewal	Powerstream	
150514	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear Initiative-WEST	0.3	6,213	System Service	Safety & Security	Horizon	This project consists of Sorbweb Oil containment system in West. Protects the environment in the event of a transformer tank rupture
151336	Base	Cable Replacement Project - (BA22) - Sunnidale and Anne, Barrie	1.5	6,208	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 2 failures in 2019.
151086	Base	Insulator Replacements	0.1	5,949	System Renewal	Overhead Asset Renewal	Guelph	Replacement of non-polymer insulators (Areas are prioritized by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.
102128	M-Factor	Aurora MS6 Expansion	1.1	5,910	System Service	Capacity (Lines)	Powerstream	2C land is currently supplied by a 13.8kV feeder 5F2. It had a peak of 269A in 2018 and does not have sufficient capacity to supply future growth in the 2C lands. New feeder capacity is required to supply the additional load.
150351	M-Factor	Voltage Conversion - Aberdeen MS, Hamilton	1.3	5,675	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 16 outages and had 500,475 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
150337	Base	Switch Renewal - West	0.4	5,476	System Renewal	Overhead Asset Renewal	Horizon	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacement units
151055	Base	Major Tools	0.1	5,432	General Plant	Tools, Shop and Garage Equipment	Guelph	Replacement of Capital tools required to perform work
150067	Base	Basement Flood Risk Mitigation - Markham TS#4	0.1	5,410	System Renewal	Substation Renewal	Powerstream	This project involves mitigating the flood risk at the Markham TS#4 where there is equipment installed in the basement by relocating or repositioning this equipment. This critical equipment includes DC system, AC and DC panels, feeder switches, UPS, ATS located in the basement of this station. Damage to this equipment due to flooding would cause extensive power interruptions to many customers.
150598	Base	Suite Metering - Renewals & Retrofits - PowerStream RZ	0.4	5,394	System Access	Metering	Powerstream	Multi-year project to purchase and install suite metering equipment in existing buildings upgraded from bulk metering.
150515	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear initiative-CENTRAL	0.3	5,352	System Service	Safety & Security	Enersource	This project consists of Sorbweb Oil containment system in Central South. Protects the environment in the event of a transformer tank rupture
150516	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear initiative-EAST	0.3	5,352	System Service	Safety & Security	Brampton	This project consists of Sorbweb Oil containment system in Central North. Protects the environment in the event of a transformer tank rupture
150336	Base	Transformer Renewal - West	0.7	5,294	System Renewal	Transformer Renewal	Horizon	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150750	Base	Lines Central-North - Major Tools	0.1	5,234	General Plant	Tools, Shop and Garage Equipment	Brampton	Replacement of Capital tools required to perform work
150009	Base	Insulator Renewal - East	0.2	5,108	System Renewal	Overhead Asset Renewal	Powerstream	Replacement of non-polymer insulators (Areas are prioritized by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.
100909	M-Factor	Rebuild 27.6 kV pole line for 4 Ccts on Warden Ave from Major Mack to Elgin Mills	2.2	4,927	System Service	Capacity (Lines)	Powerstream	This project is the third part of a multiple year project of rerouting two feeders 12M10/12M11 to Markham Future Urban Area. This project provide 40 MVA capacity.
151203	Base	Capital Corrective Equipment Replacement - Stations South West	0.1	4,921	System Renewal	Substation Renewal	Guelph	This project is intended to provide capital for all unplanned station equipment replacements in the South West Operating Area (Guelph) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
102042	Base	Purchase and Installation of Animal Guards at Various Stations-Annual Multi-year initiative-North & TS	0.0	4,894	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of animal guard installation in East
150716	M-Factor	New build - 42M69 Feeder Extension Williams Pkwy - Main St to Kennedy Rd, Brampton	1.1	4,866	System Service	Capacity (Lines)	Brampton	27.6kV UG Feeder Extension along Williams Pkwy from Main St to Kennedy Rd OH to meet contingency conditions
151464	M-Factor	Cable Injection Project - (F3-G3-H3) - Phase 2, Brampton	0.4	4,697	System Renewal	Underground Asset Renewal	Brampton	From 2000-2018 customers in this area experienced 103 failures. Exact number of failures in recent years is unknown at this moment.
151083	Base	Switchgear Renewal - West	0.4	4,684	System Renewal	Underground Asset Renewal	Horizon	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
151010	Base	Switch Renewal - Central North	0.7	4,604	System Renewal	Overhead Asset Renewal	Brampton	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacement units
150720	Base	Lines Central-South - Major Tools	0.2	4,591	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
151021	Base	Insulator Renewal - Central North	0.4	4,236	System Renewal	Overhead Asset Renewal	Brampton	Replacement of non-polymer insulators (Areas are prioritiezed by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.
150674	Base	Emerging Customer Initiated Work Central (Brampton)	0.2	4,184	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
101763	Base	Unforeseen Projects Initiated by the customer PS North	0.1	4,161	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150679	M-Factor	Alectra Drive for the Workplace	0.2	3,997	System Service	Capacity (Lines)	Multiple	Alectra Drive for the Workplace will demonstrate the value of integrating smart electric vehicle (EV) charging system at workplaces into the distribution grid such that mass uptake of electric vehicles can be managed in a safe and reliable manner. The planned investment will help manage the flow of electricity needed to serve the building and EV charging stations, so that electricity costs are minimized for commercial customers while EV drivers have an easy and accessible charging solution.
150320	M-Factor	Voltage Conversion - Dewitt MS , Hamilton	0.5	3,972	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 12 outages and had 888,434 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
150358	M-Factor	New build - QEW Dixie West New OH Circuits, Mississauga	1.1	3,907	System Service	Capacity (Lines)	Enersource	This project is an to added betterment coordinated with the MTO's QEW Expansion along Dixie West OH.

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150466	Base	Atomic Scheduler Upgrade - IT Infrastructure	0.3	3,883	General Plant	Information Technology	Multiple	Enhancement to Atomic application scheduler to support process improvement requirements. Atomic is the application scheduler in use at Alectra. This application will be used to support application and report scheduling for both CC&B and JDE. These enhancements are considered for the overall customer and organizational benefits.
150540	Base	Implement application security - IT Infrastructure	0.1	3,861	General Plant	Information Technology	Multiple	Ongoing application security enhancements and additions to meet vendor requirements .
102075	Base	Major repairs, refurbishment, or modifications to switches/switchgear	0.1	3,702	System Renewal	Underground Asset Renewal	Powerstream	Switchgear and Switches in stores that repair/refurbishment of the units can allow them to be returned to service
150376	Base	New build - Hamilton South Mountain feeders capacity relief, Hamilton	1.1	3,694	System Service	Capacity (Lines)	Horizon	This project is build new feeder to alleviate capacity in South Hamilton and to alleviate on the four feeders which are over the planning limit
151319	Base	Cable Injection Project - (I4) -Queen - Dixie - Steeles - Hwy 410, Brampton	0.4	3,650	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 0 outage due to cable failures to date. Cables are 31 years old and will be at the injection eligibility threshold by the time of project execution in 2022.
151428	Base	Cable Injection- 002- AREA 30- Eglinton Ave W & Miss Rd, Mississauga	0.6	3,632	System Renewal	Underground Asset Renewal	Enersource	There are 2 outages, we are injecting a total of 14,541 m of cable for this project, and the average age of the cable is 31 years.
151276	Base	Cable Injection Project - (SCH) - Vansickle	0.7	3,556	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 2 failures, or 11 failures per 100km. The average cable installation year is 1990 in this project scope.
151200	M-Factor	Alectra Single Platform Website ongoing	0.1	3,548	General Plant	Information Technology	Multiple	Ongoing enhancements to the Alectra platform to improve functionality for customers
150498	Base	Capital Corrective Equipment Replacement - Stations Central South	0.3	3,535	System Renewal	Substation Renewal	Enersource	This project is intended to provide capital for all unplanned station equipment replacements in the Central South Operating Area (former Enersource) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
150499	Base	Capital Corrective Equipment Replacement - Stations Central North	0.3	3,535	System Renewal	Substation Renewal	Brampton	This project is intended to provide capital for all unplanned station equipment replacements in the Central North Operating Area (Brampton) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
150497	Base	Capital Corrective Equipment Replacement - Stations West	0.3	3,535	System Renewal	Substation Renewal	Horizon	This project is intended to provide capital for all unplanned station equipment replacements in the West Operating Area (former Horizon) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
150047	M-Factor	Rear Lot Renewal Project - Royal Orchard - North	1.1	3,478	System Renewal	Rear Lot Conversion	Powerstream	This area has had an average of 3 failures per year lasting 4 hours per year based on 3 year average.
151462	M-Factor	Cable Injection Project - (G1) - Hwy 410 - Kennedy - Wanless - Main, Brampton	0.2	3,438	System Renewal	Underground Asset Renewal	Brampton	From 2000-2018 customers in this area experienced 2 failures. Exact number of failures in recent years is unknown at this moment.
150774	Base	Lines Central-North - Site Restorations	0.1	3,434	System Renewal	Overhead Asset Renewal	Brampton	
150721	Base	Lines Central-South - Site Restorations	0.1	3,434	System Renewal	Underground Asset Renewal	Enersource	
150523	Base	Security Additions & Enhancements	0.2	3,395	General Plant	Information Technology	Multiple	As per Alectra Security roadmap to key IT systems.
150672	Base	Burden Allocation - System Service	0.1	3,353	System Service	Capacity (Lines)	Horizon	

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150263	Base	Cable Replacement Project - East Left Behind Cable	1.6	3,237	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in these areas have experienced 11 failures.
102065	Base	Capital Corrective Equipment Replacement - East	0.3	3,161	System Renewal	Substation Renewal	Powerstream	This project is intended to provide capital for all unplanned station equipment replacements in the East Operating Area (former PowerStream area) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
150611	Base	Transformer Tank and Radiator Reconditioning- Multi-year initiative - East	0.2	3,117	System Renewal	Substation Renewal	Powerstream	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the East Operating Area (former PowerStream). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150623	Base	Purchase and Installation of Animal Guarding-Annual Multi-year initiative-WEST	0.0	3,095	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of animal guard installation in West
150622	Base	Purchase and Installation of Animal Guarding-Annual Multi-year initiative-CENTRAL	0.0	3,093	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of Animal guard at Central South Stations
150621	Base	Purchase and Installation of Animal Guarding-Annual Multi-year initiative-EAST	0.0	3,082	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of Animal guard at East Stations
101036	M-Factor	Install a new 4 ccts CNR yard overhead crossing on the south side of Hwy 7	1.4	2,919	System Service	Capacity (Lines)	Powerstream	This project is to increase supply capacity to Vaughan Metro Center and Vaughan Mills. It will also reduce outage impact in case of pole failure on the north side of Hwy 7 crossing CN yard.
151286	Base	Cable Replacement Project - (H2) - Wanless - Heart Lake - Bovaird - Kennedy, Brampton	1.7	2,868	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 6 outages due to cable failures from 2011 to 2017 with an average duration of 126 minutes
101625	Base	Cyber Security Audit & Upgrades	0.1	2,865	General Plant	Information Technology	Multiple	This project would fund various activities and countermeasures to improve the cyber security posture of the Operations' Network. This will be a mandate for compliance to Ontario Cyber Security framework. The counter measures include: - an annual audit of the cyber security countermeasures in place; - implementation of new technologies to seal identified compromises; - replacement of deployed cyber security equipment deemed end of life or not able to deliver an expected level of service.
150671	Base	Burden Allocation - System Renewal	1.8	2,831	System Renewal	Other System Renewal	Horizon	
150401	M-Factor	136M6 Goreway TS Extensions	1.0	2,821	System Service	Capacity (Lines)	Brampton	This feeder will supply all future residential & small commercial loads around the Gore Rd., Ebenezer Rd. & Castlemore Rd. 136M6 will off load 136M4 on the south section of the area mentioned. 136M6 will off load and provide contingency for 136M4 on the south section of this area.
150632	Base	AMI Gatekeeper Expansion - Brampton RZ	0.0	2,820	System Access	Metering	Brampton	Multi-year project to expand and upgrade AMI field communication equipment to service new connections.
151311	Base	Cable Injection Project - (E5) - Steeles - Mclaughlin - Hwy 407 - Chinguacousy, Brampton	0.3	2,785	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 2 outages due to cable failures in 2007 and 2012 with average duration of 70 minutes.
151394	Base	2022 GUELPH - Transite Underground Duct Replacement	0.3	2,683	System Renewal	Underground Asset Renewal	Guelph	Replacement of Duct Structure which contains asbestoes a known carcinogen and impacts worker safety.
150079	M-Factor	Markham TS#1 T1/T2 "B" Overcurrent Protections and HMI Upgrade	0.2	2,596	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade Markham TS#1 T1/T2 "B" Overcurrent Protections with fault recording ability and HMI Upgrade
151427	Base	Cable Injection- 001- AREA 11- Truscott & Southdown, Mississauga	1.3	2,550	System Renewal	Underground Asset Renewal	Enersource	There are 2 outages, we are injecting a total of 21,576 m of cable for this project, and the average age of the cable is 32 years.

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150332	M-Factor	Non-Wires Alternative Pilot	0.8	2,537	System Service	Capacity (Stations)	Powerstream	The project will provide customers with increased flexibility to make decisions about their electricity consumption, generation, and costs; it leads to more efficient integration of DERs which yields greater benefits to customer, system reliability, and power quality. This project will also provide the opportunity to increase operational efficiency and improved asset management to enhance service to customer and defer and/or reduce infrastructure investment needs in York Region.
150580	Base	West Region Tools and Test Equipment	0.2	2,494	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of Capital tools required to perform work
150627	Base	Station Equipment Temperature Monitoring-EAST	0.1	2,479	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of Station Temperature Monitoring system in Central North and it enables controlled emergency loading beyond the nameplate rating.
150629	Base	Station Equipment Temperature Monitoring-WEST	0.1	2,479	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of Station Temperature Monitoring system in West and it enables controlled emergency loading beyond the nameplate rating.
150095	M-Factor	Vaughan TS#1 T1/T2 "B" Differential Protections Upgrade	0.1	2,478	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the current T1/T2 ASEA solid state Transformer "B" Differential Protection relays at Vaughan TS#1 with new relays having fault recording capabilities
151202	Base	Purchase of Major Station Tools - Multi-year	0.0	2,473	General Plant	Tools, Shop and Garage Equipment	Guelph	Replacement of Capital tools required to perform work
150625	Base	Purchase of Major Tools - Muliti Year-CENTRAL	0.0	2,395	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
150624	Base	Purchase of Major Tools - Muliti Year-EAST	0.0	2,395	General Plant	Tools, Shop and Garage Equipment	Brampton	Replacement of Capital tools required to perform work
150626	Base	Purchase of Major Tools - Muliti Year-WEST	0.0	2,395	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of Capital tools required to perform work
151221	Base	Metering - AMI Hardware Upgrade	0.3	2,384	System Access	Metering	Guelph	Multi-year project to expand and upgrade AMI field communication equipment to service new connections, in Guelph RZ.
101761	Base	Unforeseen Projects Initiated by the customer PS South	0.4	2,365	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
151435	Base	Cable Injection- 010 - Area 56- Derry Rd W & Ninth Line, Mississauga	1.2	2,307	System Renewal	Underground Asset Renewal	Enersource	There are 3 outages, we are injecting a total of 45,837 m of cable for this project, and the average age of the cable is 30 years.
151290	Base	Cable Replacement Project - (I3) - Bovaird - Dixie - Queen - Hwy 410, Brampton	0.7	2,280	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 8 outages due to cable failures from 2007 to 2018 with average duration of 133 minutes.
151244	Base	Fault Indicators	0.0	2,243	System Service	System Control, Comm'ns & Performance	Guelph	The scope of this project is to install Fault Indicators in Guelph. The project would include the fault indicators communicating to the existing SCADA and will improve the fault locating and improve SAIDI
151181	Base	Cable Replacement Project - Left Behind Cable, Brampton	0.5	2,163	System Renewal	Underground Asset Renewal	Brampton	This project is to address cables which were part of a cable injection project but were ultimately not injectable at the time of project execution. These 'left behind' segments must be addressed, if they are left in the system they could cause a failure. Customers would not only experience an outage, but question the utilities work practices as we would have addressed only a portion of the cables instead of all the cables which could cause an outage.
151070	Base	Markham TS3 Firewall Upgrade	0.2	2,149	System Service	System Control, Comm'ns & Performance	Powerstream	Markham TS3 Firewall Upgrade
150321	M-Factor	Voltage Conversion - Galbraith MS, Hamilton	2.3	2,140	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 4 outages and had 77,467 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
150675	Base	Emerging Customer Inititated Work Central (Mississauga)	0.2	2,049	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
101764	Base	Road Authority Expenditure PS North	1.6	2,038	System Access	Road Authority	Powerstream	Mandatory - System Access Related Project
150604	Base	Smart Meter Network Expansion - PowerStream RZ	0.2	2,036	System Access	Metering	Powerstream	Multi-year project to expand and upgrade AMI field communication equipment to service new connections.

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151092	Base	Distribution Automation - Central South	0.6	2,014	System Service	SCADA and Automation	Enersource	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151030	Base	Addition of Sensors to SCADA Controllable 44kV LISs in Brampton	0.3	2,013	System Service	System Control, Comm'ns & Performance	Brampton	This project is to add sensors to the 44KV switches in Central North
150694	M-Factor	Cityview microgrid enhancements	0.0	1,985	System Service	Capacity (Lines)	Powerstream	The project is to understand how microgrids can be integrated into the distribution grid in a safe and reliable manner. The microgrid is used to evaluate integration and connection to the distribution grid, while reducing the building's load, greenhouse gas emissions, and increasing its resiliency to grid outages.
102547	M-Factor	Two Ccts on Birchmount Rd from ROW to 14th Ave	1.6	1,969	System Service	Capacity (Lines)	Powerstream	This project is to build 2 ccts pole line on Birchmount Rd from the Right of Way (ROW) to 14th Ave. This will extend 2 feeders 26M17 and 26M18 to 14th Ave to tie with feeder 22M7/22M8 for reliability
151324	Base	Cable Injection Project - (M3) - Castlemore - Goreway - Queen - Airport, Brampton	0.2	1,916	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 1 outage due to cable failure in 2008 with average duration of 61 minutes. The cables are 31 years old and will be at the injection eligibility threshold by the time of project execution in 2022.
151350	Base	Cable Injection Project - (M22) - Major Machenzie - Hwy 48 - 16th - McCowan, Markham	0.2	1,915	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 4 failures.
150670	Base	SCADA FDIR	0.1	1,799	System Service	SCADA and Automation	Multiple	Fault Detection, Isolation, and Restoration implementation, next generation of distribution automation technology. This utilizes devices which are already automated and integrates them into the OMS system such that devices perform self healing after a fault. in some cases reducing the outage time to less then 1 minute.
151283	Base	Cable Replacement Project - (HAM) - Mohawk	0.8	1,740	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 1 failure, or 20 failures per 100km. This area includes the 2D2X feeder which was identified as a Worst Performing Feeder in 2018. The average cable installation year is 1953 in this project scope.
150680	M-Factor	Alectra Drive at Home	0.6	1,731	System Service	Capacity (Lines)	Multiple	Alectra Drive at Home will demonstrate the value of integrating smart electric vehicle (EV) charging system in multi rise buildings as well as residential homes into the distribution grid such that mass uptake of electric vehicles can be managed in a safe and reliable manner. It will also provide insight into the characteristics of EV Charging, how EVs can be aggregated and controlled to provide the benefit at the local, regional and provincial system levels, and customer response to these control and optimization strategies.
151201	Base	Purchase of New Critical Spare Parts - Guelph	0.0	1,728	System Renewal	Substation Renewal	Guelph	This project involves procurement of critical spare parts for stations in the South West Operating Area (Guelph) so as to facilitate prompt repair of failed assets during emergency situations.
151333	Base	Cable Replacement Project - (BA9) - Little - Fairview - Harvie - Ferndale, Barrie	1.8	1,718	System Renewal	Underground Asset Renewal	Powerstream	From 2014-2018 customers in this area experienced 6 failures.
150619	Base	Purchase of Critical Spare Parts - West	0.0	1,649	System Renewal	Substation Renewal	Horizon	This project involves procurement of critical spare parts for stations in the West Operating Area (former Horizon) so as to facilitate prompt repair of failed assets during emergency situations.
150844	Base	Fleet_West_Vehicle Replacement_Bucket Truck 1-270	0.4	1,636	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151136	Base	C55 Alectra: Optimization of Business Practices	0.2	1,625	General Plant	Information Technology	Multiple	Optimizing the current software to communicate with other systems such as the ERP will allow for more efficient and effective budgeting processes and consolidation of information allowing for consistent reporting of the information from one system.

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150885	Base	Fleet_West_Vehicle Replacement_ Bucket Truck 1-361	0.4	1,624	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150893	Base	Fleet_West_Vehicle Replacement_ Digger Derrick 1-342	0.4	1,616	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151436	Base	Cable Injection-011 - Area 58 & 59- Winston Churchill & The Collegeway, Mississauga	1.9	1,614	System Renewal	Underground Asset Renewal	Enersource	There are 14 outages, we are injecting a total of 69,795 m of cable for this project, and the average age of the cable is 30 years.
151139	M-Factor	Voltage Conversion - MS-12 Hansen Rd, Brampton	3.1	1,599	System Renewal	Overhead Asset Renewal	Brampton	From 2015-2017 customers in this area experienced 29 outages and had 94,267 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
151386	Base	Cable Replacement - (278) - 31 Greengate Rd Subdivision, Guelph	0.6	1,596	System Renewal	Underground Asset Renewal	Guelph	
150642	Base	Proactive Replacement of Remote Terminal Units - Central North	0.2	1,582	System Renewal	Substation Renewal	Brampton	This project involves replacement of end-of-life remote terminal units and communications equipment at stations in the Central-North Operating Area (Brampton). Replacement equipment can be leveraged to allow for Smart Grid initiatives such as quicker fault detection and automatic isolation and restoration. If existing equipment were to fail, the ability to remotely monitor and control switching devices would be lost, thus risking longer interruptions.
150617	Base	Purchase of Critical Spare Parts - Central North	0.0	1,569	System Renewal	Substation Renewal	Brampton	This project involves procurement of critical spare parts for municipal stations in the Central North Operating Area (Brampton) so as to facilitate prompt repair of failed assets during emergency situations.
151353	Base	Cable Injection Project - (V41) - Kirby - Weston - Teston - Pine Valley, Vaughan	0.1	1,566	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 2 failures.
151309	Base	Cable Injection Project - (E3) - Bovaird - McLaughlin - Queen - Chinguacousy, Brampton	0.1	1,560	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 1 outage due to cable failure in 2015 with duration of 86 minutes.
151087	Base	Switchgear Replacement	0.2	1,559	System Renewal	Underground Asset Renewal	Guelph	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
150618	Base	Purchase of Critical Spare Parts - Central South	0.0	1,557	System Renewal	Substation Renewal	Enersource	This project involves procurement of critical spare parts for stations in the Central South Operating Area (former Enersource) so as to facilitate prompt repair of failed assets during emergency situations.
151354	Base	Cable Injection Project - (V52) - Rutherford - Kipling - Langstaff - Hwy 27, Vaughan	0.1	1,553	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 2 failures.
102077	Base	Major repair, refurbishment, or conversions of distribution transformers	0.0	1,541	System Renewal	Transformer Renewal	Powerstream	Transformers returned or in stores where repair/refurbishment of the unit can return it to service at a lower cost then purchase of a new unit
150883	Base	Fleet_West_Vehicle Replacement_ Bucket Truck 1-374	0.4	1,540	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151372	Base	Cable Replacement - (451) - Country Club Dr Subdivision, Guelph	0.4	1,482	System Renewal	Underground Asset Renewal	Guelph	
150368	M-Factor	New build - North Central feeders capacity (Carlton TS to Linwell Rd/Lake St) relief, St.Catharines	1.0	1,481	System Service	Capacity (Lines)	Horizon	This project is to alleviate capacity issues in the North and Central section of St.Catharines, primarily served by Carlton BY bus feeders which are over the planning limit.
151222	Base	Concrete Structures	0.2	1,469	System Renewal	Underground Asset Renewal	Guelph	Replacement of lids on civil structures to avoid public risk
150763	Base	Facilities_Reno_Addiscott - Service Centre Upgrades	0.1	1,462	General Plant	Facilities Management	Powerstream	Repairs to building envelop/walls to prevent further damage to the build infrastructure and systems that are supporting critical operational systems such as control rooms, server rooms, customer services groups, etc.
151408	Base	Cable Replacement Project- Burnhamthorpe & Miss. Road (13), Mississauga	2.4	1,429	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 11 outages, the length is 7,311 m, and the average cable age is 30 years old.

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150334	Base	Distribution Automation - West	0.7	1,424	System Service	SCADA and Automation	Horizon	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151371	Base	Cable Replacement - (87) - Marksam Rd/ Rhonda Rd Subdivision, Guelph	0.4	1,423	System Renewal	Underground Asset Renewal	Guelph	
150889	Base	Fleet_West_Vehicle Replacement_ Digger Derrick 1-333	0.4	1,415	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151052	Base	Emerging Customer Initiated Work - Relocations	0.1	1,412	System Access	Customer Connections	Guelph	Mandatory - System Access Related Project
150941	Base	Unit # 300 Dump truck replacement	0.1	1,400	General Plant	Fleet Renewal	Powerstream	
151410	Base	Cable Replacement Project-Roselle & Priority Cres (2), Mississauga	1.0	1,391	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 7 outages, the length is 3,006 m, and the average cable age is 43 years old.
150751	Base	Facilities_East_Capital Replacement Investment Support	0.5	1,374	General Plant	Facilities Management	Powerstream	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
151288	Base	Cable Replacement Project - (H4) - Queen - Hwy 410 - Steeles - Kennedy, Brampton	0.6	1,354	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 4 outages due to cable failures from 2009 to 2018 with average duration of 189 minutes.
150335	Base	Pole Renewal - West	2.7	1,338	System Renewal	Overhead Asset Renewal	Horizon	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
102102	Base	Enterprise File Synchronization and Sharing Platform	0.0	1,308	General Plant	Information Technology	Multiple	Alectra is looking for a secure Enterprise File Synchronization and Sharing solution that will increase productivity of internal and external teams by facilitating seamless collaboration of corporate data anywhere , anytime, and on any device without the restrictions of having to connect to the Alectra network. The overarching goal of this implementation will be to provide a balance between delivering business productivity and securing enterprise information.
150738	Base	Facilities_West_Capital Replacement Investment Support	0.3	1,289	General Plant	Facilities Management	Horizon	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
150790	Base	Fleet_Central South Vehicle Replacement-Puller/Tensioner	0.2	1,265	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
102241	Base	Proactive Replacement of Remote Terminal Units - East	0.1	1,240	System Renewal	Substation Renewal	Powerstream	This project involves replacement of end-of-life remote terminal units and communications equipment at stations in the East Operating Area (former PowerStream). Replacement equipment can be leveraged to allow for Smart Grid initiatives such as quicker fault detection and automatic isolation and restoration. If existing equipment were to fail, the ability to remotely monitor and control switching devices would be lost, thus risking longer interruptions.
150422	M-Factor	136M9 Feeder Extension Castlemore Rd, Goreway Dr to McVean Dr	0.1	1,233	System Service	Capacity (Lines)	Brampton	This project provides 136M9 capacity along Castlemore Dr from Goreway Dr to McVean Dr., and McVean will bring greenfield capacity up to Mayfield Rd to service north east Brampton. 136M9 in future will connect to and provide offloading and contingency for 136M8 and 136M42 which are at approching planning limit.

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150877	Base	Fleet_ Central North Vehicle Replacement S/Bucket 7109	0.5	1,222	General Plant	Fleet Renewal	Brampton	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151064	Base	Secondary Pedestals -St. Catharines	0.2	1,154	System Service	Safety & Security	Horizon	This project involves the replacment of above grade steel secondary pedestals which pose a safety risk to the general public
151312	Base	Cable Injection Project - (F2) - Wanless - Main - Bovaird - McLaughlin, Brampton	0.0	1,140	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 0 cable failure to date. Cables will be at the injection eligibility threshold by the time of project execution in 2022.
101125	Base	Lines Mobile Equipment - IT/OT Infrastructure	0.1	1,119	General Plant	Information Technology	Multiple	This budget covers the deployment of mobile technology - laptops/field tablets and accessories - within the Lines Department to gain efficiencies in field operations. By deploying this technology, the Lines area can move away from a paper-based to a more electronic environment. In future, it is envisioned that, for example, mobile applications will facilitate the electonic transmission of work orders and electronic record keeping (asset tracking, tailboards, switching orders, timesheets). This will allow for streamlined operational processes and record-keeping, thereby supporting corporate technological initiatives such as the GIS, Outage Management System, and future Workforce Management system. At present, all Lines Management personnel and Subforemen have laptops, facilitating activities such as viewing of the GIS, electronic Asset Tracking Forms, and use of OMS Responder Mobile. Expenditures in this area will allow for more deployment of field devices among Lines crews and for the implementation of more computerized processes.
150500	Base	On-Line Dissolved Gas Oil Monitoring of 10 MS Transformers - WEST	0.1	1,117	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of installation of Transformer bushing monitoring system in West
150570	Base	Alectra West Substation Ground Grid Installations	0.3	1,091	System Service	Safety & Security	Horizon	This project is to install ground grid at East Stations
151204	Base	Upgrade to Station Facilities (Buildings/Civil work) Multi-year	0.0	1,089	General Plant	Facilities Management	Guelph	This project involves work involving structural components of stations, including windows, brickwork, roofs, foundations, drainage, doors, etc. at stations in the SouthWest Operational Area. Not keeping up with this work would result in advanced deterioration resulting in even greater maintenance costs, potential safety concerns and potential failure of the electrical equipment in the building causing power interruptions.
103198	Base	BizTalk Upgrade - IT Infrastructure	0.3	1,085	General Plant	Information Technology	Multiple	Upgrade existing BizTalk to latest version. We currently have a development, test, and Production environment.
150794	Base	Fleet_Central South Vehicle Replacement- 229-09 S/Bucket	0.5	1,071	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151041	Base	Protection Logic Upgrades - East MSs (North)	0.1	1,061	System Service	System Control, Comm'ns & Performance	Powerstream	
150758	M-Factor	Facilities_Reno_Staff Relocation from Jane St	0.6	1,060	General Plant	Facilities Management	Brampton	Required renovations to the Cityview building to accommodate employees from various Alectra groups currently at Jane St, reducing the need to continue the office space lease at Jane St. The Jane St office lease expires in 2021 and would not be renewed, reducing operating expenditures.
150578	Base	Alectra - Microsoft Software	0.1	1,021	General Plant	Information Technology	Multiple	Compliance for Alectra employees for Microsoft application suite of products to perform daily operation .
150937	Base	Fleet_West_Vehicle Replacement_Cargo/Passenger Vans.	0.0	995	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150392	Base	Storage Upgrade	1.3	995	General Plant	Information Technology	Multiple	Upgrade on premise Enterprise Storage platform in addition to increased capacity requirements as a result of employee and customer demand for data retention. Off Premise storage costs (SharePoint Online, One Drive, Development, test and production environments)
151091	Base	Switchgear Renewal - Central South	3.8	982	System Renewal	Underground Asset Renewal	Enersource	Replacement of switchgear that is tracking, has some level of device failure (non-operable)

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151159	Base	Fault Indicator Installation and Replacement - Hamilton and St. Catharines	0.3	966	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of fault indicator installation in West
150628	Base	Station Equipment Temperature Monitoring-CENTRAL	0.1	965	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of Station Temperature Monitoring system in Central South and this enables controlled emergency loading beyond the nameplate rating.
151065	Base	Manhole Lid Replacement	0.4	925	System Renewal	Underground Asset Renewal	Horizon	Replacement of lids on civil structures to avoid public risk
151156	Base	Fleet_West_Vehicle Replacement_Step Vans	0.4	914	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150932	Base	Fleet East Vehicle replacement - SUV	0.2	905	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150781	Base	Fleet_Central South Replacement-Tractor 301-08	0.2	893	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150317	M-Factor	Voltage Conversion - Deerhurst MS, Hamilton	2.2	869	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 6 outages and had 121,838 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
150974	Base	Fleet East Vehicle replacement - Forklift	0.2	863	General Plant	Fleet Renewal	Powerstream	Asset replacement due to poor conditions and age and lack of parts replacement. Equipment not as available to support capital system renewal projects and respond to emergencies with material handling. .
150943	Base	Fleet East Vehicle replacement - Extended Van	0.3	850	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150904	Base	Fleet East Yearly Light and Misc equipment	0.1	847	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150935	Base	Fleet East Vehicle replacement - Pickup truck 1500	0.2	847	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150262	M-Factor	Cable Replacement Project - (M33) - 16th Avenue and Village Parkway, Markham	2.1	835	System Renewal	Underground Asset Renewal	Powerstream	From 2017-2019 YTD customers in this area experienced 1 failure. From 2015-2019 YTD customers in this area experienced 3 failures. Cable is 42 years old.
150909	Base	Fleet East Unit # 115 Single bucket truck replacement	0.4	835	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151163	Base	Fleet_West_Vehicle Replacement_ Passenger Van_1-370	0.0	807	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150746	Base	Facilities_Central_Capital Replacement Investment Support	0.4	807	General Plant	Facilities Management	Multiple	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
150913	Base	Fleet East Vehicle replacement - Cube Vans	0.8	806	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150946	Base	Fleet East Vehicle replacement - Van pool vans	0.1	782	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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150805	Base	Fleet_Central South Vehicle Replacement-206-09 S/bucket	0.5	782	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150939	Base	Fleet East Unit # 105 Bucket truck replacement	0.2	781	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
101622	Base	DACS Inverters and RTU's removal - East	0.1	765	System Renewal	Substation Renewal	Powerstream	This project involves removal of obsolete and out-of-service DACs inverters, RTUs and associated wiring at stations in the East Operating Area (former PowerStream) so as to remove clutter, thus simplifying future work and freeing up space for future station upgrades.
150971	Base	Fleet East Vehicle replacement - Pickup truck 2500	0.2	742	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
101632	Base	Obsolete Revenue Metering Removal from TSs	0.1	740	System Service	Safety & Security	Powerstream	Evolution of the distribution system to permit more efficient integration of DERs to yield 18
150799	Base	Fleet_Central South Vehicle Replacement- Reel Carrier	0.3	716	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151082	Base	SCADA Infrastructure	0.1	688	System Service	System Control, Comm'ns & Performance	Guelph	
151058	Base	Distribution Transformer Replacements & Upgrades	0.4	683	System Renewal	Transformer Renewal	Guelph	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
150669	Base	Burden Allocation - System Access	0.7	670	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150377	M-Factor	Voltage Conversion and Rear Lot - Montgomery Dr, Hamilton	1.8	661	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 71 outages and had 7,403,242 minutes of interruption. This project also addresses rear lot assets which are extremely difficult to replace if they fail due to complexities of access issues and restricitions for equipment to rebuild the assets.
150966	Base	Fleet East Unit # 124 83' Double Bucket	0.6	651	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
102166	Base	SQL Expansion - IT Infrastructure	0.1	636	General Plant	Information Technology	Multiple	Expand existing SQL infrastructure to meet project demands and natural growth of database. Add system capacity, improve performance, and reduce the risk of downtime due resource constraints.
150933	Base	Fleet_ Central North Vehicle Replacement Stake Trucks	0.3	616	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150203	Base	Station Equipment Temperature Monitoring-NORTH & TS	0.1	614	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of Station Temperature Monitoring system in East and it enables controlled emergency loading beyond the nameplate rating.
150880	Base	Fleet_ Central North Vehicle Replacement Tractor 7708	0.2	593	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150496	Base	iPass Project Management – Planned Capital - West	0.7	589	System Renewal	Underground Asset Renewal	Horizon	Help in optimizing DER performance and efficiency to improve addressing overall energy needs.
102046	Base	Purchase of Major Tools - Muliti Year-North & TS	0.0	565	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151206	Base	Installation of SWI Video Security System	0.0	544	System Service	Safety & Security	Guelph	This project consists of installation of SWI Video security system in SouthWest. The implementation of video monitoring will ensure that station security and safety related issues can be easily identified and addressed immediately
150905	Base	Fleet East Multi Year Shop tools	0.0	544	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of tools and shop equipment required to repair and maintain vehicles to ensure vehicle availability to support capital systems projects.
101816	Base	Alectra East (South), Fault Indicator Installation and Replacement Multi-year initiative	0.2	542	System Service	System Control, Comm'ns & Performance	Powerstream	This project is installtion of fault indictor in East - North Region which will result improved outage response, operational efficiency, and reliability
151085	M-Factor	Rear Lot Conversions	0.1	531	System Renewal	Rear Lot Conversion	Guelph	
101134	Base	Alectra East (North), Fault Indicator Installation and Replacement Multi-year initiative	0.3	527	System Service	System Control, Comm'ns & Performance	Powerstream	This project is installtion of fault indictor in East - South Region which will result improved outage response, operational efficiency, and reliability
150437	Base	OT GIS & OMS Enhancements	0.3	520	General Plant	Information Technology	Multiple	Ongoing productivity enhancements to core GIS and OMS platforms to meet internal and customer demand for functionality.
150602	Base	Smart Meter Test Facility - PowerStream RZ	0.0	471	System Access	Metering	Powerstream	Multi-year project to expand the capability of the Meter Test Facility to test increasing types of meters and AMI systems before they are placed into production.
150811	M-Factor	Fleet_Central South Vehicle Replacement-Pick ups	0.2	434	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
102027	Base	Purchase of Critical Spare Parts - Multiyear - East	0.1	428	System Renewal	Substation Renewal	Powerstream	This project involves procurement of critical spare parts for transformer and municipal stations in the East Operating Area (former PowerStream) so as to facilitate prompt repair of failed assets during emergency situations.
150576	M-Factor	Split the 1/0 loop on Cityview Blvd into two loops	0.5	423	System Service	Capacity (Lines)	Powerstream	This project is to split the 1/0 loop on Cityview Blvd into two loops. As of 2019, there is 18.5MVA connected kVA on the loop: 12MVA on the residential side and 6.5 MVA on the commercial side with 1865 residential and 93 commerical customers.
150494	Base	iPass Project Management – Planned Capital - Central-North	0.4	409	System Renewal	Overhead Asset Renewal	Brampton	Predicting the influence of weather conditions and DER contribution simultaneously on the power grid, for proactively mitigating local outages,
150495	Base	iPass Project Management – Planned Capital - Central-South	0.4	409	System Renewal	Overhead Asset Renewal	Enersource	Enable better visibility towards preventive equipment maintenance needs arising due to DER penetration which will further help mitigate outage risks,
101781	Base	iPass Project Management – Planned Capital - East	0.4	409	System Renewal	Overhead Asset Renewal	Powerstream	Estimating the effects of DER contribution at the feeder and region levels to further optimize the energy flows between the Utility and its consumers,
150607	M-Factor	Station LED Lighting Upgrades - Central	0.0	408	System Renewal	Substation Renewal	Enersource	Replacement of inefficient lighting fixtures and lamps at stations in the Central Operational Area will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
150606	M-Factor	Station LED Lighting Upgrades - EAST	0.0	408	System Renewal	Substation Renewal	Brampton	Replacement of inefficient lighting fixtures and lamps at stations in this Operational Area will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
102034	Base	Upgrade to Station Facilities (Building / Civil work) Multi-year - East	0.1	340	System Renewal	Substation Renewal	Powerstream	MULTI ANSWER
150797	M-Factor	Fleet_Central South Vehicle Replacement- SUV	0.1	326	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150610	M-Factor	Driveway Paving - Various Stations - Multi-year initiative - Central	0.0	290	System Renewal	Substation Renewal	Enersource	Existing driveways at stations in the Central Operational Area that are covered in gravel and require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150609	M-Factor	Driveway Paving - Various Stations - Multi-year initiative - East	0.0	290	System Renewal	Substation Renewal	Brampton	Existing driveways in this Operational Area that are covered in gravel require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150612	M-Factor	Driveway Paving - Various Stations - Multi-year initiative - West	0.0	290	System Renewal	Substation Renewal	Horizon	Existing driveways in the West Operational Area that are covered in gravel require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150796	M-Factor	Fleet_Central South Vehicle Replacement- Vans	0.2	286	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150551	Base	ServiceNow Expansion - IT Infrastructure	0.1	279	General Plant	Information Technology	Multiple	Building and adding features within ServiceNow we will eliminate outdated processes by automating more tasks and decisions allowing us to be more efficient and productive. Enhancements include the automation of the flow of data between other systems and across programs used by various departments and ServiceNow. Servicebots will be used as ServiceNow learns from past patterns, in order to predict future outcomes, including determining risks, assigning owners, and categorizing work. Learned models set the category of the IT request and assign the task to the right team, as well as calculate associated risk of action or inaction. This capability will improve the speed and efficiency of IT service delivery.
102050	Base	Various Stations-Station Lighting Upgrade/Retrofit-Energy Efficiency Lighting-initiative Multi-year - East	0.1	240	System Renewal	Substation Renewal	Powerstream	Replacement of inefficient indoor and outdoor lighting fixtures and lamps at stations in the East Operating Area (former PowerStream) will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
150897	M-Factor	Fleet_ Central North Vehicle Replacement pick ups	0.1	234	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150888	M-Factor	Fleet_ Central North Vehicle Replacement SUVs	0.0	223	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150891	M-Factor	Fleet_ Central North Vehicle Replacement Car	0.0	208	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150825	Base	Line & Transformer Protection Migration to DNP - Jim Yarrow TS	0.1	164	System Renewal	Substation Renewal	Brampton	This is part of a multi-phase project to upgrade aging and failure-prone protection systems at Jim Yarrow TS to the current protection standards. Proper protection to transmission lines will provide protection to the assets in the case of faults.
151382	Base	2022 GUELPH - Fleet	0.6	151	General Plant	Fleet Renewal	Guelph	Replacement of end of life asset due to poor conditions, high mileage and engine hours and age. Vehicle experiencing more down time at the shop for repairs and maintenance impacting vehicle availability.
103030	Base	Technology Upgrades Improving the System Control Room Environment	0.1	148	General Plant	Information Technology	Multiple	This project will continue to build on the original capital project whose scope was focused on the replacement of computers used as Operator WorkStations. The scope of this program has been expanded to account for all technology purchases required for the Control Room theater.
151108	Base	Office Equipment	0.1	144	General Plant	Facilities Management	Guelph	Replace aging equipment within the Guelph operational centre to ensure optimal performance in managing the distribution assets
150586	Base	OT SCADA map cleanup	0.3	137	General Plant	Information Technology	Multiple	SCADA Map clean up program to ensure accuracy and safety in the SCADA environment.
151245	M-Factor	Capacitor Bank Installations	0.0	135	System Service	System Control, Comm'ns & Performance	Guelph	This project consists of capacitor bank installation to increase power factor, capacity and reduce losses.
102931	Base	Paving of 3 MS & TS Station Driveways per year - Annual Multi-year initiative - East	0.0	125	System Renewal	Substation Renewal	Powerstream	Existing driveways at stations in the East Operating Area (former PowerStream) are covered in gravel and require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150597	Base	Lock Box Installs - East	0.0	116	System Access	Metering	Powerstream	Multi-year project to install lock boxes at ICI properties with restricted access to eliminate need for a customer appointment for access.
150569	Base	Server OS Upgrades - IT Infrastructure	0.1	95	General Plant	Information Technology	Multiple	Operating system upgrades to support IT infrastructure.
150737	Base	Facilities_East Region_Reactive Capital	0.3	92	General Plant	Facilities Management	Powerstream	Approved capital funds available to address any unforeseen and unbudgeted asset replacements/demands. Having these funds available for immediate use is critical for Facilities building operations to restore equipment/assets back to normal operations a.s.a.p.
150736	Base	Facilities_West Region_Reactive Capital	0.3	92	General Plant	Facilities Management	Horizon	Approved capital funds available to address any unforeseen and unbudgeted asset replacements/demands. Having these funds available for immediate use is critical for Facilities building operations to restore equipment/assets back to normal operations a.s.a.p.
150734	Base	Facilities_Central Region_Reactive Capital	0.3	92	General Plant	Facilities Management	Multiple	Approved capital funds available to address any unforeseen and unbudgeted asset replacements/demands. Having these funds available for immediate use is critical for Facilities building operations to restore equipment/assets back to normal operations a.s.a.p.
150676	Base	Mobile Devices - IT Infrastructure	0.0	88	General Plant	Information Technology	Multiple	
103171	Base	Implementation of a new Alectra Network Operations Voice Radio System	0.0	79	General Plant	Information Technology	Multiple	
150564	Base	OT SCADA hardware upgrade cycle 4	0.2	75	General Plant	Information Technology	Multiple	Planned hardware updrades for monitors and workstations on enterprise SCADA platform.
151016	M-Factor	Fleet_West_Vehicle_Replacement_Pickups	0.1	56	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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Project Number	Funding	Project Name	2022 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150747	M-Factor	Net Zero Energy Emissions	0.3	35	System Service	Distributed Energy Resources (DER)	Powerstream	The project will help Alectra Utilities to ensure that growing DER challenges are met through building expertise and capability in real time monitoring, integrating and optimizing of DERs in line with customer preferences. This will lead to a system that can safely integrate and optimize value from DERs for the benefit of customers.
151053	Base	Building Sustainment	0.2	32	General Plant	Facilities Management	Guelph	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
150584	Base	OT Control room hardware upgrade cycle	0.3	27	General Plant	Information Technology	Multiple	Planned hardware updrades for monitors and workstations on enterprise control room platforms. .
151084	Base	Shop equipment refurbishment and replacement	0.0	23	General Plant	Fleet Renewal	Brampton	
151031	Base	Fleet Shop equipment refurbishment and replacement	0.1	13	General Plant	Fleet Renewal	Enersource	For the refurbishment of trailers, shop compressors and hoists to extend the life of the assets instead of replacement to reduce the need fro capital expenditures.
150678	Base	P&C Specific Tools & Testing Equipment - West	0.0	12	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
102999	Base	P&C Specific Tools and Testing Equipment	0.0	12	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
102157	Base	Server Refresh - IT Infrastructure	1.2	10	General Plant	Information Technology	Multiple	Ongoing server refresh to support applications.
150396	Base	Network Refresh - IT Infrastructure	0.4	10	General Plant	Information Technology	Multiple	Replacement of existing network infrastructure that is unsupported (or soon to be) including further rationalization and design modifications to support the delivery of services throughout the Alectra Environment.

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Project Number	Funding	Project Name	2023 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150725	Base	Lines Central-North - Reactive Renewal	1.3	181,454	System Renewal	Reactive Capital	Brampton	Replacement of assets which have failured and requires replacement in order to restore power to customers
150690	Base	Lines Central-South - Reactive Renewal	3.3	171,818	System Renewal	Reactive Capital	Enersource	Replacement of assets which have failured and requires replacement in order to restore power to customers
150682	Base	Remote Fault Indicator Deployment	0.5	164,221	System Service	System Control, Comm'ns & Performance	Multiple	This project consists of remote fault indictor deployment which will result improved outage response, operational efficiency, and reliability
102247	Base	Interest Capitalization	1.2	104,304	General Plant	Other General Plant	Powerstream	
150596	Base	Meter Renewal - all types but Suite - PowerStream RZ	0.1	94,470	System Access	Metering	Powerstream	Multi-year project to renew existing residential (except suite) metering equipment.
101871	Base	Services (New and Upgrades) - Layouts – East North - Commercial Services	0.0	94,398	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
151180	Base	Central-North - Capitalization of Locates	0.0	94,387	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
150600	Base	Firmware Upgrades for Smart Meters - East	0.0	94,363	System Access	Metering	Powerstream	Multi-year project to renew residential Smart meter firmware to improve communication performance.
151169	Base	Central-South - Capitalization of Locates	0.0	94,345	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
151174	Base	West Lines - Capitalization locates	0.0	94,319	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150631	Base	Transformer Station Metering - Central North	0.1	94,246	System Access	Metering	Brampton	Multi-year project to purchase, install and renew wholesale metering equipment.
101696	Base	Subdivision - North Underground Residential Distribution System Final Close out and Inspection.	0.0	94,197	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
103381	Base	East Lines - Capitalization locates	0.1	94,145	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101870	Base	Services (New and Upgrades) - Layouts – East South - Commercial Services	0.1	94,022	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101869	Base	Services (New and Upgrades) - Layouts – East North - New Residential	0.1	93,989	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150650	Base	Replace PCB Risk PT's - Enersource RZ	0.1	93,977	System Access	Metering	Enersource	Multi-year project to replace metering transformers identified with unacceptable levels of PCB's, to prevent hazardous spills.
101919	Base	New Services (new and upgrades) - Commercial, Industrial and Institutional (ICI) Projects - NORTH	0.1	93,955	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150647	Base	Transformer Station Metering - Enersource RZ	0.1	93,884	System Access	Metering	Enersource	Multi-year project to purchase, install and renew wholesale metering equipment.
151049	Base	Commercial, Industrial, Institutional, Apartment Connections	0.1	93,830	System Access	Customer Connections	Guelph	Mandatory - System Access Related Project
101685	Base	Subdivision - South Underground Residential Distribution System Final Close out and Inspection.	0.1	93,778	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150457	Base	Services (New and Upgrades) - Layouts – St Catharines	0.2	93,519	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
151162	Base	Non Recoverable replacement of Distribution Equipment due to accident/vandalism	0.3	93,457	System Renewal	Reactive Capital	Horizon	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
101924	Base	Mulit Unit Metering for New Buildings NORTH - PowerStream RZ	0.2	93,421	System Access	Metering	Powerstream	Multi-year project to purchase and install suite metering in new buildings in northern area of territory.
150588	Base	New Residential Subdivision Development - Alectra West	0.2	93,266	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
101791	Base	New Services - new and upgrades - COMMERCIAL, INDUSTRIAL, INSTITUTIONAL (ICI) SERVICES - SOUTH	0.3	92,878	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101812	Base	Reactive Capital, Alectra East - LIS	0.3	92,710	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
150754	Base	Lines Central-North - Non-Recoverable Replacements	0.4	92,705	System Renewal	Reactive Capital	Brampton	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
150726	Base	Lines Central-South - Non-Recoverable Replacements	0.4	92,705	System Renewal	Reactive Capital	Enersource	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
101820	Base	Reactive Capital, Alectra East - Non-Recoverable Replacement	0.3	92,583	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
150389	Base	Services (New and Upgrades) - Layouts – Central North	0.4	92,563	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
150651	Base	C & I Metering - Renewal- Brampton RZ	0.6	92,561	System Access	Metering	Brampton	Multi-year project to renew existing ICI metering equipment.

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Project Number	Funding	Project Name	2023 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150386	Base	New Service (new and upgrades) - Commercial and Institutional (ICI) Projects - Central North	0.5	92,424	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
150453	Base	CIS CC&B Modifications(Regulatory Enhancements)	0.9	92,261	General Plant	Information Technology	Multiple	Enhancements to the CIS (CC&B) application needed to meet any regulatory requirements Such requirements in the past have been Ontario Energy Savings Program (OESP) as well as the Monthly Billing projects.
150649	Base	Suite Metering - Enersource RZ	0.6	91,838	System Access	Metering	Enersource	Multi-year project to purchase, install and renew suite metering equipment.
150654	Base	C & I Metering - New Services - Brampton RZ	0.6	91,553	System Access	Metering	Brampton	Multi-year project to purchase and install ICI metering equipment on new services.
150595	Base	C & I and Wholesale Metering - PowerStream RZ	0.6	91,530	System Access	Metering	Powerstream	Multi-year project to purchase, install, and renew ICI and wholesale metering equipment.
101868	Base	Services (New and Upgrades) - Layouts – East South - New Residential	0.5	91,488	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101795	Base	Multi Unit Metering for New Buildings SOUTH - PowerStream RZ	0.5	91,273	System Access	Metering	Powerstream	Multi-year project to purchase and install suite metering in new buildings in southern area of territory.
101873	Base	Services (New and Upgrades) - Layouts – East North - Residential Upgrades	0.6	91,023	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
151051	Base	System Relocations Road Authorities	0.7	91,002	System Access	Road Authority	Guelph	Mandatory - System Access Related Project
150652	Base	New Residential Subdivision Development - Alectra Central South	0.5	90,948	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
150388	Base	Services (New and Upgrades) - Layouts – Central South	0.8	90,774	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
150692	Base	New Feeder in Residential Subdivision Development - Alectra Central North	0.7	90,609	System Service	Capacity (Lines)	Brampton	This expenditure is required to meet the needs of the development community that construct municipal approved residential subdivisions in Alectra Utilities' Central North service territory
150599	Base	Suite Meter - Reverification - PowerStream RZ	1.0	90,368	System Access	Metering	Powerstream	Multi-year project to renew Measurement Canada seal dates on existing suite metering equipment.
150455	Base	Services (New and Upgrades) - Commercial, Industrial and Institutional (ICI) Projects - St Catharines	0.9	90,201	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150659	Base	Residential Meters - by Metering - Brampton RZ	0.9	90,096	System Access	Metering	Brampton	Multi-year project to purchase, install and renew residential metering equipment. Work carried out by Metering.
150456	Base	Services (New and Upgrades) - Layouts – Hamilton	0.9	89,962	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150630	Base	New Residential Subdivision Development - Alectra Central North	1.2	89,952	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
101828	Base	Reactive Capital, Alectra East - Recoverable Replacement	0.8	89,766	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover some costs for (i.e. pole hit, vehicle at scene of accicent, Alectra Utilities obtains most of costs (near $0 impact too budget))
101896	Base	New Institutional/Commercial/Industrial Subdivision Development - Alectra East	0.9	89,347	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101872	Base	Services (New and Upgrades) - Layouts – East South - Residential Upgrades	0.9	89,345	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101800	Base	Reactive Capital, Alectra East - Storm Damage	1.3	86,549	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
151047	Base	Subdivisions	0.5	85,393	System Access	Customer Connections	Guelph	Mandatory - System Access Related Project
150620	Base	Metering Renewal - all types - Horizon RZ	2.1	84,064	System Access	Metering	Horizon	Multi-year project to purchase, install, and renew residential, ICI and wholesale metering equipment.
101808	Base	Reactive Capital, Alectra East - Switchgears	1.8	83,304	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
150648	Base	Metering Renewal - all types but Suite - Enersource RZ	2.3	82,569	System Access	Metering	Enersource	Multi-year project to purchase, install and renew residential (except suite) and ICI metering equipment.
101892	Base	New Subdivision Development - Secondary Service Lateral - Alectra East	2.9	80,776	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150384	Base	New Service (new and upgrades) - Commercial and Institutional (ICI) Projects - Central South	3.6	77,904	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
150449	Base	Services (New and Upgrades) - Commercial, Industrial and Institutional (ICI) Projects - Hamilton	5.3	69,328	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
151095	Base	Reactive Restoration	1.1	63,547	System Renewal	Reactive Capital	Guelph	Replacement of assets which have failured and requires replacement in order to restore power to customers
101824	Base	Reactive Capital, Alectra East - Distribution Equipment	5.5	58,190	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers

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Project Number	Funding	Project Name	2023 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151161	Base	Joint Use Pole Removal	0.1	57,200	System Renewal	Overhead Asset Renewal	Horizon	This project is for the removal of poles in the field after third party (joint use) attachements have been removed or transferred for projects already closed by Alectra Utilities.
151050	Base	Metering - all types - Guelph RZ	0.4	55,986	System Access	Metering	Guelph	Multi-year project to purchase, install, and renew residential, ICI and wholesale metering equipment in Guelph RZ.
150469	Base	ERP JD Edwards Enhancements	1.8	55,715	General Plant	Information Technology	Multiple	Allocation of capital funds to provide 3rd party assistance on capital work, along with creating system enhancements to the JD Edwards ERP and supporting Systems.
150325	Base	CIS CC&B Enhancements	1.3	55,520	General Plant	Information Technology	Multiple	Enhancement to CIS (CC&B) application to support process improvement requirements.As the CIS (CC&B) system is one of the core applications of the organization, operational enhancements come in from a number of venues and thereby feedback into the other downstream systems. These enhancements are considered for the overall customer and organizational benefits.
101832	Base	Joint Use Pole Removal	0.6	54,024	System Renewal	Overhead Asset Renewal	Powerstream	This project is for the removal of poles in the field after third party (joint use) attachements have been removed or transferred for projects already closed by Alectra Utilities.
101570	Base	New Alliston 10MVA Substation - 44 kV Supply	0.0	50,413	System Service	Capacity (Stations)	Powerstream	This project is the 44KV feeder extension to supply Alliston MS (101569)
101571	Base	New Alliston 10MVA Substation - 13.8 kV Feeder Integration	0.0	50,184	System Service	Capacity (Stations)	Powerstream	This project is the 13.8KV feeder integration for Alliston MS (101569)
101887	Base	New Residential Subdivision Development - Alectra East	11.0	44,864	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101569	M-Factor	New Alliston 10MVA Substation - Industrial Parkway	0.8	44,830	System Service	Capacity (Stations)	Powerstream	The project entails the purchase of a station site in the vicinity of Dufferin St and Industrial Pkwy in Alliston, and constructing a new 10MVA, 44/13.8 kV, dual-stage fan, 4-feeder municipal substation
100859	Base	Switchgear Renewal - East	2.9	43,705	System Renewal	Underground Asset Renewal	Powerstream	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
151089	Base	Overhead Rebuilds	1.3	39,246	System Renewal	Overhead Asset Renewal	Guelph	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
151241	M-Factor	Arlen MTS - New Feeder	0.5	37,817	System Service	Capacity (Lines)	Guelph	New Distribution feeder from Arlen MTS to support the load growth in the south Guelph and to meet continengency requirement.
151118	M-Factor	Nebo TS 27.6kV True-up Payment (CCRA)	0.5	37,750	General Plant	Connection and Cost Recovery Agreements	Horizon	In accordance with the Connection Cost Recovery Agreement, a 10 year true-up is required for Nebo TS.
101508	Base	Transformer Renewal - East	3.1	37,474	System Renewal	Transformer Renewal	Powerstream	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
150673	Base	Road Authority Central (Mississauga)	4.5	35,001	System Access	Road Authority	Enersource	Mandatory - System Access Related Project
150073	M-Factor	Vaughan TS#1 Bus Differential & Overcurrent Protections Upgrades	0.2	34,014	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the Vaughan TS#1 Bus Differential & Overcurrent Protections Upgrades with new relays having fault recording capabilities.
150645	Base	Road Authority Central (Brampton)	5.3	31,814	System Access	Road Authority	Brampton	Mandatory - System Access Related Project
150828	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-West	0.9	31,592	System Renewal	Overhead Asset Renewal	Horizon	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151452	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-West	0.9	31,590	System Renewal	Underground Asset Renewal	Horizon	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
101762	Base	Road Authority Expenditure PS South	4.1	31,544	System Access	Road Authority	Powerstream	Mandatory - System Access Related Project
101355	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-East	1.0	31,425	System Renewal	Overhead Asset Renewal	Powerstream	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.

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151450	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-East	1.0	31,425	System Renewal	Underground Asset Renewal	Powerstream	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
100340	M-Factor	Vaughan TS#4 Feeder Integration - Part 3	5.2	28,489	System Service	Capacity (Lines)	Powerstream	This project is the third part of a multi-part project to construct and integrate new feeders from VTS#4. This project is to integrate four 27.6kV feeders (25M5/25M6/25M7/25M8) from VTS4 to the distribution system.
151363	Base	Cable Injection Project - (M25) - 14th - McCowan - Steeles - Old Kennedy, Markham	0.8	27,519	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 14 failures.
100867	Base	Pole Renewal - East	5.5	25,595	System Renewal	Overhead Asset Renewal	Powerstream	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
151074	Base	Reactive renewal	3.4	25,136	System Renewal	Reactive Capital	Horizon	Replacement of assets which have failured and requires replacement in order to restore power to customers
151362	Base	Cable Injection Project - (M39) - 16th - Warden - Hwy 7 - Woodbine, Markham	1.3	23,714	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 8 failures.
151360	Base	Cable Injection Project - (M31) - 14th - Old Kennedy - Steeles - Warden, Markham	0.8	23,641	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 38 failures.
151043	Base	Transformer Renewal - Central South	2.0	21,870	System Renewal	Transformer Renewal	Enersource	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
150071	M-Factor	Markham TS#2 Bus Differential & Overcurrent Protections Upgrades	0.3	21,087	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the Markham TS#2 Bus Differential & Overcurrent Protections Upgrades with new relays having fault recording capabilities.
151303	Base	Cable Replacement Project - (HAM) - Stone Church - Garth - Lincoln M. Alexander	3.2	19,665	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 5 failures, or 18 failures per 100km. The average cable installation year is 1976 in this project scope.
150664	Base	Residential Meters - by Lines - Brampton RZ	0.6	18,167	System Access	Metering	Brampton	Multi-year project to purchase, install and renew residential metering equipment. Work carried out by Lines.
151109	Base	Switch Replacement	0.2	18,145	System Renewal	Overhead Asset Renewal	Guelph	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacment units
102455	Base	Melbourne MS322 Land Purchase & TX Upgrade - Bradford	0.4	17,824	System Service	Capacity (Stations)	Powerstream	This project consists of transformer upgrade to increase the capacity at Melbourne MS to meet the load growth the contingency condition for Bradford area.
151367	Base	Cable Injection Project - (M21) - Hwy 7 - Markham - 16th - McCowan, Markham	1.1	17,675	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 6 failures.
150319	M-Factor	New MS - Duke MS 20 MVA Substation, Mississauga	2.0	17,541	System Service	Capacity (Stations)	Enersource	The Downtown21 plan forecasts a total population of 56,565 residents and 34,247 jobs in the Mississauga downtown core. The current capacity available for the downtown core is approximately 140 MVA ONAN rating. Based on growth projected and the land parcels available, Alectra Utilities estimates that, upon completion of Downtown21 the combined transformation load requirement will increase approximately by 300 MVA. This station will provide 20MVA ONAN capacity.
151104	Base	Distribution Automation - Central North	0.5	17,389	System Service	SCADA and Automation	Brampton	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151366	Base	Cable Injection Project - (M19) - Markham - Steeles - McCowan - 14th, Markham	1.4	17,259	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 7 failures.
151318	Base	Cable Injection Project - (I3) -Bovaird - Dixie - Queen - Hwy 410, Brampton	0.6	16,119	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 6 outages due to cable failures from 2014 to 2015 with average duration of 71 minutes.

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Project Number	Funding	Project Name	2023 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150639	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-CENTRAL	0.0	15,736	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of DC charging system for Central South Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
150638	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-East	0.0	15,736	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of DC charging system for Central North Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
150636	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-North & TS	0.0	15,736	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of installation of DC charging system for East Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
150640	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-WEST	0.0	15,736	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of installation of DC charging system for West Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
151460	M-Factor	Cable Injection Project - (V17) - Langstaff - Keele - Rutherford - Dufferin, Vaughan	0.6	15,317	System Renewal	Underground Asset Renewal	Powerstream	From 2017-2019 YTD customers in this area experienced 3 failures. From 2015-2019 YTD customers in this area experienced 4 failures.
100337	M-Factor	Markham TS #4 Feeder Egress Part 3	4.9	14,795	System Service	Capacity (Lines)	Powerstream	This project is to install four 27.6kV feeders from MTS4 along Rodick Rd to 14th Ave. These feeders will be connected to existing feeders on 14th Ave and Miller Ave. It is MTS4 Feeder Integration Plan Part 3. This project will increase supply capacity by 80 MVA to support growth and development in Markham
150285	Base	Transformer Renewal - Central North	1.3	14,492	System Renewal	Transformer Renewal	Brampton	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
101027	Base	Switch Renewal - East	0.7	14,309	System Renewal	Overhead Asset Renewal	Powerstream	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacment units
102098	Base	Client - IT Infrastructure	1.3	13,761	General Plant	Information Technology	Multiple	To upgrade desktop/laptop/mobile devices that are 5 years or older (Approximately 20% of our equipment). Net new equipment for mobile computing as well as upgrades and replacements for damaged devices. Request made by various business units. This budget also includes RSA tokens\Licenses, monitors, mice, keyboards, docking stations, tablets and small non-MFP printers. Out of Scope: Large MFP Printers
151247	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-Guelph	0.6	13,414	System Renewal	Overhead Asset Renewal	Guelph	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
102232	Base	Capital Funds for Emergency P&C Purchases - East	0.0	13,271	System Renewal	Substation Renewal	Powerstream	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the East Operating Area (former PowerStream). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.

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Project Number	Funding	Project Name	2023 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150683	Base	Capital Funds for Emergency P&C Purchases - Central North	0.0	13,185	System Renewal	Substation Renewal	Brampton	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the Central North Operating Area (Brampton). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.
150685	Base	Capital Funds for Emergency P&C Purchases - West	0.0	13,185	System Renewal	Substation Renewal	Horizon	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the West Operating Area (former Horizon). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.
150684	Base	Capital Funds for Emergency P&C Purchases - Central South	0.0	13,185	System Renewal	Substation Renewal	Enersource	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the Central South Operating Area (former Mississauga). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.
150360	M-Factor	New build - Extend 44kV feeder Centre View Dr, Mississauga	0.9	13,005	System Service	Capacity (Lines)	Enersource	A new 44 kV overhead/underground feeder extension is needed to provide supply to downtown Mississauga area on Centre View Drive as well as provide primary supply for Duke Municipal Station (MS).
150784	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-Central North	0.7	12,968	System Renewal	Overhead Asset Renewal	Brampton	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151453	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-Guelph	0.8	12,922	System Renewal	Underground Asset Renewal	Guelph	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
150823	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-Central South	0.8	12,655	System Renewal	Overhead Asset Renewal	Enersource	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
102099	Base	Printer & Copier Fleet Replacement	0.1	12,636	General Plant	Information Technology	Multiple	Replacement of existing fleet of printers/copiers that are 5 or more years old. This will include non-MFP printers. Replacement to be determined by an evaluation of evolving needs and corporate requirements as well as age of equipment.
151449	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-Central North	0.9	12,176	System Renewal	Underground Asset Renewal	Brampton	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
103211	Base	Misc Software Upgrades (FormScape, AutoCAD, etc.) - IT/OT Infrastructure	0.0	12,021	General Plant	Information Technology	Multiple	Upgrade/ acquire software as required / requested by business.
151451	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-Central South	0.9	11,936	System Renewal	Underground Asset Renewal	Enersource	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
103180	Base	Citrix Xen Virtualization Expansion - IT Infrastructure	0.3	11,299	General Plant	Information Technology	Multiple	Client computing virtualization (Citrix) is currently the standard delivery method for applications and desktops at Alectra. This system has had a tremendous uptake in the organization and requires an upgrade in back-end infrastructure to support the additional demand from the business.

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Project Number	Funding	Project Name	2023 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150693	M-Factor	Blockchain	0.6	11,192	System Service	Distributed Energy Resources (DER)	Multiple	The project will prepare Alectra Utilities to engage with customers in a real-time and transparent process to record the flow of electricity to and from DERs, enabling the efficient procurement of distribution benefits, such as demand response and frequency regulation. The project will provide a robust settlement mechanism between Alectra and customers, backed by timely and efficient financial transactions, to enable overall trust and customer value delivery and leading to increased customer satisfaction.
151314	Base	Cable Injection Project - (G2) -Wanless - Kennedy - Bovaird - Main, Brampton	0.3	11,046	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 4 outages due to cable failures from 2013 to 2017 with average duration of 125 minutes.
150665	Base	Emerging Customer Initiated Work (West)	1.7	10,905	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
151465	M-Factor	Cable Replacement - Mississauga Left Behind Cable	0.6	10,857	System Renewal	Underground Asset Renewal	Enersource	This project is to address cables which were part of a cable injection project but were ultimately not injectable at the time of project execution. These 'left behind' segments must be addressed, if they are left in the system they could cause a failure. Customers would not only experience an outage, but question the utilities work practices as we would have addressed only a portion of the cables instead of all the cables which could cause an outage.
101562	Base	Arc Flash Mitigation Projects	0.0	10,619	System Service	Safety & Security	Powerstream	This project is to mitigate arc flash risk at East stations.
151307	Base	Cable Injection Project - (HAM) - Upper Sherman - Stone Church - Nebo - Rymal	0.3	10,595	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 2 failures, or 5 failures per 100km. The average cable installation year is 1989 in this project scope.
151299	Base	Cable Replacement Project - (HAM) - Millen - Barton - Fruitland	1.3	10,342	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 16 failures, or 44 failures per 100km. The average cable installation year is 1970 in this project scope.
150653	Base	Road Authority West (St. Catharines)	1.1	10,217	System Access	Road Authority	Horizon	Mandatory - System Access Related Project
150615	Base	Metering Tools & Equipment - Central North	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Brampton	Replacement of Capital tools required to perform work
150616	Base	Metering Tools & Equipment - Central South	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
150613	Base	Metering Tools & Equipment - East	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
150614	Base	Metering Tools & Equipment - West	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of Capital tools required to perform work
102263	M-Factor	Work Force Management / Mobile Dispatch	2.4	9,762	General Plant	Information Technology	Multiple	Enterprise wide field crew management system that will enable more efficient use of crews and improve visibility to job progress enabling better communication of expectations to customers
151456	M-Factor	Cable Injection Project - (V50) - Hwy 7 - Kipling - Steeles - Hwy 27, Vaughan	0.2	9,188	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 3 failures in 2018.
151063	Base	Pole Renewal - Central South	3.1	9,065	System Renewal	Overhead Asset Renewal	Enersource	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
100886	Base	Distribution Automation - East	1.4	9,041	System Service	SCADA and Automation	Powerstream	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151275	Base	Cable Injection Project - (SCH) - QEW - Highway 406 - Martindale Road	0.8	8,905	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 3 failures, or 11 failures per 100km. The average cable installation year is 1988 in this project scope.
151298	Base	Cable Injection Project - (HAM) - Govenors - Old Ancaster	0.9	8,842	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 3 failures, or 10 failures per 100km. The average cable installation year is 1989 in this project scope.
101804	Base	Purchase of Major Tools	0.4	8,158	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work

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101488	Base	Markham TS #5	0.3	8,117	System Service	Capacity (Stations)	Powerstream	This project is to perform Class EA and purchase land for Markham TS#5 which has been recommended as per the York Region IRRP
151313	Base	Cable Injection Project - (F5) - Steeles - Main - Hwy 407 - McLaughlin, Brampton	0.3	7,751	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 5 outages due to cable failures from 2007 to 2016 with average duration of 80 minutes.
150282	Base	Switchgear Renewal - Central North	0.5	7,521	System Renewal	Underground Asset Renewal	Brampton	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
150508	Base	Installation of Transformer Bushing Monitoring on MS txmrs-Multi Year -CENTRAL	0.2	7,509	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of Transformer bushing monitoring system in Central South. bushing monitoring unit provides real time condition monitoring of the transformer bushings.
151391	Base	2023 GUELPH - Remotely Controlled Switches	0.4	7,488	System Service	SCADA and Automation	Guelph	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151325	Base	Cable Replacement Project - (M31) - 14th - Old Kennedy - Steeles - Warden, Markham	3.5	7,412	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 38 failures.
151457	M-Factor	Cable Injection Project - (V25) - Major Mackenzie - Keele - Rutherford - Jane, Vaughan	0.4	7,410	System Renewal	Underground Asset Renewal	Powerstream	From 2017-2019 YTD customers in this area experienced 2 failures. From 2015-2019 YTD customers in this area experienced 3 failures.
151339	Base	Cable Replacement Project - (BA19) - Letitia - Anne - Edgehill - Ferndale, Barrie	4.4	7,397	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 2 failures in 2018.
150370	M-Factor	New build - 27.6kV New Feeders Lakeview Development, Mississauga	1.9	7,391	System Service	Capacity (Lines)	Enersource	Two 27.6kV feeders are to be extended in order to provide for additional capacity in the Lakeview area for the brownfield development and intesificiation
151316	Base	Cable Injection Project - (H2) - Wanless - Heart Lake - Bovaird - Kennedy, Brampton	0.4	7,371	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 4 outages due to cable failures from 2009 to 2017 with average duration of 107 minutes.
150284	Base	Pole Renewal - Central North	2.9	7,305	System Renewal	Overhead Asset Renewal	Brampton	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
102017	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear initiative-North & TS	0.3	7,275	System Service	Safety & Security	Powerstream	This project consists of Sorbweb Oil containment system in East. Protects the environment in the event of a transformer tank rupture
100924	M-Factor	Install two additional 27.6 kV ccts on Hwy 7 from Jane St to Weston Rd	2.6	7,256	System Service	Capacity (Lines)	Powerstream	This project is to reroute two 27.6kV feeders (21M3 & 21M4) to supply new load in Vaughan Metro Center (VMC). Vaughan Metro Center (VMC) is supplied by two feeders 21M5 and 21M11 from VTS2. There is limited capacity on VTS2 left before it reaches the 10 day Limited Time Rating (LTR) of 153 MW. VTS4 was completed in 2017 and is in service and will off load VTS2 so that will have extra capacity to supply new loads in the VMC development (approx. 80MW).
150714	Base	MS Transformer Tank and Radiator Reconditioning- Multi-year initiative - Central	0.1	6,819	System Renewal	Substation Renewal	Enersource	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the Central South Operating Area (former Enersource). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150713	Base	MS Transformer Tank and Radiator Reconditioning- Multi-year initiative - East	0.1	6,819	System Renewal	Substation Renewal	Brampton	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the Central North Operating Area (Brampton). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.

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Project Number	Funding	Project Name	2023 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150715	Base	MS Transformer Tank and Radiator Reconditioning- Multi-year initiative - West	0.1	6,819	System Renewal	Substation Renewal	Horizon	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the West Operating Area (former Horizon). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150644	Base	Road Authority West (Hamilton)	1.9	6,689	System Access	Road Authority	Horizon	Mandatory - System Access Related Project
151355	Base	Cable Injection Project - (M26) - Hwy 7 -McCowan - 14th - Old Kennedy, Markham	0.9	6,566	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 14 failures.
150507	Base	230kV TS Transformer Primary Bushing Monitoring Enablement-BPD Elimination - 4 TS Transformers-Multi-year initiative-TS	0.5	6,521	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to install primary bushing monitoring at TS in EAST
151459	M-Factor	Cable Injection Project - (V24) - Langstaff - Jane - Rutherford - Keele, Vaughan	0.5	6,509	System Renewal	Underground Asset Renewal	Powerstream	From 2015-2019 YTD customers in this area experienced 0 failures. From 2013-2019 YTD customers in this area experienced 2 failures.
150468	Base	Meter to Cash auxiliary systems ongoing upgrades - IT/OT Infrastructure	0.2	6,495	General Plant	Information Technology	Multiple	Enhancement to CIS (CC&B) Meter to Cash ancillary systems to support process improvement requirements. Ancillary systems but not limited to upgrading FW, MV90, LPSS. These enhancements are considered for the overall customer and organizational benefits.
151418	Base	Cable Replacement Project- Innovator & Courtney Park E (4), Mississauga	2.9	6,467	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 7 outages, the length is 7,263 m, and the average cable age is 22 years old. This is a commerical/industrial (3-phase) area.
151310	Base	Cable Injection Project - (E4) - Queen - McLaughlin - Steeles - Chinguacousy, Brampton	0.2	6,421	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 4 outages due to cable failures from 2008 to 2016 with average duration of 104 minutes.
151044	Base	Switch Renewal - Central South	0.3	6,319	System Renewal	Overhead Asset Renewal	Enersource	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacement units
103659	Base	Storm Hardening - Four-Circuit Poles	2.1	6,255	System Renewal	Overhead Asset Renewal	Powerstream	
150514	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear Initiative-WEST	0.3	6,213	System Service	Safety & Security	Horizon	This project consists of Sorbweb Oil containment system in West. Protects the environment in the event of a transformer tank rupture
151336	Base	Cable Replacement Project - (BA22) - Sunnidale and Anne, Barrie	1.5	6,208	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 2 failures in 2019.
151086	Base	Insulator Replacements	0.1	5,949	System Renewal	Overhead Asset Renewal	Guelph	Replacement of non-polymer insulators (Areas are prioritized by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.
151463	M-Factor	Cable Injection Project - (F4-G4) - Main - Steeles - Chinguacousy - Queen, Brampton	0.3	5,560	System Renewal	Underground Asset Renewal	Brampton	From 2000-2018 customers in this area experienced 86 failures. Exact number of failures in recent years is unknown at this moment.
150337	Base	Switch Renewal - West	0.5	5,476	System Renewal	Overhead Asset Renewal	Horizon	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacement units
151055	Base	Major Tools	0.1	5,432	General Plant	Tools, Shop and Garage Equipment	Guelph	Replacement of Capital tools required to perform work
150598	Base	Suite Metering - Renewals & Retrofits - PowerStream RZ	0.4	5,394	System Access	Metering	Powerstream	Multi-year project to purchase and install suite metering equipment in existing buildings upgraded from bulk metering.
150515	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear initiative-CENTRAL	0.3	5,352	System Service	Safety & Security	Enersource	This project consists of Sorbweb Oil containment system in Central South. Protects the environment in the event of a transformer tank rupture
150516	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear initiative-EAST	0.3	5,352	System Service	Safety & Security	Brampton	This project consists of Sorbweb Oil containment system in Central North. Protects the environment in the event of a transformer tank rupture

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Project Number	Funding	Project Name	2023 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150336	Base	Transformer Renewal - West	0.7	5,294	System Renewal	Transformer Renewal	Horizon	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
151306	Base	Cable Injection Project - (HAM) - Upper Wentworth - Lincoln M. Alexander - Upper Ottawa - Stone Church	0.5	5,237	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 2 failures, or 8 failures per 100km. The average cable installation year is 1988 in this project scope.
150750	Base	Lines Central-North - Major Tools	0.1	5,234	General Plant	Tools, Shop and Garage Equipment	Brampton	Replacement of Capital tools required to perform work
150009	Base	Insulator Renewal - East	0.2	5,108	System Renewal	Overhead Asset Renewal	Powerstream	Replacement of non-polymer insulators (Areas are prioritized by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.
151203	Base	Capital Corrective Equipment Replacement - Stations South West	0.1	4,921	System Renewal	Substation Renewal	Guelph	This project is intended to provide capital for all unplanned station equipment replacements in the South West Operating Area (Guelph) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
102042	Base	Purchase and Installation of Animal Guards at Various Stations-Annual Multi-year initiative-North & TS	0.0	4,894	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of animal guard installation in East
151359	Base	Cable Injection Project - (M16) - Major Mackenzie - 9th - 16th - Hwy 48, Markham	0.7	4,782	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 7 failures.
151464	M-Factor	Cable Injection Project - (F3-G3-H3) - Phase 2, Brampton	0.5	4,697	System Renewal	Underground Asset Renewal	Brampton	From 2000-2018 customers in this area experienced 103 failures. Exact number of failures in recent years is unknown at this moment.
151083	Base	Switchgear Renewal - West	0.4	4,684	System Renewal	Underground Asset Renewal	Horizon	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
151010	Base	Switch Renewal - Central North	0.7	4,604	System Renewal	Overhead Asset Renewal	Brampton	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacement units
150720	Base	Lines Central-South - Major Tools	0.2	4,591	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
151420	Base	Cable Replacement Project-Eglinton & Credit Valley (5), Mississauga	10.2	4,486	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 6 outages, the length is 27,821 m, and the average cable age is 35 years old.
151021	Base	Insulator Renewal - Central North	0.4	4,236	System Renewal	Overhead Asset Renewal	Brampton	Replacement of non-polymer insulators (Areas are prioritiezed by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.
150674	Base	Emerging Customer Initiated Work Central (Brampton)	0.2	4,184	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
101763	Base	Unforeseen Projects Initiated by the customer PS North	0.1	4,161	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150679	M-Factor	Alectra Drive for the Workplace	0.2	3,997	System Service	Capacity (Lines)	Multiple	Alectra Drive for the Workplace will demonstrate the value of integrating smart electric vehicle (EV) charging system at workplaces into the distribution grid such that mass uptake of electric vehicles can be managed in a safe and reliable manner. The planned investment will help manage the flow of electricity needed to serve the building and EV charging stations, so that electricity costs are minimized for commercial customers while EV drivers have an easy and accessible charging solution.

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Project Number	Funding	Project Name	2023 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151413	Base	Cable Replacement Project- Rathburn Rd W & Elora Dr (9), Mississauga	1.6	3,744	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 8 outages, the length is 3,270 m, and the average cable age is 27 years old.
102075	Base	Major repairs, refurbishment, or modifications to switches/switchgear	0.1	3,702	System Renewal	Underground Asset Renewal	Powerstream	Switchgear and Switches in stores that repair/refurbishment of the units can allow them to be returned to service
151411	Base	Cable Replacement Project- Queensway & Mavis (31), Mississauga	3.6	3,694	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 8 outages, the length is 8,488 m, and the average cable age is 42 years old.
151276	Base	Cable Injection Project - (SCH) - Vansickle	0.4	3,556	System Renewal	Underground Asset Renewal	Horizon	From 2015-2018 YTD customers in this area experienced 2 failures, or 11 failures per 100km. The average cable installation year is 1990 in this project scope.
150498	Base	Capital Corrective Equipment Replacement - Stations Central South	0.3	3,535	System Renewal	Substation Renewal	Enersource	This project is intended to provide capital for all unplanned station equipment replacements in the Central South Operating Area (former Enersource) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
150499	Base	Capital Corrective Equipment Replacement - Stations Central North	0.3	3,535	System Renewal	Substation Renewal	Brampton	This project is intended to provide capital for all unplanned station equipment replacements in the Central North Operating Area (Brampton) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
150497	Base	Capital Corrective Equipment Replacement - Stations West	0.3	3,535	System Renewal	Substation Renewal	Horizon	This project is intended to provide capital for all unplanned station equipment replacements in the West Operating Area (former Horizon) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
101542	M-Factor	New Barrie 20MVA Substation - Harvie	0.8	3,447	System Service	Capacity (Stations)	Powerstream	The project entails the purchase of a station site in the vicinity of Harvie Road and Veterans Drive in Barrie and constructing a new 44/13.8kV, 20MVA, 4-feeder municipal substation.
150774	Base	Lines Central-North - Site Restorations	0.1	3,434	System Renewal	Overhead Asset Renewal	Brampton	
150721	Base	Lines Central-South - Site Restorations	0.1	3,434	System Renewal	Underground Asset Renewal	Enersource	
150672	Base	Burden Allocation - System Service	0.1	3,353	System Service	Capacity (Lines)	Horizon	
151458	M-Factor	Cable Injection Project - (V31) - Langstaff - Weston - Rutherford - Jane, Vaughan	0.6	3,280	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 1 failure in 2017.
150263	Base	Cable Replacement Project - East Left Behind Cable	3.4	3,237	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in these areas have experienced 11 failures.
151416	Base	Cable Replacement Project- Woodchester & Thorn Lodge (34), Mississauga	2.4	3,184	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 7 outages, the length is 6,669 m, and the average cable age is 49 years old.
151356	Base	Cable Injection Project - (V44) - Langstaff - Pine Valley - Hwy 7 - Kipling, Vaughan	0.4	3,176	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 6 failures.
150601	Base	Advanced Metering Infrastructure (AMI) Security Audit - East	0.1	3,171	System Access	Metering	Powerstream	Multi-year project to renew meter data security to address emerging cyber threats.
102065	Base	Capital Corrective Equipment Replacement - East	0.3	3,161	System Renewal	Substation Renewal	Powerstream	This project is intended to provide capital for all unplanned station equipment replacements in the East Operating Area (former PowerStream area) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.

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Project Number	Funding	Project Name	2023 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150611	Base	Transformer Tank and Radiator Reconditioning- Multi-year initiative - East	0.2	3,117	System Renewal	Substation Renewal	Powerstream	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the East Operating Area (former PowerStream). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150524	Base	Security Additions & Enhancements	0.2	3,110	General Plant	Information Technology	Multiple	details refer to PWC doc
150623	Base	Purchase and Installation of Animal Guarding-Annual Multi-year initiative-WEST	0.0	3,095	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of animal guard installation in West
150622	Base	Purchase and Installation of Animal Guarding-Annual Multi-year initiative-CENTRAL	0.0	3,093	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of Animal guard at Central South Stations
150621	Base	Purchase and Installation of Animal Guarding-Annual Multi-year initiative-EAST	0.0	3,082	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of Animal guard at East Stations
151317	Base	Cable Injection Project - (H4) - Queen - Hwy 410 - Steeles - Kennedy, Brampton	0.4	3,033	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 2 outages due to cable failures in 2007 and 2012 with average duration of 72 minutes.
151417	Base	Cable Replacement Project- Rathburn & Cawthra (27), Mississauga	0.6	2,968	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 8 outages, the length is 1,103 m, and the average cable age is 38 years old.
100632	M-Factor	27.6 kV Pole Line on 14th Ave from Hwy 48 to 9th Line	2.0	2,933	System Service	Capacity (Lines)	Powerstream	This project consists of building new 27.6 KV pole line on 14th Avenue from HWY 48 to 9th Line. Feeders in this area are over the planning limit and existing load over planning limit and this project will redirected to alternate supply as well as supply new development.
151208	Base	Station Equipment Temperature Monitoring - South West	0.0	2,911	System Renewal	Substation Renewal	Guelph	MULTI ANSWER
151286	Base	Cable Replacement Project - (H2) - Wanless - Heart Lake - Bovaird - Kennedy, Brampton	1.3	2,868	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 6 outages due to cable failures from 2011 to 2017 with an average duration of 126 minutes
101625	Base	Cyber Security Audit & Upgrades	0.1	2,865	General Plant	Information Technology	Multiple	This project would fund various activities and countermeasures to improve the cyber security posture of the Operations' Network. This will be a mandate for compliance to Ontario Cyber Security framework. The counter measures include: - an annual audit of the cyber security countermeasures in place; - implementation of new technologies to seal identified compromises; - replacement of deployed cyber security equipment deemed end of life or not able to deliver an expected level of service.
150671	Base	Burden Allocation - System Renewal	1.9	2,831	System Renewal	Other System Renewal	Horizon	
150632	Base	AMI Gatekeeper Expansion - Brampton RZ	0.0	2,820	System Access	Metering	Brampton	Multi-year project to expand and upgrade AMI field communication equipment to service new connections.
150374	M-Factor	New build - 13.8kV Feeder Extension 9th Line, Derry to Argentia, Mississauga	1.2	2,571	System Service	Capacity (Lines)	Enersource	13.8kV OH feeder extension 9th Line from Derry Rd W to Argentia Rd in Mississauga.This will provide additional capacity for growth along 9th Line.
150332	M-Factor	Non-Wires Alternative Pilot	0.8	2,537	System Service	Capacity (Stations)	Powerstream	The project will provide customers with increased flexibility to make decisions about their electricity consumption, generation, and costs; it leads to more efficient integration of DERs which yields greater benefits to customer, system reliability, and power quality. This project will also provide the opportunity to increase operational efficiency and improved asset management to enhance service to customer and defer and/or reduce infrastructure investment needs in York Region.
150580	Base	West Region Tools and Test Equipment	0.2	2,494	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of Capital tools required to perform work
150627	Base	Station Equipment Temperature Monitoring-EAST	0.1	2,479	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of Station Temperature Monitoring system in Central North and it enables controlled emergency loading beyond the nameplate rating.
150629	Base	Station Equipment Temperature Monitoring-WEST	0.1	2,479	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of Station Temperature Monitoring system in West and it enables controlled emergency loading beyond the nameplate rating.
150095	M-Factor	Vaughan TS#1 T1/T2 "B" Differential Protections Upgrade	0.1	2,478	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the current T1/T2 ASEA solid state Transformer "B" Differential Protection relays at Vaughan TS#1 with new relays having fault recording capabilities

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Project Number	Funding	Project Name	2023 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151202	Base	Purchase of Major Station Tools - Multi-year	0.0	2,473	General Plant	Tools, Shop and Garage Equipment	Guelph	Replacement of Capital tools required to perform work
151419	Base	Cable Replacement Project- Thomas St & Hillside (24), Mississauga	1.8	2,467	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 6 outages, the length is 4,089 m, and the average cable age is 30 years old.
151395	Base	2023 GUELPH - Transite Underground Duct Replacement	0.3	2,461	System Renewal	Underground Asset Renewal	Guelph	Replacement of Duct Structure which contains asbestoes a known carcinogen and impacts worker safety.
150625	Base	Purchase of Major Tools - Muliti Year-CENTRAL	0.0	2,395	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
150624	Base	Purchase of Major Tools - Muliti Year-EAST	0.0	2,395	General Plant	Tools, Shop and Garage Equipment	Brampton	Replacement of Capital tools required to perform work
150626	Base	Purchase of Major Tools - Muliti Year-WEST	0.0	2,395	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of Capital tools required to perform work
101761	Base	Unforeseen Projects Initiated by the customer PS South	0.4	2,365	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
151435	Base	Cable Injection- 010 - Area 56- Derry Rd W & Ninth Line, Mississauga	1.3	2,307	System Renewal	Underground Asset Renewal	Enersource	There are 3 outages, we are injecting a total of 45,837 m of cable for this project, and the average age of the cable is 30 years.
151290	Base	Cable Replacement Project - (I3) - Bovaird - Dixie - Queen - Hwy 410, Brampton	0.7	2,280	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 8 outages due to cable failures from 2007 to 2018 with average duration of 133 minutes.
150084	M-Factor	Markham TS#2 T1/T2 "B" Differential Protections Upgrade	0.1	2,270	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the T1/T2 GEC solid state Transformer "B" Differential Protection relays at Markham TS#3 with new relays having fault recording capabilities
151244	Base	Fault Indicators	0.0	2,243	System Service	System Control, Comm'ns & Performance	Guelph	The scope of this project is to install Fault Indicators in Guelph. The project would include the fault indicators communicating to the existing SCADA and will improve the fault locating and improve SAIDI
151181	Base	Cable Replacement Project - Left Behind Cable, Brampton	0.5	2,163	System Renewal	Underground Asset Renewal	Brampton	This project is to address cables which were part of a cable injection project but were ultimately not injectable at the time of project execution. These 'left behind' segments must be addressed, if they are left in the system they could cause a failure. Customers would not only experience an outage, but question the utilities work practices as we would have addressed only a portion of the cables instead of all the cables which could cause an outage.
150675	Base	Emerging Customer Inititated Work Central (Mississauga)	0.2	2,049	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
101764	Base	Road Authority Expenditure PS North	1.6	2,038	System Access	Road Authority	Powerstream	Mandatory - System Access Related Project
150604	Base	Smart Meter Network Expansion - PowerStream RZ	0.3	2,036	System Access	Metering	Powerstream	Multi-year project to expand and upgrade AMI field communication equipment to service new connections.
151092	Base	Distribution Automation - Central South	0.6	2,014	System Service	SCADA and Automation	Enersource	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151030	Base	Addition of Sensors to SCADA Controllable 44kV LISs in Brampton	0.3	2,013	System Service	System Control, Comm'ns & Performance	Brampton	This project is to add sensors to the 44KV switches in Central North
150694	M-Factor	Cityview microgrid enhancements	0.0	1,985	System Service	Capacity (Lines)	Powerstream	The project is to understand how microgrids can be integrated into the distribution grid in a safe and reliable manner. The microgrid is used to evaluate integration and connection to the distribution grid, while reducing the building's load, greenhouse gas emissions, and increasing its resiliency to grid outages.
150538	Base	Cyber Security Devices Upgrades	0.6	1,985	General Plant	Information Technology	Multiple	This project upgrades security tools to maintain compliance with OEB Cyber Security Framework
151335	Base	Cable Replacement Project - (BA14) - Tifffin and Hwy 400, Barrie	2.7	1,976	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 43 years old and will be 47 when project starts (2023).
100904	M-Factor	Install Double Cct Pole Line on Major Mackenzie - Hwy 27 to Huntington Rd	3.7	1,874	System Service	Capacity (Lines)	Powerstream	This project is to build two 27.6kV ccts on Major Mackenzie - Hwy 27 to Huntington Rd to supply new customers on Major Major Dr and existing customers. There is one 4.8kV single phase cct on the west half of the section and there is one 27.6kV cct (1/0 AL) on the east half the section. They don't have sufficient capacity for future developments in the area.

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Project Number	Funding	Project Name	2023 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150670	Base	SCADA FDIR	0.1	1,799	System Service	SCADA and Automation	Multiple	Fault Detection, Isolation, and Restoration implementation, next generation of distribution automation technology. This utilizes devices which are already automated and integrates them into the OMS system such that devices perform self healing after a fault. in some cases reducing the outage time to less then 1 minute.
151323	Base	Cable Injection Project - (L4) - Queen - Airport - Steeles - Torbram, Brampton	0.2	1,746	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 0 outage due to cable failures to date. Cables are 31 years old and will be at the injection eligibility threshold by the time of project execution in 2023.
150680	M-Factor	Alectra Drive at Home	0.6	1,731	System Service	Capacity (Lines)	Multiple	Alectra Drive at Home will demonstrate the value of integrating smart electric vehicle (EV) charging system in multi rise buildings as well as residential homes into the distribution grid such that mass uptake of electric vehicles can be managed in a safe and reliable manner. It will also provide insight into the characteristics of EV Charging, how EVs can be aggregated and controlled to provide the benefit at the local, regional and provincial system levels, and customer response to these control and optimization strategies.
151201	Base	Purchase of New Critical Spare Parts - Guelph	0.0	1,728	System Renewal	Substation Renewal	Guelph	This project involves procurement of critical spare parts for stations in the South West Operating Area (Guelph) so as to facilitate prompt repair of failed assets during emergency situations.
150378	M-Factor	Rear Lot Renewal Project - East of Queen Street/North of Mill Street	1.8	1,699	System Renewal	Rear Lot Conversion	Powerstream	This area has had an average of 1 outage lasting 8.6hrs per year based on 3 a year average.
150619	Base	Purchase of Critical Spare Parts - West	0.0	1,649	System Renewal	Substation Renewal	Horizon	This project involves procurement of critical spare parts for stations in the West Operating Area (former Horizon) so as to facilitate prompt repair of failed assets during emergency situations.
151136	Base	C55 Alectra: Optimization of Business Practices	0.2	1,625	General Plant	Information Technology	Multiple	Optimizing the current software to communicate with other systems such as the ERP will allow for more efficient and effective budgeting processes and consolidation of information allowing for consistent reporting of the information from one system.
151139	M-Factor	Voltage Conversion - MS-12 Hansen Rd, Brampton	2.4	1,599	System Renewal	Overhead Asset Renewal	Brampton	From 2015-2017 customers in this area experienced 29 outages and had 94,267 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
150642	Base	Proactive Replacement of Remote Terminal Units - Central North	0.2	1,582	System Renewal	Substation Renewal	Brampton	This project involves replacement of end-of-life remote terminal units and communications equipment at stations in the Central-North Operating Area (Brampton). Replacement equipment can be leveraged to allow for Smart Grid initiatives such as quicker fault detection and automatic isolation and restoration. If existing equipment were to fail, the ability to remotely monitor and control switching devices would be lost, thus risking longer interruptions.
150617	Base	Purchase of Critical Spare Parts - Central North	0.0	1,569	System Renewal	Substation Renewal	Brampton	This project involves procurement of critical spare parts for municipal stations in the Central North Operating Area (Brampton) so as to facilitate prompt repair of failed assets during emergency situations.
151087	Base	Switchgear Replacement	0.3	1,559	System Renewal	Underground Asset Renewal	Guelph	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
150618	Base	Purchase of Critical Spare Parts - Central South	0.0	1,557	System Renewal	Substation Renewal	Enersource	This project involves procurement of critical spare parts for stations in the Central South Operating Area (former Enersource) so as to facilitate prompt repair of failed assets during emergency situations.
102077	Base	Major repair, refurbishment, or conversions of distribution transformers	0.0	1,541	System Renewal	Transformer Renewal	Powerstream	Transformers returned or in stores where repair/refurbishment of the unit can return it to service at a lower cost then purchase of a new unit
150964	Base	Fleet_West_Vehicle Replacement_ Bucket Truck 1-337	0.4	1,531	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.

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150989	Base	Fleet_West_Vehicle Replacement_ Underground Reel Tensioner Truck 1-351	0.4	1,519	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150887	Base	Fleet_West_Vehicle Replacement_ Bucket Truck 1-379	0.4	1,502	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151222	Base	Concrete Structures	0.2	1,469	System Renewal	Underground Asset Renewal	Guelph	Replacement of lids on civil structures to avoid public risk
151320	Base	Cable Injection Project - (I5) - Steeles - Dixie - Hwy 407 - Hwy 410, Brampton	0.1	1,426	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 0 outage due to cable failures to date. Cables are 31 years old and will be at injection eligibility threshold by the time of project execution in 2023.
150334	Base	Distribution Automation - West	0.7	1,424	System Service	SCADA and Automation	Horizon	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151052	Base	Emerging Customer Initiated Work - Relocations	0.1	1,412	System Access	Customer Connections	Guelph	Mandatory - System Access Related Project
150751	Base	Facilities_East_Capital Replacement Investment Support	0.1	1,374	General Plant	Facilities Management	Powerstream	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
151288	Base	Cable Replacement Project - (H4) - Queen - Hwy 410 - Steeles - Kennedy, Brampton	0.6	1,354	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 4 outages due to cable failures from 2009 to 2018 with average duration of 189 minutes.
151357	Base	Cable Injection Project - (V34) - Kirby - Jane - Teston - Weston, Vaughan	0.1	1,343	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 1 failure.
150335	Base	Pole Renewal - West	3.0	1,338	System Renewal	Overhead Asset Renewal	Horizon	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
151387	Base	Cable Replacement - (833) - 295 Water St Subdivision, Guelph	0.6	1,320	System Renewal	Underground Asset Renewal	Guelph	
151337	Base	Cable Replacement Project - (BA18) - Ferndale and Benson, Barrie	1.0	1,318	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 41 years old and will be 45 when project starts (2023).
150738	Base	Facilities_West_Capital Replacement Investment Support	1.8	1,289	General Plant	Facilities Management	Horizon	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
150330	M-Factor	Rear Lot Renewal Project - Marsdale, St.Catharines	1.1	1,284	System Renewal	Rear Lot Conversion	Horizon	This area has had an average of 19 outages lasting 1hr per year based on 3 year average.
151358	Base	Cable Injection Project - (V62) - Kirby - Hwy 27 - Nashville - Huntington, Vaughan	0.1	1,265	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 1 failure.
150790	Base	Fleet_Central South Vehicle Replacement-Puller/Tensioner	0.2	1,265	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
102241	Base	Proactive Replacement of Remote Terminal Units - East	0.1	1,240	System Renewal	Substation Renewal	Powerstream	This project involves replacement of end-of-life remote terminal units and communications equipment at stations in the East Operating Area (former PowerStream). Replacement equipment can be leveraged to allow for Smart Grid initiatives such as quicker fault detection and automatic isolation and restoration. If existing equipment were to fail, the ability to remotely monitor and control switching devices would be lost, thus risking longer interruptions.
150529	Base	OT GIS & OMS Software Upgrade	0.3	1,210	General Plant	Information Technology	Multiple	Requried upgrades to our customer facing GIS and OMS systems to ensure product support and security patches.

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151064	Base	Secondary Pedestals -St. Catharines	0.2	1,154	System Service	Safety & Security	Horizon	This project involves the replacment of above grade steel secondary pedestals which pose a safety risk to the general public
101125	Base	Lines Mobile Equipment - IT/OT Infrastructure	0.1	1,119	General Plant	Information Technology	Multiple	This budget covers the deployment of mobile technology - laptops/field tablets and accessories - within the Lines Department to gain efficiencies in field operations. By deploying this technology, the Lines area can move away from a paper-based to a more electronic environment. In future, it is envisioned that, for example, mobile applications will facilitate the electonic transmission of work orders and electronic record keeping (asset tracking, tailboards, switching orders, timesheets). This will allow for streamlined operational processes and record-keeping, thereby supporting corporate technological initiatives such as the GIS, Outage Management System, and future Workforce Management system. At present, all Lines Management personnel and Subforemen have laptops, facilitating activities such as viewing of the GIS, electronic Asset Tracking Forms, and use of OMS Responder Mobile. Expenditures in this area will allow for more deployment of field devices among Lines crews and for the implementation of more computerized processes.
150570	Base	Alectra West Substation Ground Grid Installations	0.3	1,091	System Service	Safety & Security	Horizon	This project is to install ground grid at East Stations
151204	Base	Upgrade to Station Facilities (Buildings/Civil work) Multi-year	0.0	1,089	General Plant	Facilities Management	Guelph	This project involves work involving structural components of stations, including windows, brickwork, roofs, foundations, drainage, doors, etc. at stations in the SouthWest Operational Area. Not keeping up with this work would result in advanced deterioration resulting in even greater maintenance costs, potential safety concerns and potential failure of the electrical equipment in the building causing power interruptions.
103198	Base	BizTalk Upgrade - IT Infrastructure	0.3	1,085	General Plant	Information Technology	Multiple	Upgrade existing BizTalk to latest version. We currently have a development, test, and Production environment.
151434	Base	Cable Injection- 009- AREA 54- Highway 401 & Argentia, Mississauga	2.5	1,085	System Renewal	Underground Asset Renewal	Enersource	There are 0 outages, we are injecting a total of 30,642 m of cable for this project, and the average age of the cable is 30 years.
151284	Base	Cable Replacement Project - (E3) - Bovaird - McLaughlin - Queen - Chinguacousy, Brampton	0.7	1,082	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 0 cable failure to date. Cables will be at the injection eligibility threshold by the time of project execution in 2023.
150806	Base	Fleet_Central South Vehicle Replacement-207-09 S/bucket	0.5	1,069	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151041	Base	Protection Logic Upgrades - East MSs (North)	0.1	1,061	System Service	System Control, Comm'ns & Performance	Powerstream	
151373	Base	Cable Replacement - (923) - Scottsdale Drive Subdivision, Guelph	0.8	1,060	System Renewal	Underground Asset Renewal	Guelph	
150937	Base	Fleet_West_Vehicle Replacement_Cargo/Passenger Vans.	0.0	995	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151091	Base	Switchgear Renewal - Central South	3.8	982	System Renewal	Underground Asset Renewal	Enersource	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
150983	Base	Fleet East Vehicle replacement - Pickup truck 1500	0.3	982	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151159	Base	Fault Indicator Installation and Replacement - Hamilton and St. Catharines	0.3	966	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of fault indicator installation in West
150628	Base	Station Equipment Temperature Monitoring-CENTRAL	0.1	965	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of Station Temperature Monitoring system in Central South and this enables controlled emergency loading beyond the nameplate rating.
150815	Base	Fleet_Central South Vehicle Replacement-Trailers	0.1	961	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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Project Number	Funding	Project Name	2023 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151065	Base	Manhole Lid Replacement	0.4	925	System Renewal	Underground Asset Renewal	Horizon	Replacement of lids on civil structures to avoid public risk
150900	Base	Fleet_West_Vehicle Replacement_ Step Vans	0.4	918	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150981	Base	Fleet East Vehicle replacement - Pickup truck 2500	0.5	914	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150361	M-Factor	Airport 88M5 & 88M7 HONI Purchase	0.5	905	System Service	Capacity (Lines)	Enersource	Hydro One owns the OH Feeders from Richview TS to the CN rails approximately 6100m away. 88M5 and 88M7 would transfer ownership from HONI to Alectra to reliably supply to airport.
151017	Base	Fleet_West_Vehicle_Replacement_Tensioner Trailers	0.4	894	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150969	Base	Fleet East Vehicle replacement - SUV/Van	0.2	885	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150904	Base	Fleet East Yearly Light and Misc equipment	0.0	847	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150817	Base	Fleet_Central South Vehicle Replacement-230-11 S/bucket	0.5	830	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150746	Base	Facilities_Central_Capital Replacement Investment Support	1.5	807	General Plant	Facilities Management	Multiple	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
151431	Base	Cable Injection- 006- AREA 39- Erin Mills Pkway & Thomas St, Mississauga	1.8	786	System Renewal	Underground Asset Renewal	Enersource	There are 0 outages, we are injecting a total of 38,448 m of cable for this project, and the average age of the cable is 30 years.
101622	Base	DACS Inverters and RTU's removal - East	0.1	765	System Renewal	Substation Renewal	Powerstream	This project involves removal of obsolete and out-of-service DACs inverters, RTUs and associated wiring at stations in the East Operating Area (former PowerStream) so as to remove clutter, thus simplifying future work and freeing up space for future station upgrades.
150881	Base	Fleet_ Central North Vehicle Replacement DBL.Bucket 7808	0.6	749	General Plant	Fleet Renewal	Brampton	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150765	Base	Facilities_Reno_Vansickle - Service Centre Upgrades	0.1	746	General Plant	Facilities Management	Horizon	Repairs to building envelop/walls to prevent further damage to the build infrastructure and systems that are supporting critical operational systems such as control rooms, server rooms, customer services groups, etc.
101632	Base	Obsolete Revenue Metering Removal from TSs	0.1	740	System Service	Safety & Security	Powerstream	Evolution of the distribution system to permit more efficient integration of DERs to yield 18
150970	Base	Fleet East Vehicle replacement - Van pool vans	0.1	714	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151082	Base	SCADA Infrastructure	0.1	688	System Service	System Control, Comm'ns & Performance	Guelph	

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Project Number	Funding	Project Name	2023 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151058	Base	Distribution Transformer Replacements & Upgrades	0.4	683	System Renewal	Transformer Renewal	Guelph	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
150669	Base	Burden Allocation - System Access	0.7	670	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150894	Base	Fleet_ Central North Vehicle Replacement S/Bucket 3110	0.5	656	General Plant	Fleet Renewal	Brampton	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150792	Base	Fleet_Central South Vehicle Replacement- RBD 109-07	0.6	653	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
102166	Base	SQL Expansion - IT Infrastructure	0.1	636	General Plant	Information Technology	Multiple	Expand existing SQL infrastructure to meet project demands and natural growth of database. Add system capacity, improve performance, and reduce the risk of downtime due resource constraints.
150203	Base	Station Equipment Temperature Monitoring-NORTH & TS	0.1	614	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of Station Temperature Monitoring system in East and it enables controlled emergency loading beyond the nameplate rating.
150976	Base	Fleet East Unit # 365 digger truck	0.6	604	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150977	Base	Fleet East Unit # 366 digger truck	0.6	604	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150496	Base	iPass Project Management – Planned Capital - West	0.7	589	System Renewal	Underground Asset Renewal	Horizon	Help in optimizing DER performance and efficiency to improve addressing overall energy needs.
150967	M-Factor	Fleet East Unit # 125, 83' Double Bucket	0.7	580	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
102046	Base	Purchase of Major Tools - Muliti Year-North & TS	0.0	565	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
151128	M-Factor	MS Transformer & HV Switchgear Replacement - Western MS36 T1 & HV1	0.2	554	System Renewal	Substation Renewal	Enersource	Recent testing has indicated possible mechanical damage to the transformer windings and the HV switchgear has suffered damage due to a prior failure. The station is in a residential area and a transformer failure could result in a fire, posing a risk to the community and collateral damage to other assets in the station, as well as resulting in an extensive power interruption. Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted reactive capital expenditure.
150905	Base	Fleet East Multi Year Shop tools	0.0	544	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of tools and shop equipment required to repair and maintain vehicles to ensure vehicle availability to support capital systems projects.
101816	Base	Alectra East (South), Fault Indicator Installation and Replacement Multi-year initiative	0.3	542	System Service	System Control, Comm'ns & Performance	Powerstream	This project is installtion of fault indictor in East - North Region which will result improved outage response, operational efficiency, and reliability
150938	M-Factor	Fleet_ Central North Vehicle Replacement_Stake Trucks	0.3	539	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151085	M-Factor	Rear Lot Conversions	0.1	531	System Renewal	Rear Lot Conversion	Guelph	
101134	Base	Alectra East (North), Fault Indicator Installation and Replacement Multi-year initiative	0.3	527	System Service	System Control, Comm'ns & Performance	Powerstream	This project is installtion of fault indictor in East - South Region which will result improved outage response, operational efficiency, and reliability

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150437	Base	OT GIS & OMS Enhancements	0.3	520	General Plant	Information Technology	Multiple	Ongoing productivity enhancements to core GIS and OMS platforms to meet internal and customer demand for functionality.
150602	Base	Smart Meter Test Facility - PowerStream RZ	0.0	471	System Access	Metering	Powerstream	Multi-year project to expand the capability of the Meter Test Facility to test increasing types of meters and AMI systems before they are placed into production.
150810	M-Factor	Fleet_Central South Vehicle Replacement-Step Vans	0.2	462	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150798	M-Factor	Fleet_Central South Vehicle Replacement- Arrowboard	0.0	450	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150848	Base	Fleet_Central South Vehicle Replacement-Compressors	0.1	449	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
102027	Base	Purchase of Critical Spare Parts - Multiyear - East	0.1	428	System Renewal	Substation Renewal	Powerstream	This project involves procurement of critical spare parts for transformer and municipal stations in the East Operating Area (former PowerStream) so as to facilitate prompt repair of failed assets during emergency situations.
150494	Base	iPass Project Management – Planned Capital - Central-North	0.4	409	System Renewal	Overhead Asset Renewal	Brampton	Predicting the influence of weather conditions and DER contribution simultaneously on the power grid, for proactively mitigating local outages,
150495	Base	iPass Project Management – Planned Capital - Central-South	0.4	409	System Renewal	Overhead Asset Renewal	Enersource	Enable better visibility towards preventive equipment maintenance needs arising due to DER penetration which will further help mitigate outage risks,
101781	Base	iPass Project Management – Planned Capital - East	0.4	409	System Renewal	Overhead Asset Renewal	Powerstream	Estimating the effects of DER contribution at the feeder and region levels to further optimize the energy flows between the Utility and its consumers,
150607	M-Factor	Station LED Lighting Upgrades - Central	0.0	408	System Renewal	Substation Renewal	Enersource	Replacement of inefficient lighting fixtures and lamps at stations in the Central Operational Area will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
150606	M-Factor	Station LED Lighting Upgrades - EAST	0.0	408	System Renewal	Substation Renewal	Brampton	Replacement of inefficient lighting fixtures and lamps at stations in this Operational Area will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
151013	M-Factor	Fleet_West_Vehicle_Replacement_Bucket Truck_1-354	0.4	407	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
151132	M-Factor	MS Transformer & HV Switchgear Replacement - Munden MS35 T1 & HV1	0.2	406	System Renewal	Substation Renewal	Enersource	Recent testing has indicated that the transformer insulation has deteriorated and lacks a proper foundation and is beginning to lean. The station is in a residential area and a transformer failure could result in a fire, posing a risk to the community and collateral damage to other assets in the station, as well as resulting in an extensive power interruption. Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted reactive capital expenditure.
150399	M-Factor	Rear Lot Renewal Project - Richlieu Dr and Trelawne Dr, St.Catharines	1.3	393	System Renewal	Rear Lot Conversion	Horizon	This area has had an average of 40 outages lasting 1.5hrs per year based on 3 year average.
150138	M-Factor	Cable Replacement Project – (BA23-BA24) - Cook St and Steel St, Barrie	1.7	389	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 43 years old. Project is in 2023 so it will be over EUL by 6 years.

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Project Number	Funding	Project Name	2023 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150608	M-Factor	Station LED Lighting Upgrades - West	0.0	359	System Renewal	Substation Renewal	Horizon	Replacement of inefficient lighting fixtures and lamps at stations in the West Operational Area will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
102034	Base	Upgrade to Station Facilities (Building / Civil work) Multi-year - East	0.1	340	System Renewal	Substation Renewal	Powerstream	MULTI ANSWER
150531	Base	OT GIS Hardware Refresh	0.4	294	General Plant	Information Technology	Multiple	Hardware platform refresh to support GIS infrastructure.
150610	M-Factor	Driveway Paving - Various Stations - Multi-year initiative - Central	0.0	290	System Renewal	Substation Renewal	Enersource	Existing driveways at stations in the Central Operational Area that are covered in gravel and require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150609	M-Factor	Driveway Paving - Various Stations - Multi-year initiative - East	0.0	290	System Renewal	Substation Renewal	Brampton	Existing driveways in this Operational Area that are covered in gravel require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150612	M-Factor	Driveway Paving - Various Stations - Multi-year initiative - West	0.0	290	System Renewal	Substation Renewal	Horizon	Existing driveways in the West Operational Area that are covered in gravel require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150552	Base	ServiceNow Expansion - IT Infrastructure	0.1	258	General Plant	Information Technology	Multiple	Building and adding features within ServiceNow we will eliminate outdated processes by automating more tasks and decisions allowing us to be more efficient and productive. Enhancements include the automation of the flow of data between other systems and across programs used by various departments and ServiceNow. Servicebots will be used as ServiceNow learns from past patterns, in order to predict future outcomes, including determining risks, assigning owners, and categorizing work. Learned models set the category of the IT request and assign the task to the right team, as well as calculate associated risk of action or inaction. This capability will improve the speed and efficiency of IT service delivery.
151166	M-Factor	Fleet_ Central North Vehicle Replacement pick ups	0.1	245	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
102050	Base	Various Stations-Station Lighting Upgrade/Retrofit-Energy Efficiency Lighting-initiative Multi-year - East	0.1	240	System Renewal	Substation Renewal	Powerstream	Replacement of inefficient indoor and outdoor lighting fixtures and lamps at stations in the East Operating Area (former PowerStream) will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.

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Project Number	Funding	Project Name	2023 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150391	Base	Wireless LAN Upgrade	0.1	235	General Plant	Information Technology	Multiple	Corporate Wireless LAN upgrade to replace end of life wireless infrastructure in corporate and operation center locations.
150843	M-Factor	Fleet_Central South Vehicle Replacement-Bocat	0.0	223	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
100319	M-Factor	Radial Supply Remediation/Conversion - 13.8 kV to 27.6 kV on Miller Ave	1.5	208	System Renewal	Overhead Asset Renewal	Powerstream	From 2015-2017 customers in this area experienced 15 outages and had 45,942 minutes of interruption. Customers in this area ona radial supply with no backup, this is atypical of Alectra Utilities customers and needs to be rectified to ensure customers here are receiving service similar to other Alectra Utiliites customers.
150936	Base	Fleet_ Central North Vehicle Replacement Tower Lights	0.0	192	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150802	Base	Fleet_Central South Vehicle Replacement- Scissor lift	0.0	185	General Plant	Fleet Renewal	Enersource	Asset replacement due to poor conditions and age and lack of parts replacement. Equipment not as available to support capital system renewal projects and respond to emergencies with material handling. .
150944	M-Factor	Fleet_ Central North Vehicle Replacement_Trailer	0.1	182	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150825	Base	Line & Transformer Protection Migration to DNP - Jim Yarrow TS	0.1	164	System Renewal	Substation Renewal	Brampton	This is part of a multi-phase project to upgrade aging and failure-prone protection systems at Jim Yarrow TS to the current protection standards. Proper protection to transmission lines will provide protection to the assets in the case of faults.
103030	Base	Technology Upgrades Improving the System Control Room Environment	0.1	148	General Plant	Information Technology	Multiple	This project will continue to build on the original capital project whose scope was focused on the replacement of computers used as Operator WorkStations. The scope of this program has been expanded to account for all technology purchases required for the Control Room theater.
151108	Base	Office Equipment	0.1	144	General Plant	Facilities Management	Guelph	Replace aging equipment within the Guelph operational centre to ensure optimal performance in managing the distribution assets
151245	M-Factor	Capacitor Bank Installations	0.0	135	System Service	System Control, Comm'ns & Performance	Guelph	This project consists of capacitor bank installation to increase power factor, capacity and reduce losses.
102931	Base	Paving of 3 MS & TS Station Driveways per year - Annual Multi-year initiative - East	0.0	125	System Renewal	Substation Renewal	Powerstream	Existing driveways at stations in the East Operating Area (former PowerStream) are covered in gravel and require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150597	Base	Lock Box Installs - East	0.0	116	System Access	Metering	Powerstream	Multi-year project to install lock boxes at ICI properties with restricted access to eliminate need for a customer appointment for access.
101487	M-Factor	Add one Additional 27.6 kV Cct on Major Mack Dr and 9th Line	1.3	108	System Service	Capacity (Lines)	Powerstream	There are two ccts 12M1/12M3 on Major Mack Dr east of Hwy 48, but only one cct 12M3 goes all the way to 9th Line. The second cct stops half way and is a radial supply. This project is to establish another tie between two ccts on Major Mack and 9th Line. The purpose is to form a supply loop and a new tie between Buttonville TS and MTS2.
150255	M-Factor	Cable Replacement Project - (B23) - Cundles Rd and Janine St, Barrie	1.1	99	System Renewal	Underground Asset Renewal	Powerstream	
151383	Base	2023 GUELPH - Fleet	0.6	98	General Plant	Fleet Renewal	Guelph	Replacement of end of life asset due to poor conditions, high mileage and engine hours and age. Vehicle experiencing more down time at the shop for repairs and maintenance impacting vehicle availability.

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Project Number	Funding	Project Name	2023 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150569	Base	Server OS Upgrades - IT Infrastructure	0.2	95	General Plant	Information Technology	Multiple	Operating system upgrades to support IT infrastructure.
150737	Base	Facilities_East Region_Reactive Capital	0.3	92	General Plant	Facilities Management	Powerstream	Approved capital funds available to address any unforeseen and unbudgeted asset replacements/demands. Having these funds available for immediate use is critical for Facilities building operations to restore equipment/assets back to normal operations a.s.a.p.
150736	Base	Facilities_West Region_Reactive Capital	0.3	92	General Plant	Facilities Management	Horizon	Approved capital funds available to address any unforeseen and unbudgeted asset replacements/demands. Having these funds available for immediate use is critical for Facilities building operations to restore equipment/assets back to normal operations a.s.a.p.
150734	Base	Facilities_Central Region_Reactive Capital	0.3	92	General Plant	Facilities Management	Multiple	Approved capital funds available to address any unforeseen and unbudgeted asset replacements/demands. Having these funds available for immediate use is critical for Facilities building operations to restore equipment/assets back to normal operations a.s.a.p.
101393	M-Factor	Redundant Fibre Path to Aurora MS#4 Sub-Station	0.5	90	System Service	System Control, Comm'ns & Performance	Powerstream	AMS4 is a major node on the Operations Network, but the fiber optic routes into the AMS4 are not diverse. This major hub is therefore exposed to a single point of failure, and loss of communications to this hub would be very impact. This project is to provide redundant fibre path to Aurora MS to offer increased security and reliability.
150676	Base	Mobile Devices - IT Infrastructure	0.0	88	General Plant	Information Technology	Multiple	
103171	Base	Implementation of a new Alectra Network Operations Voice Radio System	0.0	79	General Plant	Information Technology	Multiple	
151018	M-Factor	Fleet_West_Vehicle_Replacement_Trailer	0.1	50	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150747	M-Factor	Net Zero Energy Emissions	0.3	35	System Service	Distributed Energy Resources (DER)	Powerstream	The project will help Alectra Utilities to ensure that growing DER challenges are met through building expertise and capability in real time monitoring, integrating and optimizing of DERs in line with customer preferences. This will lead to a system that can safely integrate and optimize value from DERs for the benefit of customers.
151053	Base	Building Sustainment	0.2	32	General Plant	Facilities Management	Guelph	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
103065	Base	Upgrade Advanced Distribution Management System (ADMS) to latest version release.	0.1	25	General Plant	Information Technology	Powerstream	
151160	M-Factor	Fleet_West_Vehicle Replacement_ Pole Trailer_1-405	0.1	15	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150581	Base	Analytics\Monitoring Tool IT infrastrucutre rescources	0.3	14	General Plant	Information Technology	Multiple	Gather requirements, determine available products that meet those requirements and RFP. SOW will include POC of chosen products as well as Professional Services to assist with design, build and implementation.
150583	Base	OT Server Hardware upgrade OMS/SCADA	0.3	13	General Plant	Information Technology	Multiple	Hardware refresh for customer facing OMS platform and SCADA architecture .
151031	Base	Fleet Shop equipment refurbishment and replacement	0.1	13	General Plant	Fleet Renewal	Enersource	For the refurbishment of trailers, shop compressors and hoists to extend the life of the assets instead of replacement to reduce the need fro capital expenditures.
150678	Base	P&C Specific Tools & Testing Equipment - West	0.0	12	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
102999	Base	P&C Specific Tools and Testing Equipment	0.0	12	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
102157	Base	Server Refresh - IT Infrastructure	0.4	10	General Plant	Information Technology	Multiple	Ongoing server refresh to support applications.

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150725	Base	Lines Central-North - Reactive Renewal	1.3	181,454	System Renewal	Reactive Capital	Brampton	Replacement of assets which have failured and requires replacement in order to restore power to customers
150690	Base	Lines Central-South - Reactive Renewal	3.3	171,818	System Renewal	Reactive Capital	Enersource	Replacement of assets which have failured and requires replacement in order to restore power to customers
150682	Base	Remote Fault Indicator Deployment	0.1	164,221	System Service	System Control, Comm'ns & Performance	Multiple	This project consists of remote fault indictor deployment which will result improved outage response, operational efficiency, and reliability
102247	Base	Interest Capitalization	1.3	104,304	General Plant	Other General Plant	Powerstream	
150596	Base	Meter Renewal - all types but Suite - PowerStream RZ	0.1	94,470	System Access	Metering	Powerstream	Multi-year project to renew existing residential (except suite) metering equipment.
101871	Base	Services (New and Upgrades) - Layouts – East North - Commercial Services	0.0	94,398	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
151180	Base	Central-North - Capitalization of Locates	0.0	94,387	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
150600	Base	Firmware Upgrades for Smart Meters - East	0.0	94,363	System Access	Metering	Powerstream	Multi-year project to renew residential Smart meter firmware to improve communication performance.
151169	Base	Central-South - Capitalization of Locates	0.0	94,345	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
151174	Base	West Lines - Capitalization locates	0.0	94,319	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150631	Base	Transformer Station Metering - Central North	0.1	94,246	System Access	Metering	Brampton	Multi-year project to purchase, install and renew wholesale metering equipment.
101696	Base	Subdivision - North Underground Residential Distribution System Final Close out and Inspection.	0.1	94,197	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
103381	Base	East Lines - Capitalization locates	0.1	94,145	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101870	Base	Services (New and Upgrades) - Layouts – East South - Commercial Services	0.1	94,022	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101869	Base	Services (New and Upgrades) - Layouts – East North - New Residential	0.1	93,989	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150650	Base	Replace PCB Risk PT's - Enersource RZ	0.1	93,977	System Access	Metering	Enersource	Multi-year project to replace metering transformers identified with unacceptable levels of PCB's, to prevent hazardous spills.
101919	Base	New Services (new and upgrades) - Commercial, Industrial and Institutional (ICI) Projects - NORTH	0.1	93,955	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150647	Base	Transformer Station Metering - Enersource RZ	0.1	93,884	System Access	Metering	Enersource	Multi-year project to purchase, install and renew wholesale metering equipment.
151049	Base	Commercial, Industrial, Institutional, Apartment Connections	0.1	93,830	System Access	Customer Connections	Guelph	Mandatory - System Access Related Project
101685	Base	Subdivision - South Underground Residential Distribution System Final Close out and Inspection.	0.1	93,778	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150457	Base	Services (New and Upgrades) - Layouts – St Catharines	0.2	93,519	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
151162	Base	Non Recoverable replacement of Distribution Equipment due to accident/vandalism	0.3	93,457	System Renewal	Reactive Capital	Horizon	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
101924	Base	Mulit Unit Metering for New Buildings NORTH - PowerStream RZ	0.2	93,421	System Access	Metering	Powerstream	Multi-year project to purchase and install suite metering in new buildings in northern area of territory.
150588	Base	New Residential Subdivision Development - Alectra West	0.2	93,266	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
101791	Base	New Services - new and upgrades - COMMERCIAL, INDUSTRIAL, INSTITUTIONAL (ICI) SERVICES - SOUTH	0.3	92,878	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101812	Base	Reactive Capital, Alectra East - LIS	0.3	92,710	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
150754	Base	Lines Central-North - Non-Recoverable Replacements	0.4	92,705	System Renewal	Reactive Capital	Brampton	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
150726	Base	Lines Central-South - Non-Recoverable Replacements	0.4	92,705	System Renewal	Reactive Capital	Enersource	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
101820	Base	Reactive Capital, Alectra East - Non-Recoverable Replacement	0.3	92,583	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover costs for (i.e. pole hit no vehicle at scene of accicent)
150389	Base	Services (New and Upgrades) - Layouts – Central North	0.4	92,563	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
150651	Base	C & I Metering - Renewal- Brampton RZ	0.8	92,561	System Access	Metering	Brampton	Multi-year project to renew existing ICI metering equipment.

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150386	Base	New Service (new and upgrades) - Commercial and Institutional (ICI) Projects - Central North	0.5	92,424	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
150453	Base	CIS CC&B Modifications(Regulatory Enhancements)	1.8	92,261	General Plant	Information Technology	Multiple	Enhancements to the CIS (CC&B) application needed to meet any regulatory requirements Such requirements in the past have been Ontario Energy Savings Program (OESP) as well as the Monthly Billing projects.
150649	Base	Suite Metering - Enersource RZ	0.6	91,838	System Access	Metering	Enersource	Multi-year project to purchase, install and renew suite metering equipment.
150654	Base	C & I Metering - New Services - Brampton RZ	0.6	91,553	System Access	Metering	Brampton	Multi-year project to purchase and install ICI metering equipment on new services.
150595	Base	C & I and Wholesale Metering - PowerStream RZ	0.6	91,530	System Access	Metering	Powerstream	Multi-year project to purchase, install, and renew ICI and wholesale metering equipment.
101868	Base	Services (New and Upgrades) - Layouts – East South - New Residential	0.5	91,488	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101795	Base	Multi Unit Metering for New Buildings SOUTH - PowerStream RZ	0.6	91,273	System Access	Metering	Powerstream	Multi-year project to purchase and install suite metering in new buildings in southern area of territory.
101873	Base	Services (New and Upgrades) - Layouts – East North - Residential Upgrades	0.6	91,023	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
151051	Base	System Relocations Road Authorities	0.7	91,002	System Access	Road Authority	Guelph	Mandatory - System Access Related Project
150652	Base	New Residential Subdivision Development - Alectra Central South	0.5	90,948	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
150388	Base	Services (New and Upgrades) - Layouts – Central South	0.9	90,774	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
150692	Base	New Feeder in Residential Subdivision Development - Alectra Central North	0.8	90,609	System Service	Capacity (Lines)	Brampton	This expenditure is required to meet the needs of the development community that construct municipal approved residential subdivisions in Alectra Utilities' Central North service territory
150599	Base	Suite Meter - Reverification - PowerStream RZ	0.5	90,368	System Access	Metering	Powerstream	Multi-year project to renew Measurement Canada seal dates on existing suite metering equipment.
150455	Base	Services (New and Upgrades) - Commercial, Industrial and Institutional (ICI) Projects - St Catharines	0.9	90,201	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150659	Base	Residential Meters - by Metering - Brampton RZ	0.9	90,096	System Access	Metering	Brampton	Multi-year project to purchase, install and renew residential metering equipment. Work carried out by Metering.
150456	Base	Services (New and Upgrades) - Layouts – Hamilton	0.9	89,962	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150630	Base	New Residential Subdivision Development - Alectra Central North	1.2	89,952	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
101828	Base	Reactive Capital, Alectra East - Recoverable Replacement	0.8	89,766	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have been damaged causing catastrophic failure by third parties which Alectra Utilities is not able to recover some costs for (i.e. pole hit, vehicle at scene of accicent, Alectra Utilities obtains most of costs (near $0 impact too budget))
101896	Base	New Institutional/Commercial/Industrial Subdivision Development - Alectra East	1.0	89,347	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101872	Base	Services (New and Upgrades) - Layouts – East South - Residential Upgrades	0.9	89,345	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101800	Base	Reactive Capital, Alectra East - Storm Damage	1.3	86,549	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
151047	Base	Subdivisions	0.5	85,393	System Access	Customer Connections	Guelph	Mandatory - System Access Related Project
150620	Base	Metering Renewal - all types - Horizon RZ	2.2	84,064	System Access	Metering	Horizon	Multi-year project to purchase, install, and renew residential, ICI and wholesale metering equipment.
101808	Base	Reactive Capital, Alectra East - Switchgears	1.7	83,304	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
150648	Base	Metering Renewal - all types but Suite - Enersource RZ	2.4	82,569	System Access	Metering	Enersource	Multi-year project to purchase, install and renew residential (except suite) and ICI metering equipment.
101892	Base	New Subdivision Development - Secondary Service Lateral - Alectra East	3.1	80,776	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150384	Base	New Service (new and upgrades) - Commercial and Institutional (ICI) Projects - Central South	3.8	77,904	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
150449	Base	Services (New and Upgrades) - Commercial, Industrial and Institutional (ICI) Projects - Hamilton	5.5	69,328	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
151095	Base	Reactive Restoration	1.1	63,547	System Renewal	Reactive Capital	Guelph	Replacement of assets which have failured and requires replacement in order to restore power to customers

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151301	Base	Cable Replacement Project - (HAM) - Rymal - Mud - Upper Centennial - Upper Red Hill Valley	3.3	61,747	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 8 failures, or 14 failures per 100km. This area includes the 331X & 341X feeders which were identified as a Worst Performing Feeder in 2018. The average cable installation year is 1968 in this project scope.
101824	Base	Reactive Capital, Alectra East - Distribution Equipment	5.7	58,190	System Renewal	Reactive Capital	Powerstream	Replacement of assets which have failured and requires replacement in order to restore power to customers
151161	Base	Joint Use Pole Removal	0.1	57,200	System Renewal	Overhead Asset Renewal	Horizon	This project is for the removal of poles in the field after third party (joint use) attachements have been removed or transferred for projects already closed by Alectra Utilities.
151050	Base	Metering - all types - Guelph RZ	0.4	55,986	System Access	Metering	Guelph	Multi-year project to purchase, install, and renew residential, ICI and wholesale metering equipment in Guelph RZ.
150469	Base	ERP JD Edwards Enhancements	1.4	55,715	General Plant	Information Technology	Multiple	Allocation of capital funds to provide 3rd party assistance on capital work, along with creating system enhancements to the JD Edwards ERP and supporting Systems.
150325	Base	CIS CC&B Enhancements	1.6	55,520	General Plant	Information Technology	Multiple	Enhancement to CIS (CC&B) application to support process improvement requirements.As the CIS (CC&B) system is one of the core applications of the organization, operational enhancements come in from a number of venues and thereby feedback into the other downstream systems. These enhancements are considered for the overall customer and organizational benefits.
101832	Base	Joint Use Pole Removal	0.6	54,024	System Renewal	Overhead Asset Renewal	Powerstream	This project is for the removal of poles in the field after third party (joint use) attachements have been removed or transferred for projects already closed by Alectra Utilities.
101570	Base	New Alliston 10MVA Substation - 44 kV Supply	0.3	50,413	System Service	Capacity (Stations)	Powerstream	This project is the 44KV feeder extension to supply Alliston MS (101569)
101571	Base	New Alliston 10MVA Substation - 13.8 kV Feeder Integration	0.6	50,184	System Service	Capacity (Stations)	Powerstream	This project is the 13.8KV feeder integration for Alliston MS (101569)
101887	Base	New Residential Subdivision Development - Alectra East	11.4	44,864	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
101569	M-Factor	New Alliston 10MVA Substation - Industrial Parkway	1.1	44,830	System Service	Capacity (Stations)	Powerstream	The project entails the purchase of a station site in the vicinity of Dufferin St and Industrial Pkwy in Alliston, and constructing a new 10MVA, 44/13.8 kV, dual-stage fan, 4-feeder municipal substation
100859	Base	Switchgear Renewal - East	3.1	43,705	System Renewal	Underground Asset Renewal	Powerstream	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
151089	Base	Overhead Rebuilds	1.3	39,246	System Renewal	Overhead Asset Renewal	Guelph	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
101508	Base	Transformer Renewal - East	3.2	37,474	System Renewal	Transformer Renewal	Powerstream	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
150673	Base	Road Authority Central (Mississauga)	4.7	35,001	System Access	Road Authority	Enersource	Mandatory - System Access Related Project
151240	M-Factor	Southgate Dr to Maltby Rd O/H Extension	0.6	34,668	System Service	Capacity (Lines)	Guelph	The road extension from COG and potential developments on Southgate requires two 13.8kV circuit expanded in order to provide capacity and contingency supply.
151238	Base	New Feeder Maltby Rd W (Crawley to Gordon)	0.9	34,423	System Service	Capacity (Lines)	Guelph	Build new pole line on Maltby Rd between Crawley Rd and Gordon St to back-up radially fed loads on Gordon St south of Clair Rd/Gordon St intersection with 556ASC OH Conductor to replace 3/0ACSR to act a feeder inter-tie.
150645	Base	Road Authority Central (Brampton)	5.6	31,814	System Access	Road Authority	Brampton	Mandatory - System Access Related Project
150828	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-West	1.0	31,592	System Renewal	Overhead Asset Renewal	Horizon	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151452	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-West	1.0	31,590	System Renewal	Underground Asset Renewal	Horizon	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
101762	Base	Road Authority Expenditure PS South	4.3	31,544	System Access	Road Authority	Powerstream	Mandatory - System Access Related Project
101355	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-East	1.0	31,425	System Renewal	Overhead Asset Renewal	Powerstream	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151450	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-East	1.0	31,425	System Renewal	Underground Asset Renewal	Powerstream	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
150074	M-Factor	Vaughan TS#2 Bus Differential and Overcurrent Protections Upgrade	0.3	28,628	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the Vaughan TS#2 Bus Differential & Overcurrent Protections Upgrades with new relays having fault recording capabilities.
100340	M-Factor	Vaughan TS#4 Feeder Integration - Part 3	3.6	28,489	System Service	Capacity (Lines)	Powerstream	This project is the third part of a multi-part project to construct and integrate new feeders from VTS#4. This project is to integrate four 27.6kV feeders (25M5/25M6/25M7/25M8) from VTS4 to the distribution system.
151363	Base	Cable Injection Project - (M25) - 14th - McCowan - Steeles - Old Kennedy, Markham	1.6	27,519	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 14 failures.
100867	Base	Pole Renewal - East	5.8	25,595	System Renewal	Overhead Asset Renewal	Powerstream	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
151074	Base	Reactive renewal	3.5	25,136	System Renewal	Reactive Capital	Horizon	Replacement of assets which have failured and requires replacement in order to restore power to customers
151362	Base	Cable Injection Project - (M39) - 16th - Warden - Hwy 7 - Woodbine, Markham	0.9	23,714	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 8 failures.
151360	Base	Cable Injection Project - (M31) - 14th - Old Kennedy - Steeles - Warden, Markham	0.8	23,641	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 38 failures.
151043	Base	Transformer Renewal - Central South	2.0	21,870	System Renewal	Transformer Renewal	Enersource	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
150071	M-Factor	Markham TS#2 Bus Differential & Overcurrent Protections Upgrades	0.1	21,087	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the Markham TS#2 Bus Differential & Overcurrent Protections Upgrades with new relays having fault recording capabilities.
151303	Base	Cable Replacement Project - (HAM) - Stone Church - Garth - Lincoln M. Alexander	0.9	19,665	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 5 failures, or 18 failures per 100km. The average cable installation year is 1976 in this project scope.
150664	Base	Residential Meters - by Lines - Brampton RZ	1.4	18,167	System Access	Metering	Brampton	Multi-year project to purchase, install and renew residential metering equipment. Work carried out by Lines.
151109	Base	Switch Replacement	0.2	18,145	System Renewal	Overhead Asset Renewal	Guelph	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacment units
102455	Base	Melbourne MS322 Land Purchase & TX Upgrade - Bradford	0.9	17,824	System Service	Capacity (Stations)	Powerstream	This project consists of transformer upgrade to increase the capacity at Melbourne MS to meet the load growth the contingency condition for Bradford area.
151367	Base	Cable Injection Project - (M21) - Hwy 7 - Markham - 16th - McCowan, Markham	1.8	17,675	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 6 failures.
150319	M-Factor	New MS - Duke MS 20 MVA Substation, Mississauga	4.2	17,541	System Service	Capacity (Stations)	Enersource	The Downtown21 plan forecasts a total population of 56,565 residents and 34,247 jobs in the Mississauga downtown core. The current capacity available for the downtown core is approximately 140 MVA ONAN rating. Based on growth projected and the land parcels available, Alectra Utilities estimates that, upon completion of Downtown21 the combined transformation load requirement will increase approximately by 300 MVA. This station will provide 20MVA ONAN capacity.

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151104	Base	Distribution Automation - Central North	0.5	17,389	System Service	SCADA and Automation	Brampton	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151366	Base	Cable Injection Project - (M19) - Markham - Steeles - McCowan - 14th, Markham	1.4	17,259	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 7 failures.
151318	Base	Cable Injection Project - (I3) -Bovaird - Dixie - Queen - Hwy 410, Brampton	0.5	16,119	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 6 outages due to cable failures from 2014 to 2015 with average duration of 71 minutes.
150639	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-CENTRAL	0.0	15,736	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of DC charging system for Central South Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
150638	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-East	0.0	15,736	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of DC charging system for Central North Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
150636	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-North & TS	0.0	15,736	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of installation of DC charging system for East Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
150640	Base	Purchase and Installation of 4 Station DC System Monitoring-Multi-year initiative-WEST	0.0	15,736	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of installation of DC charging system for West Sations. A better real-time assessment of Station batteries will lower the risk of battery failure/fire/explosion
151460	M-Factor	Cable Injection Project - (V17) - Langstaff - Keele - Rutherford - Dufferin, Vaughan	1.7	15,317	System Renewal	Underground Asset Renewal	Powerstream	From 2017-2019 YTD customers in this area experienced 3 failures. From 2015-2019 YTD customers in this area experienced 4 failures.
150285	Base	Transformer Renewal - Central North	1.5	14,492	System Renewal	Transformer Renewal	Brampton	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
101027	Base	Switch Renewal - East	0.7	14,309	System Renewal	Overhead Asset Renewal	Powerstream	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacment units
100913	M-Factor	Pole Line Installation Double Cct on Major Mack - Huntington Rd to Hwy 50	1.4	14,223	System Service	Capacity (Lines)	Powerstream	This project is to build two ccts on Major Mack Dr between Huntington Rd and Hwy 50 in conjunction with the road widening project to supply new customers on both side of Major Mack, as well as customers along Hwy 50.
102098	Base	Client - IT Infrastructure	0.6	13,761	General Plant	Information Technology	Multiple	To upgrade desktop/laptop/mobile devices that are 5 years or older (Approximately 20% of our equipment). Net new equipment for mobile computing as well as upgrades and replacements for damaged devices. Request made by various business units. This budget also includes RSA tokens\Licenses, monitors, mice, keyboards, docking stations, tablets and small non-MFP printers. Out of Scope: Large MFP Printers
151247	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-Guelph	0.7	13,414	System Renewal	Overhead Asset Renewal	Guelph	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
102232	Base	Capital Funds for Emergency P&C Purchases - East	0.0	13,271	System Renewal	Substation Renewal	Powerstream	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the East Operating Area (former PowerStream). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150683	Base	Capital Funds for Emergency P&C Purchases - Central North	0.0	13,185	System Renewal	Substation Renewal	Brampton	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the Central North Operating Area (Brampton). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.
150685	Base	Capital Funds for Emergency P&C Purchases - West	0.0	13,185	System Renewal	Substation Renewal	Horizon	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the West Operating Area (former Horizon). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.
150684	Base	Capital Funds for Emergency P&C Purchases - Central South	0.0	13,185	System Renewal	Substation Renewal	Enersource	This project provides funds for the emergency procurement of Intelligent Electronic Devices (IED), communications equipment, protective relays, and other critical spare parts for the municipal/transformer substations in the Central South Operating Area (former Mississauga). These parts are critical to maintaining the viability of key operations' systems and the conformance to the ESA Regulation 22/04. Failure or underperformance of this equipment could cause a catastrophic failure of a key component of the distribution grid.
150360	M-Factor	New build - Extend 44kV feeder Centre View Dr, Mississauga	5.6	13,005	System Service	Capacity (Lines)	Enersource	A new 44 kV overhead/underground feeder extension is needed to provide supply to downtown Mississauga area on Centre View Drive as well as provide primary supply for Duke Municipal Station (MS).
150784	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-Central North	0.8	12,968	System Renewal	Overhead Asset Renewal	Brampton	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
151453	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-Guelph	0.8	12,922	System Renewal	Underground Asset Renewal	Guelph	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
150823	Base	Overhead Asset Renewal-Alectra Field Distribution System Projects-Central South	0.8	12,655	System Renewal	Overhead Asset Renewal	Enersource	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
102099	Base	Printer & Copier Fleet Replacement	0.0	12,636	General Plant	Information Technology	Multiple	Replacement of existing fleet of printers/copiers that are 5 or more years old. This will include non-MFP printers. Replacement to be determined by an evaluation of evolving needs and corporate requirements as well as age of equipment.
151449	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-Central North	0.9	12,176	System Renewal	Underground Asset Renewal	Brampton	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
103211	Base	Misc Software Upgrades (FormScape, AutoCAD, etc.) - IT/OT Infrastructure	0.0	12,021	General Plant	Information Technology	Multiple	Upgrade/ acquire software as required / requested by business.
151451	Base	Underground Asset Renewal-Alectra Field Distribution System Projects-Central South	1.0	11,936	System Renewal	Underground Asset Renewal	Enersource	These are projects which during the course of the year evolve due to customer issues around reliability which cannot wait for execution in the following year due to the impact on customers in terms of either frequency or outages, duration or both.
103180	Base	Citrix Xen Virtualization Expansion - IT Infrastructure	0.2	11,299	General Plant	Information Technology	Multiple	Client computing virtualization (Citrix) is currently the standard delivery method for applications and desktops at Alectra. This system has had a tremendous uptake in the organization and requires an upgrade in back-end infrastructure to support the additional demand from the business.

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150693	M-Factor	Blockchain	0.6	11,192	System Service	Distributed Energy Resources (DER)	Multiple	The project will prepare Alectra Utilities to engage with customers in a real-time and transparent process to record the flow of electricity to and from DERs, enabling the efficient procurement of distribution benefits, such as demand response and frequency regulation. The project will provide a robust settlement mechanism between Alectra and customers, backed by timely and efficient financial transactions, to enable overall trust and customer value delivery and leading to increased customer satisfaction.
151314	Base	Cable Injection Project - (G2) -Wanless - Kennedy - Bovaird - Main, Brampton	0.7	11,046	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 4 outages due to cable failures from 2013 to 2017 with average duration of 125 minutes.
150665	Base	Emerging Customer Initiated Work (West)	1.8	10,905	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
151465	M-Factor	Cable Replacement - Mississauga Left Behind Cable	1.8	10,857	System Renewal	Underground Asset Renewal	Enersource	This project is to address cables which were part of a cable injection project but were ultimately not injectable at the time of project execution. These 'left behind' segments must be addressed, if they are left in the system they could cause a failure. Customers would not only experience an outage, but question the utilities work practices as we would have addressed only a portion of the cables instead of all the cables which could cause an outage.
101562	Base	Arc Flash Mitigation Projects	0.0	10,619	System Service	Safety & Security	Powerstream	This project is to mitigate arc flash risk at East stations.
151307	Base	Cable Injection Project - (HAM) - Upper Sherman - Stone Church - Nebo - Rymal	0.7	10,595	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 2 failures, or 5 failures per 100km. The average cable installation year is 1989 in this project scope.
151429	Base	Cable Injection- 003- AREA36 -Matheson & Kennedy, Mississauga	1.3	10,395	System Renewal	Underground Asset Renewal	Enersource	There are 2 outages, we are injecting a total of 14,907 m of cable for this project, and the average age of the cable is 31 years.
150653	Base	Road Authority West (St. Catharines)	1.2	10,217	System Access	Road Authority	Horizon	Mandatory - System Access Related Project
150615	Base	Metering Tools & Equipment - Central North	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Brampton	Replacement of Capital tools required to perform work
150616	Base	Metering Tools & Equipment - Central South	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
150613	Base	Metering Tools & Equipment - East	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
150614	Base	Metering Tools & Equipment - West	0.0	9,947	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of Capital tools required to perform work
151315	Base	Cable Injection Project - (G5) - Steeles - Kennedy - Hwy 407 - Main, Brampton	1.6	9,695	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 7 outages due to cable failures from 2010 to 2019 with average duration of 109 minutes.
151063	Base	Pole Renewal - Central South	2.7	9,065	System Renewal	Overhead Asset Renewal	Enersource	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
100886	Base	Distribution Automation - East	2.0	9,041	System Service	SCADA and Automation	Powerstream	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151298	Base	Cable Injection Project - (HAM) - Govenors - Old Ancaster	0.6	8,842	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 3 failures, or 10 failures per 100km. The average cable installation year is 1989 in this project scope.
101804	Base	Purchase of Major Tools	0.4	8,158	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
151424	Base	Cable Replacement Project-Miss. Valley & Bloor (15) Mississauga	9.9	8,141	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 6 outages, the length is 10,780 m, and the average cable age is 34 years old. There are 32 backlot transformers that we are also replacing.
101488	Base	Markham TS #5	0.4	8,117	System Service	Capacity (Stations)	Powerstream	This project is to perform Class EA and purchase land for Markham TS#5 which has been recommended as per the York Region IRRP

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151313	Base	Cable Injection Project - (F5) - Steeles - Main - Hwy 407 - McLaughlin, Brampton	0.1	7,751	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 5 outages due to cable failures from 2007 to 2016 with average duration of 80 minutes.
150282	Base	Switchgear Renewal - Central North	0.5	7,521	System Renewal	Underground Asset Renewal	Brampton	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
151361	Base	Cable Injection Project - (V26) - Teston - Keele - Major Mackenzie - Jane, Vaughan	1.2	7,473	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 8 failures.
151325	Base	Cable Replacement Project - (M31) - 14th - Old Kennedy - Steeles - Warden, Markham	1.2	7,412	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 38 failures.
150284	Base	Pole Renewal - Central North	3.0	7,305	System Renewal	Overhead Asset Renewal	Brampton	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
102017	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear initiative-North & TS	0.3	7,275	System Service	Safety & Security	Powerstream	This project consists of Sorbweb Oil containment system in East. Protects the environment in the event of a transformer tank rupture
151392	Base	2024 GUELPH - Remotely Controlled Switches	0.4	6,957	System Service	SCADA and Automation	Guelph	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
150714	Base	MS Transformer Tank and Radiator Reconditioning- Multi-year initiative - Central	0.1	6,819	System Renewal	Substation Renewal	Enersource	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the Central South Operating Area (former Enersource). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150713	Base	MS Transformer Tank and Radiator Reconditioning- Multi-year initiative - East	0.1	6,819	System Renewal	Substation Renewal	Brampton	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the Central North Operating Area (Brampton). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150715	Base	MS Transformer Tank and Radiator Reconditioning- Multi-year initiative - West	0.1	6,819	System Renewal	Substation Renewal	Horizon	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the West Operating Area (former Horizon). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150644	Base	Road Authority West (Hamilton)	2.1	6,689	System Access	Road Authority	Horizon	Mandatory - System Access Related Project
151459	M-Factor	Cable Injection Project - (V24) - Langstaff - Jane - Rutherford - Keele, Vaughan	0.7	6,509	System Renewal	Underground Asset Renewal	Powerstream	From 2015-2019 YTD customers in this area experienced 0 failures. From 2013-2019 YTD customers in this area experienced 2 failures.
150468	Base	Meter to Cash auxiliary systems ongoing upgrades - IT/OT Infrastructure	0.2	6,495	General Plant	Information Technology	Multiple	Enhancement to CIS (CC&B) Meter to Cash ancillary systems to support process improvement requirements. Ancillary systems but not limited to upgrading FW, MV90, LPSS. These enhancements are considered for the overall customer and organizational benefits.
151044	Base	Switch Renewal - Central South	0.3	6,319	System Renewal	Overhead Asset Renewal	Enersource	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacement units
103659	Base	Storm Hardening - Four-Circuit Poles	2.2	6,255	System Renewal	Overhead Asset Renewal	Powerstream	
100459	Base	New Barrie 20MVA Substation - Harvie - 44 kV Supply	0.0	6,215	System Service	Capacity (Stations)	Powerstream	This project consists of 44KV feeder extension to supply for Harvie MS project (101452)
150514	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear Initiative-WEST	0.4	6,213	System Service	Safety & Security	Horizon	This project consists of Sorbweb Oil containment system in West. Protects the environment in the event of a transformer tank rupture
151336	Base	Cable Replacement Project - (BA22) - Sunnidale and Anne, Barrie	3.9	6,208	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 2 failures in 2019.
151305	Base	Cable Injection Project - (HAM) - Stone Church - Upper Sherman - Rymal - Upper Wellington	0.7	6,019	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 1 failure, or 3 failures per 100km. The average cable installation year is 1989 in this project scope.

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151086	Base	Insulator Replacements	0.1	5,949	System Renewal	Overhead Asset Renewal	Guelph	Replacement of non-polymer insulators (Areas are prioritized by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.
100461	Base	New Barrie 20MVA Substation - Harvie - 13.8kV Feeder Integration	0.0	5,856	System Service	Capacity (Stations)	Powerstream	This project consist of 13.8KV feeder integration for Harvie MS project (101542)
151463	M-Factor	Cable Injection Project - (F4-G4) - Main - Steeles - Chinguacousy - Queen, Brampton	0.7	5,560	System Renewal	Underground Asset Renewal	Brampton	From 2000-2018 customers in this area experienced 86 failures. Exact number of failures in recent years is unknown at this moment.
150337	Base	Switch Renewal - West	0.5	5,476	System Renewal	Overhead Asset Renewal	Horizon	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacement units
151055	Base	Major Tools	0.1	5,432	General Plant	Tools, Shop and Garage Equipment	Guelph	Replacement of Capital tools required to perform work
150598	Base	Suite Metering - Renewals & Retrofits - PowerStream RZ	0.4	5,394	System Access	Metering	Powerstream	Multi-year project to purchase and install suite metering equipment in existing buildings upgraded from bulk metering.
150515	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear initiative-CENTRAL	0.4	5,352	System Service	Safety & Security	Enersource	This project consists of Sorbweb Oil containment system in Central South. Protects the environment in the event of a transformer tank rupture
150516	Base	Sorbweb Oil Containment Systems - 4 Transformers -Multiyear initiative-EAST	0.4	5,352	System Service	Safety & Security	Brampton	This project consists of Sorbweb Oil containment system in Central North. Protects the environment in the event of a transformer tank rupture
150336	Base	Transformer Renewal - West	0.7	5,294	System Renewal	Transformer Renewal	Horizon	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
151306	Base	Cable Injection Project - (HAM) - Upper Wentworth - Lincoln M. Alexander - Upper Ottawa - Stone Church	0.5	5,237	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 2 failures, or 8 failures per 100km. The average cable installation year is 1988 in this project scope.
150750	Base	Lines Central-North - Major Tools	0.1	5,234	General Plant	Tools, Shop and Garage Equipment	Brampton	Replacement of Capital tools required to perform work
151432	Base	Cable Injection- 007- AREA 43 & 51- Hurontario & Derry Rd W, Mississauga	1.4	5,149	System Renewal	Underground Asset Renewal	Enersource	There are 3 outages, we are injecting a total of 16,419 m of cable for this project, and the average age of the cable is 28 years.
150009	Base	Insulator Renewal - East	0.3	5,108	System Renewal	Overhead Asset Renewal	Powerstream	Replacement of non-polymer insulators (Areas are prioritized by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.
151203	Base	Capital Corrective Equipment Replacement - Stations South West	0.1	4,921	System Renewal	Substation Renewal	Guelph	This project is intended to provide capital for all unplanned station equipment replacements in the South West Operating Area (Guelph) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
102042	Base	Purchase and Installation of Animal Guards at Various Stations-Annual Multi-year initiative-North & TS	0.0	4,894	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of animal guard installation in East
151083	Base	Switchgear Renewal - West	0.4	4,684	System Renewal	Underground Asset Renewal	Horizon	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
151010	Base	Switch Renewal - Central North	0.7	4,604	System Renewal	Overhead Asset Renewal	Brampton	Replacement of gang-operated (3 phase) load break switches that can no longer be maintained and are no longer operable with new manual replacement units

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150720	Base	Lines Central-South - Major Tools	0.2	4,591	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
151461	M-Factor	Cable Injection Project - (V51) - Langstaff - Kipling - Hwy 7 - Hwy 27, Vaughan	0.7	4,537	System Renewal	Underground Asset Renewal	Powerstream	From 2017-2019 YTD customers in this area experienced 1 failure. From 2015-2019 YTD customers in this area experienced 5 failures.
151364	Base	Cable Injection Project - (V23) - Hwy 7 - Keele - Langstaff - Jane, Vaughan	0.7	4,381	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 2 failures.
151021	Base	Insulator Renewal - Central North	0.4	4,236	System Renewal	Overhead Asset Renewal	Brampton	Replacement of non-polymer insulators (Areas are prioritiezed by insulators showing signs of defects), with modern polymer style insulators, we reduce pole fires and insulator flashovers. this will also drive efficiencies as insulator washing will no longer be required once all non-polymer insulators are replaced.
150674	Base	Emerging Customer Initiated Work Central (Brampton)	0.2	4,184	System Access	Customer Connections	Brampton	Mandatory - System Access Related Project
101763	Base	Unforeseen Projects Initiated by the customer PS North	0.1	4,161	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
150679	M-Factor	Alectra Drive for the Workplace	0.2	3,997	System Service	Capacity (Lines)	Multiple	Alectra Drive for the Workplace will demonstrate the value of integrating smart electric vehicle (EV) charging system at workplaces into the distribution grid such that mass uptake of electric vehicles can be managed in a safe and reliable manner. The planned investment will help manage the flow of electricity needed to serve the building and EV charging stations, so that electricity costs are minimized for commercial customers while EV drivers have an easy and accessible charging solution.
150367	M-Factor	Mini-Orlando MS 27.6kV Land Purchase, Mississauga	2.2	3,727	System Service	Capacity (Stations)	Enersource	Mini-Orlando MS is situated on leased land in the area of Mavis Road, south of Highway 401, provides capacity for the commercial and industrial customers in the Heartland area
102075	Base	Major repairs, refurbishment, or modifications to switches/switchgear	0.1	3,702	System Renewal	Underground Asset Renewal	Powerstream	Switchgear and Switches in stores that repair/refurbishment of the units can allow them to be returned to service
150329	M-Factor	Rear Lot Renewal Project - Main Street / Unionville / Carlton	2.5	3,599	System Renewal	Rear Lot Conversion	Powerstream	This area has had an average of 1 outages lasting an 1hr 40 minutes per year based on a 3 year average.
150498	Base	Capital Corrective Equipment Replacement - Stations Central South	0.3	3,535	System Renewal	Substation Renewal	Enersource	This project is intended to provide capital for all unplanned station equipment replacements in the Central South Operating Area (former Enersource) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
150499	Base	Capital Corrective Equipment Replacement - Stations Central North	0.3	3,535	System Renewal	Substation Renewal	Brampton	This project is intended to provide capital for all unplanned station equipment replacements in the Central North Operating Area (Brampton) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
150497	Base	Capital Corrective Equipment Replacement - Stations West	0.3	3,535	System Renewal	Substation Renewal	Horizon	This project is intended to provide capital for all unplanned station equipment replacements in the West Operating Area (former Horizon) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
101542	M-Factor	New Barrie 20MVA Substation - Harvie	1.4	3,447	System Service	Capacity (Stations)	Powerstream	The project entails the purchase of a station site in the vicinity of Harvie Road and Veterans Drive in Barrie and constructing a new 44/13.8kV, 20MVA, 4-feeder municipal substation.

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150353	M-Factor	Truscott Plaza - Additional capacity, Mississauga	1.0	3,353	System Service	Capacity (Lines)	Enersource	This project is to provide 27.6 KV capacity to supply developments in Truscott areas as the existing 4.16kV does not provide service size
150672	Base	Burden Allocation - System Service	0.1	3,353	System Service	Capacity (Lines)	Horizon	
150263	Base	Cable Replacement Project - East Left Behind Cable	1.6	3,237	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in these areas have experienced 11 failures.
102065	Base	Capital Corrective Equipment Replacement - East	0.4	3,161	System Renewal	Substation Renewal	Powerstream	This project is intended to provide capital for all unplanned station equipment replacements in the East Operating Area (former PowerStream area) that occur due to unexpected or run to failure equipment failures. This project improves response time as well as administration work as the work order and funds are pre-approved. The risk increases significantly when a piece of failed equipment is not available for service. These assets need to have spares readily available in order to quickly replace the failed asset and mitigate the impact of failure on customer reliability.
151297	Base	Cable Replacement Project - (HAM) - Govenors - Old Ancaster	1.0	3,148	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 3 failures, or 10 failures per 100km. The average cable installation year is 1957 in this project scope.
150611	Base	Transformer Tank and Radiator Reconditioning- Multi-year initiative - East	0.2	3,117	System Renewal	Substation Renewal	Powerstream	This project is intended for corrosion mitigation of station power transformer main tanks and cooling radiators in the East Operating Area (former PowerStream). It also prevents oil from leaking out of failed tanks and radiators due to corrosion. Preventing the main tank and radiators from corrosion extends the useful life of the unit and improves the reliability to customers.
150623	Base	Purchase and Installation of Animal Guarding-Annual Multi-year initiative-WEST	0.0	3,095	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of animal guard installation in West
150622	Base	Purchase and Installation of Animal Guarding-Annual Multi-year initiative-CENTRAL	0.0	3,093	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of Animal guard at Central South Stations
150621	Base	Purchase and Installation of Animal Guarding-Annual Multi-year initiative-EAST	0.0	3,082	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of installation of Animal guard at East Stations
151426	Base	Cable Replacement Project-Southdown & Lakeshore (35), Mississauga	6.8	3,020	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 3 outages, the length is 8,126 m, and the average cable age is 48 years old. There are 62 backlot transformers that we are also replacing.
151286	Base	Cable Replacement Project - (H2) - Wanless - Heart Lake - Bovaird - Kennedy, Brampton	0.4	2,868	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 6 outages due to cable failures from 2011 to 2017 with an average duration of 126 minutes
101625	Base	Cyber Security Audit & Upgrades	0.1	2,865	General Plant	Information Technology	Multiple	This project would fund various activities and countermeasures to improve the cyber security posture of the Operations' Network. This will be a mandate for compliance to Ontario Cyber Security framework. The counter measures include: - an annual audit of the cyber security countermeasures in place; - implementation of new technologies to seal identified compromises; - replacement of deployed cyber security equipment deemed end of life or not able to deliver an expected level of service.
150525	Base	Security Additions & Enhancements	0.3	2,842	General Plant	Information Technology	Multiple	details refer to PWC doc
150671	Base	Burden Allocation - System Renewal	1.9	2,831	System Renewal	Other System Renewal	Horizon	
150632	Base	AMI Gatekeeper Expansion - Brampton RZ	0.0	2,820	System Access	Metering	Brampton	Multi-year project to expand and upgrade AMI field communication equipment to service new connections.
151422	Base	Cable Replacement Project-Queen St W & Paisley (30), Mississauga	1.5	2,820	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 6 outages, the length is 3,992 m, and the average cable age is 36 years old.
151365	Base	Cable Injection Project - (V02) - Atkinson and Worth, Vaughan	0.4	2,765	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 1 failure.
151340	Base	Cable Replacement Project - (V29) - Hwy 7 - Jane - Steeles - Weston, Vaughan	4.3	2,594	System Renewal	Underground Asset Renewal	Powerstream	From 2013-2018 customers in this area experienced 5 failures.

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150332	M-Factor	Non-Wires Alternative Pilot	0.8	2,537	System Service	Capacity (Stations)	Powerstream	The project will provide customers with increased flexibility to make decisions about their electricity consumption, generation, and costs; it leads to more efficient integration of DERs which yields greater benefits to customer, system reliability, and power quality. This project will also provide the opportunity to increase operational efficiency and improved asset management to enhance service to customer and defer and/or reduce infrastructure investment needs in York Region.
151421	Base	Cable Replacement Project-Rathkeale Rd & Edenrose St (6), Mississauga	2.8	2,502	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 6 outages, the length is 8,577 m, and the average cable age is 31 years old.
150580	Base	West Region Tools and Test Equipment	0.2	2,494	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of Capital tools required to perform work
150627	Base	Station Equipment Temperature Monitoring-EAST	0.1	2,479	System Service	System Control, Comm'ns & Performance	Brampton	This project consists of Station Temperature Monitoring system in Central North and it enables controlled emergency loading beyond the nameplate rating.
150629	Base	Station Equipment Temperature Monitoring-WEST	0.1	2,479	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of Station Temperature Monitoring system in West and it enables controlled emergency loading beyond the nameplate rating.
151202	Base	Purchase of Major Station Tools - Multi-year	0.0	2,473	General Plant	Tools, Shop and Garage Equipment	Guelph	Replacement of Capital tools required to perform work
150625	Base	Purchase of Major Tools - Muliti Year-CENTRAL	0.0	2,395	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
150624	Base	Purchase of Major Tools - Muliti Year-EAST	0.0	2,395	General Plant	Tools, Shop and Garage Equipment	Brampton	Replacement of Capital tools required to perform work
150626	Base	Purchase of Major Tools - Muliti Year-WEST	0.0	2,395	General Plant	Tools, Shop and Garage Equipment	Horizon	Replacement of Capital tools required to perform work
101761	Base	Unforeseen Projects Initiated by the customer PS South	0.5	2,365	System Access	Customer Connections	Powerstream	Mandatory - System Access Related Project
151435	Base	Cable Injection- 010 - Area 56- Derry Rd W & Ninth Line, Mississauga	1.3	2,307	System Renewal	Underground Asset Renewal	Enersource	There are 3 outages, we are injecting a total of 45,837 m of cable for this project, and the average age of the cable is 30 years.
151425	Base	Cable Replacement Project-Rathburn Rd E & Tomken (10), Mississauga	1.4	2,295	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 10 outages, the length is 3,180 m, and the average cable age is 38 years old.
151290	Base	Cable Replacement Project - (I3) - Bovaird - Dixie - Queen - Hwy 410, Brampton	0.7	2,280	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 8 outages due to cable failures from 2007 to 2018 with average duration of 133 minutes.
150084	M-Factor	Markham TS#2 T1/T2 "B" Differential Protections Upgrade	0.1	2,270	System Service	System Control, Comm'ns & Performance	Powerstream	This project is to upgrade the T1/T2 GEC solid state Transformer "B" Differential Protection relays at Markham TS#3 with new relays having fault recording capabilities
151396	Base	2024 GUELPH - Transite Underground Duct Replacement	0.3	2,252	System Renewal	Underground Asset Renewal	Guelph	Replacement of Duct Structure which contains asbestoes a known carcinogen and impacts worker safety.
151244	Base	Fault Indicators	0.0	2,243	System Service	System Control, Comm'ns & Performance	Guelph	The scope of this project is to install Fault Indicators in Guelph. The project would include the fault indicators communicating to the existing SCADA and will improve the fault locating and improve SAIDI
151181	Base	Cable Replacement Project - Left Behind Cable, Brampton	0.5	2,163	System Renewal	Underground Asset Renewal	Brampton	This project is to address cables which were part of a cable injection project but were ultimately not injectable at the time of project execution. These 'left behind' segments must be addressed, if they are left in the system they could cause a failure. Customers would not only experience an outage, but question the utilities work practices as we would have addressed only a portion of the cables instead of all the cables which could cause an outage.
151423	Base	Cable Replacement Project-Old Carriage Road (33), Mississauga	1.4	2,104	System Renewal	Underground Asset Renewal	Enersource	Since 2005, there have been 5 outages, the length is 2,229 m, and the average cable age is 45 years old.
150096	M-Factor	Vaughan TS#2 T1/T2 "B" Differential Protections Upgrade	0.1	2,074	System Service	System Control, Comm'ns & Performance	Powerstream	Vaughan TS#2 T1/T2 "B" Differential Protections Upgrade
151338	Base	Cable Replacement Project- (BA15) - Burton - Huronia - Little - Bayview, Barrie	3.2	2,063	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 41 years old and will be 46 when project starts (2024).
150675	Base	Emerging Customer Inititated Work Central (Mississauga)	0.2	2,049	System Access	Customer Connections	Enersource	Mandatory - System Access Related Project
101764	Base	Road Authority Expenditure PS North	1.7	2,038	System Access	Road Authority	Powerstream	Mandatory - System Access Related Project
150604	Base	Smart Meter Network Expansion - PowerStream RZ	0.3	2,036	System Access	Metering	Powerstream	Multi-year project to expand and upgrade AMI field communication equipment to service new connections.

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
151092	Base	Distribution Automation - Central South	0.8	2,014	System Service	SCADA and Automation	Enersource	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151030	Base	Addition of Sensors to SCADA Controllable 44kV LISs in Brampton	0.3	2,013	System Service	System Control, Comm'ns & Performance	Brampton	This project is to add sensors to the 44KV switches in Central North
150694	M-Factor	Cityview microgrid enhancements	0.0	1,985	System Service	Capacity (Lines)	Powerstream	The project is to understand how microgrids can be integrated into the distribution grid in a safe and reliable manner. The microgrid is used to evaluate integration and connection to the distribution grid, while reducing the building's load, greenhouse gas emissions, and increasing its resiliency to grid outages.
150670	Base	SCADA FDIR	0.1	1,799	System Service	SCADA and Automation	Multiple	Fault Detection, Isolation, and Restoration implementation, next generation of distribution automation technology. This utilizes devices which are already automated and integrates them into the OMS system such that devices perform self healing after a fault. in some cases reducing the outage time to less then 1 minute.
150539	Base	Cyber Security Devices Upgrades	0.6	1,789	General Plant	Information Technology	Multiple	This project upgrades security tools to maintain compliance with OEB Cyber Security Framework
150680	M-Factor	Alectra Drive at Home	0.6	1,731	System Service	Capacity (Lines)	Multiple	Alectra Drive at Home will demonstrate the value of integrating smart electric vehicle (EV) charging system in multi rise buildings as well as residential homes into the distribution grid such that mass uptake of electric vehicles can be managed in a safe and reliable manner. It will also provide insight into the characteristics of EV Charging, how EVs can be aggregated and controlled to provide the benefit at the local, regional and provincial system levels, and customer response to these control and optimization strategies.
151201	Base	Purchase of New Critical Spare Parts - Guelph	0.0	1,728	System Renewal	Substation Renewal	Guelph	This project involves procurement of critical spare parts for stations in the South West Operating Area (Guelph) so as to facilitate prompt repair of failed assets during emergency situations.
150619	Base	Purchase of Critical Spare Parts - West	0.0	1,649	System Renewal	Substation Renewal	Horizon	This project involves procurement of critical spare parts for stations in the West Operating Area (former Horizon) so as to facilitate prompt repair of failed assets during emergency situations.
151136	Base	C55 Alectra: Optimization of Business Practices	0.1	1,625	General Plant	Information Technology	Multiple	Optimizing the current software to communicate with other systems such as the ERP will allow for more efficient and effective budgeting processes and consolidation of information allowing for consistent reporting of the information from one system.
150642	Base	Proactive Replacement of Remote Terminal Units - Central North	0.2	1,582	System Renewal	Substation Renewal	Brampton	This project involves replacement of end-of-life remote terminal units and communications equipment at stations in the Central-North Operating Area (Brampton). Replacement equipment can be leveraged to allow for Smart Grid initiatives such as quicker fault detection and automatic isolation and restoration. If existing equipment were to fail, the ability to remotely monitor and control switching devices would be lost, thus risking longer interruptions.
150617	Base	Purchase of Critical Spare Parts - Central North	0.0	1,569	System Renewal	Substation Renewal	Brampton	This project involves procurement of critical spare parts for municipal stations in the Central North Operating Area (Brampton) so as to facilitate prompt repair of failed assets during emergency situations.
151332	Base	Cable Replacement Project - (BA20) - Bayfield and Simcoe, Barrie	2.0	1,565	System Renewal	Underground Asset Renewal	Powerstream	Customers in this area have experienced 0 failures to date. Cable is 43 years old and will be 48 when project starts (2024).
151087	Base	Switchgear Replacement	0.3	1,559	System Renewal	Underground Asset Renewal	Guelph	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
150618	Base	Purchase of Critical Spare Parts - Central South	0.0	1,557	System Renewal	Substation Renewal	Enersource	This project involves procurement of critical spare parts for stations in the Central South Operating Area (former Enersource) so as to facilitate prompt repair of failed assets during emergency situations.

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
102077	Base	Major repair, refurbishment, or conversions of distribution transformers	0.0	1,541	System Renewal	Transformer Renewal	Powerstream	Transformers returned or in stores where repair/refurbishment of the unit can return it to service at a lower cost then purchase of a new unit
150398	M-Factor	Rear Lot Renewal Project - Strathcona Dr	0.9	1,537	System Renewal	Rear Lot Conversion	Horizon	This area has had an average of 44 outages lasting 0.35hrs per year based on 3 year average.
151222	Base	Concrete Structures	0.2	1,469	System Renewal	Underground Asset Renewal	Guelph	Replacement of lids on civil structures to avoid public risk
150334	Base	Distribution Automation - West	0.8	1,424	System Service	SCADA and Automation	Horizon	Installation of remote operable switches and switchgear, overlaping as much as possible switches that are end of life. These devices will directly impact the duration of outages as they allow for faster outage detection and fault finding. Furthermore, as many devices deployed as possible will have additional protection enabled to limit the number of customers effected by the outage in the first place
151052	Base	Emerging Customer Initiated Work - Relocations	0.1	1,412	System Access	Customer Connections	Guelph	Mandatory - System Access Related Project
151308	Base	Cable Injection Project - (HAM) - Hollybush - Parkside - Dundas - Spring Creek	0.1	1,389	System Renewal	Underground Asset Renewal	Horizon	From 2010-2018 YTD customers in this area experienced 1 failure, or 5 failures per 100km. The average cable installation year is 1988 in this project scope.
150751	Base	Facilities_East_Capital Replacement Investment Support	0.1	1,374	General Plant	Facilities Management	Powerstream	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
150965	Base	Fleet_West_Vehicle Replacement_ Bucket Truck 1-256	0.5	1,371	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150982	Base	Fleet_West_Vehicle Replacement_ Bucket Truck 1-299	0.5	1,371	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150335	Base	Pole Renewal - West	3.2	1,338	System Renewal	Overhead Asset Renewal	Horizon	This project involves the replacement of poles that either by testing or visual inspection in accordance with the ACA are in very poor or poor condition and must be replaced
151374	Base	Cable Replacement - (893) - Janefield Ave Subdivision, Guelph	0.6	1,325	System Renewal	Underground Asset Renewal	Guelph	
151388	Base	Cable Replacement - (724) - 30 Hadati Rd, Guelph	0.8	1,303	System Renewal	Underground Asset Renewal	Guelph	
151291	Base	Cable Replacement Project - (I4) - Queen - Dixie - Steeles - Hwy 410, Brampton	1.5	1,302	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 0 cable failure to date. Cables are 41 to 42 years old and beyond EUL.
150963	Base	Fleet_West_Vehicle Replacement_ Bucket Truck 1-224	0.6	1,299	General Plant	Fleet Renewal	Horizon	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150738	Base	Facilities_West_Capital Replacement Investment Support	0.5	1,289	General Plant	Facilities Management	Horizon	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
150330	M-Factor	Rear Lot Renewal Project - Marsdale, St.Catharines	2.0	1,284	System Renewal	Rear Lot Conversion	Horizon	This area has had an average of 19 outages lasting 1hr per year based on 3 year average.
150355	M-Factor	Voltage Conversion - Elmwood MS, Hamilton	2.8	1,275	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 23 outages and had 251,178 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
102241	Base	Proactive Replacement of Remote Terminal Units - East	0.1	1,240	System Renewal	Substation Renewal	Powerstream	This project involves replacement of end-of-life remote terminal units and communications equipment at stations in the East Operating Area (former PowerStream). Replacement equipment can be leveraged to allow for Smart Grid initiatives such as quicker fault detection and automatic isolation and restoration. If existing equipment were to fail, the ability to remotely monitor and control switching devices would be lost, thus risking longer interruptions.
150323	M-Factor	Station Switchgear Replacement - Bloor MS38 LV1	0.7	1,228	System Renewal	Substation Renewal	Enersource	Bloor MS is centrally located, supplying a large number of customers, and reliability is very important. This switchgear is non-arc-resistant and poses a potential safety hazard to Alectra personnel and even to the general public who happen to be in the vicinity of the station during a failure event. The circuit breakers that are housed in the switchgear prone to failure and are considered obsolete (no longer supported by the manufacturer and parts are difficult to come by). Obsolescence translates into more frequent and more lengthy maintenance requirements and longer outage duration in the event of a failure. Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted reactive capital expenditure.
151064	Base	Secondary Pedestals -St. Catharines	0.2	1,154	System Service	Safety & Security	Horizon	This project involves the replacment of above grade steel secondary pedestals which pose a safety risk to the general public
101125	Base	Lines Mobile Equipment - IT/OT Infrastructure	0.1	1,119	General Plant	Information Technology	Multiple	This budget covers the deployment of mobile technology - laptops/field tablets and accessories - within the Lines Department to gain efficiencies in field operations. By deploying this technology, the Lines area can move away from a paper-based to a more electronic environment. In future, it is envisioned that, for example, mobile applications will facilitate the electonic transmission of work orders and electronic record keeping (asset tracking, tailboards, switching orders, timesheets). This will allow for streamlined operational processes and record-keeping, thereby supporting corporate technological initiatives such as the GIS, Outage Management System, and future Workforce Management system. At present, all Lines Management personnel and Subforemen have laptops, facilitating activities such as viewing of the GIS, electronic Asset Tracking Forms, and use of OMS Responder Mobile. Expenditures in this area will allow for more deployment of field devices among Lines crews and for the implementation of more computerized processes.
151204	Base	Upgrade to Station Facilities (Buildings/Civil work) Multi-year	0.0	1,089	General Plant	Facilities Management	Guelph	This project involves work involving structural components of stations, including windows, brickwork, roofs, foundations, drainage, doors, etc. at stations in the SouthWest Operational Area. Not keeping up with this work would result in advanced deterioration resulting in even greater maintenance costs, potential safety concerns and potential failure of the electrical equipment in the building causing power interruptions.
151003	Base	Fleet_West_Vehicle Replacement_Pickups	0.1	1,042	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150354	M-Factor	Voltage Conversion - Eastmount MS, Hamilton	3.8	1,022	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 43 outages and had 2,261,630 minutes of interruption. The station assets are in very poor and poor condition and if this project does not proceed station renewal costs will be incurred to ensure the station does not fail.
151091	Base	Switchgear Renewal - Central South	3.9	982	System Renewal	Underground Asset Renewal	Enersource	Replacement of switchgear that is tracking, has some level of device failure (non-operable)
150380	M-Factor	Rear Lot Renewal Project - Gunn/Oakley Park/St.Vincent	1.8	967	System Renewal	Rear Lot Conversion	Powerstream	This area has had an average of 1 outage lasting 13hrs per year based on a 3 year average.
151159	Base	Fault Indicator Installation and Replacement - Hamilton and St. Catharines	0.3	966	System Service	System Control, Comm'ns & Performance	Horizon	This project consists of fault indicator installation in West

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150628	Base	Station Equipment Temperature Monitoring-CENTRAL	0.1	965	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of Station Temperature Monitoring system in Central South and this enables controlled emergency loading beyond the nameplate rating.
150947	Base	Fleet_West_Vehicle Replacement_ Pickups	0.1	952	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151065	Base	Manhole Lid Replacement	0.4	925	System Renewal	Underground Asset Renewal	Horizon	Replacement of lids on civil structures to avoid public risk
151279	Base	Cable Injection Project - (SCH) - Jacobson - Chestnut - Woodcrest	0.1	866	System Renewal	Underground Asset Renewal	Horizon	Customers in this area have experienced 0 underground XLPE cable outages to date. The average cable installation year is 1991. Since this project is in 2024, the cable will now be 8 years over the TUL while simultaneously pushing the boundary of Area 2 as a candidate for injection (see Figure A10 - 8: XLPE Cable by Type in Exhibit 04, Tab 01, Schedule 01, Appendix A10, Page 14)
150904	Base	Fleet East Yearly Light and Misc equipment	0.0	847	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150698	Base	Station Switchgear Replacement - City Centre South MS61 LV1	0.4	844	System Renewal	Substation Renewal	Enersource	City Centre South MS is located centrally adjacent to Square One shopping mall, and feeds a large number of customers. Therefore, reliability is very important. This project involves replacing the existing LV1 13.8 kV switchgear with new arc-rated switchgear and new circuit breakers. It also includes upgrading the transformer protection and replacing end-of-life feeder egress cables. The existing equipment line-up is technically obsolete, poses safety and environmental risks, and is prone to failure. Proactive replacement of the existing equipment is a prudent strategy as system reliability would be greatly affected in the event of a failure. Additionally, the restoration of the system to normal conditions could take 8-10 months due to long equipment lead times.
151285	Base	Cable Replacement Project - (G2) - Wanless - Kennedy - Bovaird - Main, Brampton	0.8	841	System Renewal	Underground Asset Renewal	Brampton	Customers in this area experienced 1 outage due to cable failure in 2007 with duration of 82 minutes. The cables are 41 to 43 years old and beyond EUL.
150746	Base	Facilities_Central_Capital Replacement Investment Support	0.5	807	General Plant	Facilities Management	Multiple	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
151469	M-Factor	Cable Replacement Project - (F4-G4) - Main - Steeles - Chinguacousy - Queen, Brampton	1.0	804	System Renewal	Underground Asset Renewal	Brampton	From 2000-2018 customers in this area experienced 86 failures. Exact number of failures in recent years is unknown at this moment.
151466	M-Factor	Cable Replacement Project - (V24) - Langstaff - Jane - Rutherford - Keele, Vaughan	1.0	800	System Renewal	Underground Asset Renewal	Powerstream	From 2015-2019 YTD customers in this area experienced 0 failures. From 2013-2019 YTD customers in this area experienced 2 failures.
151468	M-Factor	Cable Replacement Project - (V51) - Langstaff - Kipling - Hwy 7 - Hwy 27, Vaughan	1.0	799	System Renewal	Underground Asset Renewal	Powerstream	From 2017-2019 YTD customers in this area experienced 1 failure. From 2015-2019 YTD customers in this area experienced 5 failures.
151431	Base	Cable Injection- 006- AREA 39- Erin Mills Pkway & Thomas St, Mississauga	1.4	786	System Renewal	Underground Asset Renewal	Enersource	There are 0 outages, we are injecting a total of 38,448 m of cable for this project, and the average age of the cable is 30 years.
101622	Base	DACS Inverters and RTU's removal - East	0.0	765	System Renewal	Substation Renewal	Powerstream	This project involves removal of obsolete and out-of-service DACs inverters, RTUs and associated wiring at stations in the East Operating Area (former PowerStream) so as to remove clutter, thus simplifying future work and freeing up space for future station upgrades.
101632	Base	Obsolete Revenue Metering Removal from TSs	0.0	740	System Service	Safety & Security	Powerstream	Evolution of the distribution system to permit more efficient integration of DERs to yield 18
150979	M-Factor	Fleet East Vehicle replacement - Extended Vans	0.2	738	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150996	Base	Fleet East Vehicle replacement - Pickup truck 1500	0.2	729	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151467	M-Factor	Cable Replacement Project - (V17) - Langstaff - Keele - Rutherford - Dufferin, Vaughan	2.4	703	System Renewal	Underground Asset Renewal	Powerstream	From 2017-2019 YTD customers in this area experienced 3 failures. From 2015-2019 YTD customers in this area experienced 4 failures.
151082	Base	SCADA Infrastructure	0.1	688	System Service	System Control, Comm'ns & Performance	Guelph	
151191	Base	Facilities_Reno_Nebo - Service Centre Upgrades	0.1	685	General Plant	Facilities Management	Horizon	Repairs to building envelop/walls to prevent further damage to the build infrastructure and systems that are supporting critical operational systems such as control rooms, server rooms, customer services groups, etc.
151058	Base	Distribution Transformer Replacements & Upgrades	0.4	683	System Renewal	Transformer Renewal	Guelph	Alectra Utilities will replace transformers proactively when they are found to be in a condition that introduces an unacceptable safety risk to the public, or to the environmental, (e.g., corroded or damaged enclosure that may expose the public to energized components), or risk of environmental contamination, (e.g., leaking oil), are of obsolete vintage construction, are consistently overloaded, or are configured in a way that increases the likelihood of a lengthy outage due to difficult replacement.
151005	Base	Fleet_West_Vehicle Replacement_Cargo Van	0.1	674	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150669	Base	Burden Allocation - System Access	0.7	670	System Access	Customer Connections	Horizon	Mandatory - System Access Related Project
150962	M-Factor	Fleet East Unit # 61 Digger truck replacement	0.4	644	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
102166	Base	SQL Expansion - IT Infrastructure	0.2	636	General Plant	Information Technology	Multiple	Expand existing SQL infrastructure to meet project demands and natural growth of database. Add system capacity, improve performance, and reduce the risk of downtime due resource constraints.
150818	M-Factor	Fleet_Central South Vehicle Replacement-236-10 S/bucket	0.5	635	General Plant	Fleet Renewal	Enersource	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150980	M-Factor	Fleet East Vehicle replacement - Work Van	0.1	622	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150942	M-Factor	Fleet_ Central North Vehicle Replacement_S/Bucket	0.5	621	General Plant	Fleet Renewal	Brampton	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150807	M-Factor	Fleet_Central South Vehicle Replacement-209-09 S/bucket	0.5	621	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150203	Base	Station Equipment Temperature Monitoring-NORTH & TS	0.1	614	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of Station Temperature Monitoring system in East and it enables controlled emergency loading beyond the nameplate rating.
150945	M-Factor	Fleet_ Central North Vehicle Replacement_Reel Carriers	0.7	614	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150803	M-Factor	Fleet_Central South Vehicle Replacement- Material Handler	0.6	606	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150896	M-Factor	Fleet_ Central North Vehicle Replacement S/Bucket 8910	0.5	596	General Plant	Fleet Renewal	Brampton	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150496	Base	iPass Project Management – Planned Capital - West	0.7	589	System Renewal	Underground Asset Renewal	Horizon	Help in optimizing DER performance and efficiency to improve addressing overall energy needs.
150978	M-Factor	Fleet East Vehicle replacement - Cube Vans	0.7	580	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150953	M-Factor	Fleet_ Central North Vehicle Replacement_Trailer 11510	0.0	566	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
102046	Base	Purchase of Major Tools - Muliti Year-North & TS	0.0	565	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
151209	M-Factor	Station LED Lighting Upgrades - South West	0.0	556	System Renewal	Substation Renewal	Guelph	Replacement of inefficient lighting fixtures and lamps at Guelph stations will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
151128	M-Factor	MS Transformer & HV Switchgear Replacement - Western MS36 T1 & HV1	0.6	554	System Renewal	Substation Renewal	Enersource	Recent testing has indicated possible mechanical damage to the transformer windings and the HV switchgear has suffered damage due to a prior failure. The station is in a residential area and a transformer failure could result in a fire, posing a risk to the community and collateral damage to other assets in the station, as well as resulting in an extensive power interruption. Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted reactive capital expenditure.
151150	M-Factor	Fleet East Vehicle replacement - SUV	0.0	550	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150968	M-Factor	Fleet East Vehicle replacement Pickup truck 2500	0.1	549	General Plant	Fleet Renewal	Powerstream	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150905	Base	Fleet East Multi Year Shop tools	0.0	544	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of tools and shop equipment required to repair and maintain vehicles to ensure vehicle availability to support capital systems projects.
101816	Base	Alectra East (South), Fault Indicator Installation and Replacement Multi-year initiative	0.3	542	System Service	System Control, Comm'ns & Performance	Powerstream	This project is installtion of fault indictor in East - North Region which will result improved outage response, operational efficiency, and reliability
151085	M-Factor	Rear Lot Conversions	0.1	531	System Renewal	Rear Lot Conversion	Guelph	
101134	Base	Alectra East (North), Fault Indicator Installation and Replacement Multi-year initiative	0.3	527	System Service	System Control, Comm'ns & Performance	Powerstream	This project is installtion of fault indictor in East - South Region which will result improved outage response, operational efficiency, and reliability
150437	Base	OT GIS & OMS Enhancements	0.4	520	General Plant	Information Technology	Multiple	Ongoing productivity enhancements to core GIS and OMS platforms to meet internal and customer demand for functionality.
150975	M-Factor	Fleet East Unit # 75 83' Double Bucket	0.7	513	General Plant	Fleet Renewal	Powerstream	Vehicle replacement due to poor conditions, high mileage, engine hours and age. Due to increasing repairs & parts availability, vehicle not as available to support capital system renewal projects and respond to emergencies.
150602	Base	Smart Meter Test Facility - PowerStream RZ	0.0	471	System Access	Metering	Powerstream	Multi-year project to expand the capability of the Meter Test Facility to test increasing types of meters and AMI systems before they are placed into production.
150955	Base	Fleet_ Central North Vehicle Replacement_Arrowboards	0.1	459	General Plant	Fleet Renewal	Brampton	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
102027	Base	Purchase of Critical Spare Parts - Multiyear - East	0.1	428	System Renewal	Substation Renewal	Powerstream	This project involves procurement of critical spare parts for transformer and municipal stations in the East Operating Area (former PowerStream) so as to facilitate prompt repair of failed assets during emergency situations.
150494	Base	iPass Project Management – Planned Capital - Central-North	0.4	409	System Renewal	Overhead Asset Renewal	Brampton	Predicting the influence of weather conditions and DER contribution simultaneously on the power grid, for proactively mitigating local outages,
150495	Base	iPass Project Management – Planned Capital - Central-South	0.4	409	System Renewal	Overhead Asset Renewal	Enersource	Enable better visibility towards preventive equipment maintenance needs arising due to DER penetration which will further help mitigate outage risks,
101781	Base	iPass Project Management – Planned Capital - East	0.4	409	System Renewal	Overhead Asset Renewal	Powerstream	Estimating the effects of DER contribution at the feeder and region levels to further optimize the energy flows between the Utility and its consumers,
150607	M-Factor	Station LED Lighting Upgrades - Central	0.0	408	System Renewal	Substation Renewal	Enersource	Replacement of inefficient lighting fixtures and lamps at stations in the Central Operational Area will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
150606	M-Factor	Station LED Lighting Upgrades - EAST	0.0	408	System Renewal	Substation Renewal	Brampton	Replacement of inefficient lighting fixtures and lamps at stations in this Operational Area will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
151132	M-Factor	MS Transformer & HV Switchgear Replacement - Munden MS35 T1 & HV1	0.7	406	System Renewal	Substation Renewal	Enersource	Recent testing has indicated that the transformer insulation has deteriorated and lacks a proper foundation and is beginning to lean. The station is in a residential area and a transformer failure could result in a fire, posing a risk to the community and collateral damage to other assets in the station, as well as resulting in an extensive power interruption. Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted reactive capital expenditure.
150517	Base	Upgrade to Station Facilities (Building / Civil work) Multi-year - West	0.1	399	System Renewal	Substation Renewal	Horizon	MULTI ANSWER
150518	Base	Upgrade to Station Facilities (Building / Civil work) Multi-year - Central	0.1	399	System Renewal	Substation Renewal	Enersource	MULTI ANSWER
151168	M-Factor	Fleet_Central South Vehicle Replacement-Step Vans	0.7	395	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150399	M-Factor	Rear Lot Renewal Project - Richlieu Dr and Trelawne Dr, St.Catharines	1.2	393	System Renewal	Rear Lot Conversion	Horizon	This area has had an average of 40 outages lasting 1.5hrs per year based on 3 year average.
151212	M-Factor	Driveway Paving Multi-year initiative - South West	0.0	391	System Renewal	Substation Renewal	Guelph	These driveways at Guelph stations that are covered in gravel require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
151007	M-Factor	Fleet_West_Vehicle_Replacement_Trailers	0.1	367	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150608	M-Factor	Station LED Lighting Upgrades - West	0.0	359	System Renewal	Substation Renewal	Horizon	Replacement of inefficient lighting fixtures and lamps at stations in the West Operational Area will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
150356	M-Factor	Voltage Conversion - Clarkson Area, Mississauga	2.7	359	System Renewal	Overhead Asset Renewal	Enersource	From 2015-2017 customers in this area experienced 35 outages and had 91,638 minutes of interruption.
102034	Base	Upgrade to Station Facilities (Building / Civil work) Multi-year - East	0.1	340	System Renewal	Substation Renewal	Powerstream	MULTI ANSWER
150854	M-Factor	Fleet_Central South Vehicle Replacement-Trailers	0.2	330	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150813	M-Factor	Fleet_Central South Vehicle Replacement-SUV	0.1	330	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150501	Base	On-Line Dissolved Gas Oil Monitoring of 20 MS Transformers - CENTRAL	0.2	313	System Service	System Control, Comm'ns & Performance	Enersource	This project consists of installation of Transformer bushing monitoring system in Central South
150741	Base	Facilities_Replacement_Patterson Road Roof	1.2	308	General Plant	Facilities Management	Powerstream	Building roofs have exceeded the project useful life. Various decaying roof conditions identified need to be addressed to prevent further damage to the building envelope, structure and assets.
150610	M-Factor	Driveway Paving - Various Stations - Multi-year initiative - Central	0.0	290	System Renewal	Substation Renewal	Enersource	Existing driveways at stations in the Central Operational Area that are covered in gravel and require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150609	M-Factor	Driveway Paving - Various Stations - Multi-year initiative - East	0.0	290	System Renewal	Substation Renewal	Brampton	Existing driveways in this Operational Area that are covered in gravel require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150612	M-Factor	Driveway Paving - Various Stations - Multi-year initiative - West	0.0	290	System Renewal	Substation Renewal	Horizon	Existing driveways in the West Operational Area that are covered in gravel require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150812	M-Factor	Fleet_Central South Vehicle Replacement-Vans	0.1	240	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

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Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
102050	Base	Various Stations-Station Lighting Upgrade/Retrofit-Energy Efficiency Lighting-initiative Multi-year - East	0.1	240	System Renewal	Substation Renewal	Powerstream	Replacement of inefficient indoor and outdoor lighting fixtures and lamps at stations in the East Operating Area (former PowerStream) will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
151167	M-Factor	Fleet_Central South Vehicle Replacement-Pick ups	0.2	237	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150421	M-Factor	2D7X Pimlico Dr - Voltage Conversion and Rear Lot	0.6	234	System Renewal	Overhead Asset Renewal	Horizon	From 2015-2017 customers in this area experienced 28 outages and had 805,077 minutes of interruption. This project also addresses rear lot assets which are extrememly difficult to replace if they fail due to complexities of access issues and restricitions for equipment to rebuild the assets.
150853	M-Factor	Fleet_Central South Vehicle Replacement-Vans	0.2	228	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
151164	Base	Fleet_Central South _key box replacement	0.0	223	General Plant	Fleet Renewal	Enersource	Adopted the current vehicles key management system at all sites to ensure access to vehicles when required. This ensure access to vehicles after hours and tracking of vehceil keys.
151038	Base	Fleet_West_Equipment_Key Boxes	0.0	223	General Plant	Fleet Renewal	Horizon	Adopted the current vehicles key management system at all sites to ensure access to vehicles when required. This ensure access to vehicles after hours and tracking of vehceil keys.
150394	M-Factor	King St. Voltage Conversion & Loop (LRT Betterment)	0.3	192	System Renewal	Overhead Asset Renewal	Enersource	From 2015-2017 customers in this area experienced 5 outages and had 61,455 minutes of interruption.
150822	Base	Fleet_Central South Vehicle Replacement-Arrowboard	0.0	179	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150326	Base	Software Asset Management as a Service	0.1	173	General Plant	Information Technology	Multiple	The Software Asset Management module of ServiceNow will enable the creation of an accurate, up to date, single system of record for IT infrastructure, both on premises and in public clouds. It will identify IP-enabled configuration items (CIs), map their interdependencies, and populate and maintain them in the ServiceNow Configuration Management Database (CMDB). Software spend across the year will be more predictable, and access to software agreements will be more efficient. Auditing of agreements will be more manageable. The implementation will all better control over the complexity of our software assets, allowing us to optimize the use of these assets.
150153	Base	Bradford MS324-F2 Reconductor - Holland Street	0.0	169	System Service	Capacity (Lines)	Powerstream	This project is to reconductor MS324f2 feeder to increase capacity and meet contingency requirements. Increase the ampacity of the existing section of 13.8kV feeder along Holland Street by reconductoring the existing 3/0 Al with 336 Al from Langford Drive to Professor Day
150511	M-Factor	Installation of SWI Video security system at 4 MS stations per year - Annual Multi-year initiative-WEST	0.2	164	System Service	Safety & Security	Horizon	This project consists of installation of SWI Video security system in West. The implementation of video monitoring will ensure that station security and safety related issues can be easily identified and addressed immediately
150512	M-Factor	Installation of SWI Video security system at 4 MS stations per year - Annual Multi-year initiative-CENTRAL	0.2	164	System Service	Safety & Security	Enersource	This project consists of installation of SWI Video security system in Central South. The implementation of video monitoring will ensure that station security and safety related issues can be easily identified and addressed immediately
150519	M-Factor	Upgrade to Station Facilities (Building / Civil work) MultiYear - East	0.1	156	System Renewal	Substation Renewal	Brampton	This project involves work involving structural components of stations, including windows, brickwork, roofs, foundations, drainage, doors, etc. at stations in the East Operational Area. Not keeping up with this work would result in advanced deterioration resulting in even greater maintenance costs, potential safety concerns and potential failure of the electrical equipment in the building causing power interruptions.

Project List for Oral Hearing Undertakings

Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
103030	Base	Technology Upgrades Improving the System Control Room Environment	0.1	148	General Plant	Information Technology	Multiple	This project will continue to build on the original capital project whose scope was focused on the replacement of computers used as Operator WorkStations. The scope of this program has been expanded to account for all technology purchases required for the Control Room theater.
151108	Base	Office Equipment	0.1	144	General Plant	Facilities Management	Guelph	Replace aging equipment within the Guelph operational centre to ensure optimal performance in managing the distribution assets
151384	Base	2024 GUELPH - Fleet	0.6	138	General Plant	Fleet Renewal	Guelph	Replacement of end of life asset due to poor conditions, high mileage and engine hours and age. Vehicle experiencing more down time at the shop for repairs and maintenance impacting vehicle availability.
151245	M-Factor	Capacitor Bank Installations	0.0	135	System Service	System Control, Comm'ns & Performance	Guelph	This project consists of capacitor bank installation to increase power factor, capacity and reduce losses.
150235	M-Factor	Greenwood Expansion Station Service Supply Backup	0.0	130	System Service	System Control, Comm'ns & Performance	Powerstream	This project consists of providing back up to the station service transformer at Greenwood TS. In the current configurationt the two station transformers are supplied from VTS#1 and a failure on VTS#1 result in removal of both VTS#1 and VTS#1.
150582	M-Factor	Back-end Automation (Orchestration Tool\Setup)	0.2	128	General Plant	Information Technology	Multiple	Automated integration of enterprise system platforms with HR functionality. Increase in productivity related to human resources
102931	Base	Paving of 3 MS & TS Station Driveways per year - Annual Multi-year initiative - East	0.1	125	System Renewal	Substation Renewal	Powerstream	Existing driveways at stations in the East Operating Area (former PowerStream) are covered in gravel and require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
150597	Base	Lock Box Installs - East	0.0	116	System Access	Metering	Powerstream	Multi-year project to install lock boxes at ICI properties with restricted access to eliminate need for a customer appointment for access.
150821	M-Factor	Fleet_Central South Vehicle Replacement-Van	0.1	111	General Plant	Fleet Renewal	Enersource	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
150737	Base	Facilities_East Region_Reactive Capital	0.3	92	General Plant	Facilities Management	Powerstream	Approved capital funds available to address any unforeseen and unbudgeted asset replacements/demands. Having these funds available for immediate use is critical for Facilities building operations to restore equipment/assets back to normal operations a.s.a.p.
150736	Base	Facilities_West Region_Reactive Capital	0.3	92	General Plant	Facilities Management	Horizon	Approved capital funds available to address any unforeseen and unbudgeted asset replacements/demands. Having these funds available for immediate use is critical for Facilities building operations to restore equipment/assets back to normal operations a.s.a.p.
150734	Base	Facilities_Central Region_Reactive Capital	0.3	92	General Plant	Facilities Management	Multiple	Approved capital funds available to address any unforeseen and unbudgeted asset replacements/demands. Having these funds available for immediate use is critical for Facilities building operations to restore equipment/assets back to normal operations a.s.a.p.
150958	M-Factor	Fleet_West_Vehicle Replacement_Forklift	0.1	91	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.
103171	Base	Implementation of a new Alectra Network Operations Voice Radio System	0.0	79	General Plant	Information Technology	Multiple	
150906	Base	Vehicle key box system	0.0	43	General Plant	Fleet Renewal	Powerstream	

Project List for Oral Hearing Undertakings

Project Number	Funding	Project Name	2024 ($MM)	Project Score	Investment Category	Investment Grouping	Rate Zone	Comment
150747	M-Factor	Net Zero Energy Emissions	0.3	35	System Service	Distributed Energy Resources (DER)	Powerstream	The project will help Alectra Utilities to ensure that growing DER challenges are met through building expertise and capability in real time monitoring, integrating and optimizing of DERs in line with customer preferences. This will lead to a system that can safely integrate and optimize value from DERs for the benefit of customers.
151053	Base	Building Sustainment	0.2	32	General Plant	Facilities Management	Guelph	Projects planned to maintain the buildings, assets and systems in a condition that contributes to maintaining efficiencies, business operations and to alleviate pressure on the operating expenditures. Planned expenditures are based on the condition and/or lifecycle of a given building or component/asset and is scheduled for replacement (e.g. condenser, furnace, windows, roofing).
150878	M-Factor	Bus & Main Breaker Protections Replacement - Jim Yarrow TS	0.1	22	System Renewal	Substation Renewal	Brampton	This is part of a multi-phase project to upgrade aging and failure-prone protection systems to the current protection standards. Proper protection to the main bus and transformers will provide protection to the assets in the case of faults when they occur.
151031	Base	Fleet Shop equipment refurbishment and replacement	0.1	13	General Plant	Fleet Renewal	Enersource	For the refurbishment of trailers, shop compressors and hoists to extend the life of the assets instead of replacement to reduce the need fro capital expenditures.
150678	Base	P&C Specific Tools & Testing Equipment - West	0.0	12	General Plant	Tools, Shop and Garage Equipment	Enersource	Replacement of Capital tools required to perform work
102999	Base	P&C Specific Tools and Testing Equipment	0.0	12	General Plant	Tools, Shop and Garage Equipment	Powerstream	Replacement of Capital tools required to perform work
102157	Base	Server Refresh - IT Infrastructure	0.4	10	General Plant	Information Technology	Multiple	Ongoing server refresh to support applications.
150547	M-Factor	Business Support	0.2	8	General Plant	Information Technology	Multiple	The project will encompass a variety of sub projects for the purpose of investigating new and emerging technologies. Building a culture of innovation Alectra will need a continued effort in remaining ahead of the trends and implementing new and more efficient ways of doing business.
151029	M-Factor	Fleet_West_Vehicle_Replacement_Pickups	0.2	1	General Plant	Fleet Renewal	Horizon	Replacement due to poor conditions, high mileage, engine hours and age. These vehicles are critical to support capital system renewal projects, support assets maintenance programs and respond to emergencies.

J2.5

Reference:

To provide the scores for the M-factor.

Response:

Alectra Utilities provides the scores for the M-Factor projects in Table 1 below.

Table 1: M-Factor Project Scores

Project Number	Project Name	Project Score
151125	Connection Cost Recovery Agreement (CCRA) – Midhurst TS – 15th Anniversary True-up	78,172
151124	Goreway TS Expansion (CCRA) - 10 Yr True-Up Payment, Brampton	76,026
100159	Hydro One Asset Purchase - Alliston	52,601
101569	New Alliston 10MVA Substation - Industrial Parkway	44,830
151117	Vansickle TS True-up Payment (CCRA), St.Catharines	43,573
151241	Arlen MTS - New Feeder	37,817
150369	New build - 44kV Feeder Extension York/Meadowpine, Mississauga	37,795
151118	Nebo TS 27.6kV True-up Payment (CCRA)	37,750
101003	Richmond Hill TS#2 Upgrade Bus, Line & Transformer Protections	36,020
151240	Southgate Dr to Maltby Rd O/H Extension	34,668
102387	Install 44kV & 13.8kV Bryne Drive	34,654
150073	Vaughan TS#1 Bus Differential & Overcurrent Protections Upgrades	34,014
103633	Install Two 27.6kV Ccts on 16th Ave from Hwy 404 to Woodbine Ave	30,531
150074	Vaughan TS#2 Bus Differential and Overcurrent Protections Upgrade	28,628
100340	Vaughan TS#4 Feeder Integration - Part 3	28,489
150072	Markham TS#3 Bus Differential & Overcurrent Protections Upgrades	27,028
150364	New build - Port Credit Village East (Marina) 27.6kV Feeders, Mississauga	25,989
150070	Markham TS#1 Bus Differential & Overcurrent Protections Upgrades	22,500

150467	CIS CC&B upgrade	21,392
150071	Markham TS#2 Bus Differential & Overcurrent Protections Upgrades	21,087
101480	Build double ccts 27.6kV pole line on 19th Ave between Leslie St and Bayview Ave	20,987
150371	New build - 27.6kV Feeder Extension Traders, Mississauga	19,792
150319	New MS - Duke MS 20 MVA Substation, Mississauga	17,541
151460	Cable Injection Project - (V17) - Langstaff - Keele - Rutherford - Dufferin, Vaughan	15,317
150749	New WiMAX Communication Network - Central South	15,089
100337	Markham TS #4 Feeder Egress Part 3	14,795
100913	Pole Line Installation Double Cct on Major Mack - Huntington Rd to Hwy 50	14,223
150360	New build - Extend 44kV feeder Centre View Dr, Mississauga	13,005
151233	New Construction - Campbell TS 36M63 Feeder PHASE 1 & 2, Guelph	11,851
150693	Blockchain	11,192
150342	HaLRT_New Stirton Feeder for TPSS#4 and 8852X load shedding, Hamilton	10,907
151465	Cable Replacement - Mississauga Left Behind Cable	10,857
102263	Work Force Management / Mobile Dispatch	9,762
151456	Cable Injection Project - (V50) - Hwy 7 - Kipling - Steeles - Hwy 27, Vaughan	9,188
150097	Line Protections and HMI Upgrade - KDU-10 Replacement - Markham TS#2	8,506
150773	New WiMAX Communications System - Central North	8,000
150785	New WiMAX Communications System - West	7,655
151457	Cable Injection Project - (V25) - Major Mackenzie - Keele - Rutherford - Jane, Vaughan	7,410
150370	New build - 27.6kV New Feeders Lakeview Development, Mississauga	7,391
100924	Install two additional 27.6 kV ccts on Hwy 7 from Jane St to Weston Rd	7,256
150343	Bathurst Street Widening	6,905
151459	Cable Injection Project - (V24) - Langstaff - Jane - Rutherford - Keele, Vaughan	6,509
102128	Aurora MS6 Expansion	5,910
150351	Voltage Conversion - Aberdeen MS, Hamilton	5,675
151463	Cable Injection Project - (F4-G4) - Main - Steeles - Chinguacousy - Queen, Brampton	5,560
100909	Rebuild 27.6 kV pole line for 4 Ccts on Warden Ave from Major Mack to Elgin Mills	4,927
150716	New build - 42M69 Feeder Extension Williams Pkwy - Main St to Kennedy Rd, Brampton	4,866

150605	Residential "ICON F" Meter Replacement - PowerStream RZ	4,853
151464	Cable Injection Project - (F3-G3-H3) - Phase 2, Brampton	4,697
151461	Cable Injection Project - (V51) - Langstaff - Kipling - Hwy 7 - Hwy 27, Vaughan	4,537
151022	New Three Sector WiMAX Node - MS305	4,525
150411	42M64 Feeder Extension Mississauga Rd, Williams Pkwy to Queen / Embleton	4,471
150125	Aurora MS6 (AMS6) Transformer and Bus Protection Upgrade	4,156
150679	Alectra Drive for the Workplace	3,997
150320	Voltage Conversion - Dewitt MS , Hamilton	3,972
150358	New build - QEW Dixie West New OH Circuits, Mississauga	3,907
150367	Mini-Orlando MS 27.6kV Land Purchase, Mississauga	3,727
150043	Rear Lot Renewal Project - East of Queen St. to Eastern Ave./North of Greenway St.	3,714
150329	Rear Lot Renewal Project - Main Street / Unionville / Carlton	3,599
151200	Alectra Single Platform Website ongoing	3,548
150047	Rear Lot Renewal Project - Royal Orchard - North	3,478
101542	New Barrie 20MVA Substation - Harvie	3,447
151462	Cable Injection Project - (G1) - Hwy 410 - Kennedy - Wanless - Main, Brampton	3,438
150353	Truscott Plaza - Additional capacity, Mississauga	3,353
151458	Cable Injection Project - (V31) - Langstaff - Weston - Rutherford - Jane, Vaughan	3,280
150390	New build - Waterdown 3rd Feeder, Hamilton	3,248
150089	Markham TS#3 T1/T2 "B" Differential Protections Upgrade	2,935
100632	27.6 kV Pole Line on 14th Ave from Hwy 48 to 9th Line	2,933
101036	Install a new 4 ccts CNR yard overhead crossing on the south side of Hwy 7	2,919
150401	136M6 Goreway TS Extensions	2,821
150666	Facilities_John_Roof Deck – Rooftop Renovation	2,610
150079	Markham TS#1 T1/T2 "B" Overcurrent Protections and HMI Upgrade	2,596
150374	New build - 13.8kV Feeder Extension 9th Line, Derry to Argentia, Mississauga	2,571
150332	Non-Wires Alternative Pilot	2,537
150095	Vaughan TS#1 T1/T2 "B" Differential Protections Upgrade	2,478
150084	Markham TS#2 T1/T2 "B" Differential Protections Upgrade	2,270
150321	Voltage Conversion - Galbraith MS, Hamilton	2,140
150096	Vaughan TS#2 T1/T2 "B" Differential Protections Upgrade	2,074
150694	Cityview microgrid enhancements	1,985
102547	Two Ccts on Birchmount Rd from ROW to 14th Ave	1,969

100904	Install Double Cct Pole Line on Major Mackenzie - Hwy 27 to Huntington Rd	1,874
150680	Alectra Drive at Home	1,731
150378	Rear Lot Renewal Project - East of Queen Street/North of Mill Street	1,699
151139	Voltage Conversion - MS-12 Hansen Rd, Brampton	1,599
150398	Rear Lot Renewal Project - Strathcona Dr	1,537
150368	New build - North Central feeders capacity (Carlton TS to Linwell Rd/Lake St) relief, St.Catharines	1,481
150410	42M66 OH Feeder Egress Mississauga Rd, Bovaird to CNR	1,458
150362	Voltage Conversion - Dufferin St S, between MS431 and Albert St S, Alliston	1,328
150330	Rear Lot Renewal Project - Marsdale, St.Catharines	1,284
150355	Voltage Conversion - Elmwood MS, Hamilton	1,275
151138	Voltage Conversion - MS-2 Church St, Brampton	1,255
150422	136M9 Feeder Extension Castlemore Rd, Goreway Dr to McVean Dr	1,233
150323	Station Switchgear Replacement - Bloor MS38 LV1	1,228
150044	Rear Lot Renewal Project - Blake/Kempenfelt	1,144
150254	Cable Replacement Project - (A02) - Steeplechase Ave, Aurora	1,133
150758	Facilities_Reno_Staff Relocation from Jane St	1,060
100919	Install 2nd 27.6 kV Cct on Woodbine Ave from Elgin Mills Rd to 19th Ave	1,028
150354	Voltage Conversion - Eastmount MS, Hamilton	1,022
150257	Cable Replacement Project - (V15) - Jardin Dr, Vaughan	1,004
150380	Rear Lot Renewal Project - Gunn/Oakley Park/St.Vincent	967
150361	Airport 88M5 & 88M7 HONI Purchase	905
150317	Voltage Conversion - Deerhurst MS, Hamilton	869
150262	Cable Replacement Project - (M33) - 16th Avenue and Village Parkway, Markham	835
151469	Cable Replacement Project - (F4-G4) - Main - Steeles - Chinguacousy - Queen, Brampton	804
151466	Cable Replacement Project - (V24) - Langstaff - Jane - Rutherford - Keele, Vaughan	800
151468	Cable Replacement Project - (V51) - Langstaff - Kipling - Hwy 7 - Hwy 27, Vaughan	799
150979	Fleet East Vehicle replacement - Extended Vans	738
151072	Station Service Transfer Upgrade - Vaughan TS#3	726
151178	Cable Replacement Project - Mason Heights	716
151467	Cable Replacement Project - (V17) - Langstaff - Keele - Rutherford - Dufferin, Vaughan	703
150377	Voltage Conversion and Rear Lot - Montgomery Dr, Hamilton	661
150962	Fleet East Unit # 61 Digger truck replacement	644

150818	Fleet_Central South Vehicle Replacement-236-10 S/bucket	635
150980	Fleet East Vehicle replacement - Work Van	622
150942	Fleet_ Central North Vehicle Replacement_S/Bucket	621
150807	Fleet_Central South Vehicle Replacement-209-09 S/bucket	621
150945	Fleet_ Central North Vehicle Replacement_Reel Carriers	614
150803	Fleet_Central South Vehicle Replacement- Material Handler	606
150896	Fleet_ Central North Vehicle Replacement S/Bucket 8910	596
150871	Fleet_Central North Vehicle Replacement-Step Van 8108	595
150846	Fleet_West_Vehicle Replacement_Step Vans	589
150967	Fleet East Unit # 125, 83' Double Bucket	580
150978	Fleet East Vehicle replacement - Cube Vans	580
150876	Fleet_Central North Vehicle Replacement_ Step Vans 6310	568
150953	Fleet_ Central North Vehicle Replacement_Trailer 11510	566
150793	Fleet_Central South Vehicle Replacement-210-09 S/bucket	560
151209	Station LED Lighting Upgrades - South West	556
151128	MS Transformer & HV Switchgear Replacement - Western MS36 T1 & HV1	554
151150	Fleet East Vehicle replacement - SUV	550
150968	Fleet East Vehicle replacement Pickup truck 2500	549
150938	Fleet_ Central North Vehicle Replacement_Stake Trucks	539
151085	Rear Lot Conversions	531
150975	Fleet East Unit # 75 83' Double Bucket	513
151179	Cable Replacement Project - Area of Erin Mills Parkway and South Millway	482
150810	Fleet_Central South Vehicle Replacement-Step Vans	462
150798	Fleet_Central South Vehicle Replacement- Arrowboard	450
150782	Fleet_Central South Vehicle Replacement-Step Van	439
150811	Fleet_Central South Vehicle Replacement-Pick ups	434
151141	Cable Replacement and Transformers replacement - Project - Windjammer, Mississauga	432
150576	Split the 1/0 loop on Cityview Blvd into two loops	423
150607	Station LED Lighting Upgrades - Central	408
150606	Station LED Lighting Upgrades - EAST	408
151013	Fleet_West_Vehicle_Replacement_Bucket Truck_1-354	407
151158	Fleet_Central South_Vehicle Replacement -Vans	407
151132	MS Transformer & HV Switchgear Replacement - Munden MS35 T1 & HV1	406
150786	Fleet_Central South Vehicle Replacement-SUV	403
150868	Fleet_Central North Vehicle Replacement-180 Loader	400
151168	Fleet_Central South Vehicle Replacement-Step Vans	395

150399	Rear Lot Renewal Project - Richlieu Dr and Trelawne Dr, St.Catharines	393
151212	Driveway Paving Multi-year initiative - South West	391
150138	Cable Replacement Project – (BA23-BA24) - Cook St and Steel St, Barrie	389
150920	Fleet East Vehicle addition - Van pool van	387
150831	Fleet_West_Vehicle Replacement_SUVs_1-268,1-226,1-227	376
151007	Fleet_West_Vehicle_Replacement_Trailers	367
150608	Station LED Lighting Upgrades - West	359
150356	Voltage Conversion - Clarkson Area, Mississauga	359
150951	Fleet East Vehicle addition - Van pool van	345
150854	Fleet_Central South Vehicle Replacement-Trailers	330
150813	Fleet_Central South Vehicle Replacement-SUV	330
150797	Fleet_Central South Vehicle Replacement- SUV	326
150873	Fleet_Central North Vehicle Replacement_Vans	308
150884	Fleet_Central North Vehicle Replacement Pick up 9514	299
150610	Driveway Paving - Various Stations - Multi-year initiative - Central	290
150609	Driveway Paving - Various Stations - Multi-year initiative - East	290
150612	Driveway Paving - Various Stations - Multi-year initiative - West	290
150870	Fleet_Central North Vehicle Replacement-Van 5910	289
150800	Fleet_Central South Vehicle Replacement- trailer	288
150796	Fleet_Central South Vehicle Replacement- Vans	286
151166	Fleet_ Central North Vehicle Replacement pick ups	245
150812	Fleet_Central South Vehicle Replacement-Vans	240
151167	Fleet_Central South Vehicle Replacement-Pick ups	237
150897	Fleet_ Central North Vehicle Replacement pick ups	234
150421	2D7X Pimlico Dr - Voltage Conversion and Rear Lot	234
150853	Fleet_Central South Vehicle Replacement-Vans	228
151155	Fleet_Central South Vehicle Replacement-Pick ups	227
150843	Fleet_Central South Vehicle Replacement-Bocat	223
150888	Fleet_ Central North Vehicle Replacement SUVs	223
100319	Radial Supply Remediation/Conversion - 13.8 kV to 27.6 kV on Miller Ave	208
150891	Fleet_ Central North Vehicle Replacement Car	208
151145	Cable Replacement Project - Bough Beeches Blvd.	197
150394	King St. Voltage Conversion & Loop (LRT Betterment)	192
150787	Fleet_Central South Vehicle Replacement- Van	183
150944	Fleet_ Central North Vehicle Replacement_Trailer	182

150512	Installation of SWI Video security system at 4 MS stations per year - Annual Multi-year initiative-CENTRAL	164
150511	Installation of SWI Video security system at 4 MS stations per year - Annual Multi-year initiative-WEST	164
150519	Upgrade to Station Facilities (Building / Civil work) MultiYear - East	156
151245	Capacitor Bank Installations	135
150235	Greenwood Expansion Station Service Supply Backup	130
150582	Back-end Automation (Orchestration Tool\Setup)	128
151143	Cable Replacement and Transformers Replacement -Project - Shelter Bay Rd. Mississauga	112
150821	Fleet_Central South Vehicle Replacement-Van	111
101487	Add one Additional 27.6 kV Cct on Major Mack Dr and 9th Line	108
150255	Cable Replacement Project - (B23) - Cundles Rd and Janine St, Barrie	99
150464	Fieldworker Upgrade - IT/OT Infrastructure	91
150958	Fleet_West_Vehicle Replacement_Forklift	91
101393	Redundant Fibre Path to Aurora MS#4 Sub-Station	90
151016	Fleet_West_Vehicle_Replacement_Pickups	56
151018	Fleet_West_Vehicle_Replacement_Trailer	50
150747	Net Zero Energy Emissions	35
150878	Bus & Main Breaker Protections Replacement - Jim Yarrow TS	22
151160	Fleet_West_Vehicle Replacement_ Pole Trailer_1-405	15
150547	Business Support	8
151029	Fleet_West_Vehicle_Replacement_Pickups	1

J2.5B

Reference:

To show the presentation deck regarding a meeting held with the Ministry of Energy.

Response:

The PowerPoint presentation is provided as Attachment 1 to this undertaking.

J2.5B

ATTACHMENT 1 – Presentation to Ministry of Energy July 12, 2019

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Discover the possibilities

Meeting with ADM Carolyn Calwell on Alectra's 2020 Electricity Distribution Rates Application

July 12, 2019

Indy Butany-DeSouza, MBA, VP Regulatory Affairs
Natalie Yeates, Director, Regulatory Affairs and Reporting

Overview: A New Approach to Post-Merger Rate-Setting

- In its 2020 Electricity Distribution Rate (“EDR”) application, Alectra Utilities is attempting to address an important issue resulting from its first two years of post-merger rate setting:

The lack of sufficient, stable funding for critical capital investments

- OEB decisions on Alectra Utilities’ past two rate applications have restricted capital funding, resulting in deteriorating customer reliability and increasing constraints on our ability to connect customers
- Alectra Utilities’ 2020 rate application proposes a new approach to capital funding, without which Alectra Utilities will not be able to meet customer needs and priorities (as assessed through extensive customer engagement)
- This approach is also consistent with the government’s Red Tape Reduction and OEB Modernization goals: our five year capital funding application results in cost savings and rate certainty for customers (detailed on slide 7)

Failure of wood pole on October 15, 2017

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Background: OEB MAADs Policy

- The Alectra merger transaction and related business case were carried out in the context of stated government policies and based on specific OEB policies and guidelines

- Shareholders relied on two elements of OEB policy in particular:

    1. The availability of a rebasing deferral period of ten years, during which the economic consequences of the transaction (good and bad) are for the account of shareholders
    2. A mechanism for adjusting rates to reflect incremental capital investments during the rebasing deferral period

- These policies gave consolidating LDCs a system to fund necessary capital investments, while maintaining a rebasing deferral period that would be long enough to allow utilities to recover transition and transaction costs

- Consolidation is not economically viable without these policies, the interpretation of which must be consistent and predictable

Together, these policies were, and remain, critical to the utility's financial viability and its ability to serve its customers in the years following the merger

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Outcomes of Recent EDR Applications

- The OEB's implementation of those policies in Alectra's 2018 and 2019 EDR applications has fallen short of expectations

- In 2017, Alectra Utilities filed its first EDR application (for 2018 rates), which included incremental capital funding ("Incremental Capital Mechanism" or "ICM") for the Brampton, Enersource and PowerStream rate zones. In its decision, the OEB imposed greater restrictions on capital funding and also effectively changed the way that post-merger accounting policy changes would be treated

- Separate from the decision, the OEB has developed new requirements that imposed costs on the utility. The collective impact of these factors is significant:

Impact of Decisions & Policy Changes	2018	2019	2020	2021	2022	Total	2023
Total ICM Impact	$ (2.1)	$ (3.4)	$ (7.3)	$ (9.8)	$ (11.3)	$ (33.9)	N/A
Accounting Policy Impact	$ (0.8)	$ (2.3)	$ (4.5)	$ (4.2)	$ (3.8)	$ (15.6)	N/A
Total Rate Decision Impact	$ (2.9)	$ (5.7)	$ (11.8)	$ (14.0)	$ (15.1)	$ (49.5)	N/A
Customer Service Rules Impact	$ (3.2)	$ (3.2)	$ (3.2)	$ (3.2)	$ (3.2)	$ (16.0)	$ (3.2)
Total Impact	$ (6.1)	$ (8.9)	$ (15.0)	$ (17.2)	$ (18.3)	$ (65.5)	N/A

Disconnect Between Planning and Funding for Capital Investment

- The OEB's policies have, until now, been limited to addressing incremental capital requirements on **a year by year basis** (as part of IR applications)
- However, in the post-MAADs period, Alectra is required to file **a five year Distribution System Plan** ("DSP") which includes its five year capital requirements
- It is therefore reasonable to conclude that the OEB should fund incremental capital investments on the basis of the DSP that it requires of LDCs

<u>There is a disconnect between:</u>

1. The detailed work undertaken by Alectra to plan our capital investments, including:
   - Preparing and filing a DSP, which sets out the capital program for five years and the funding that is required to support it;
   - Ensuring customer engagement and support for the capital program, including integrating customer priorities and preferences; and
2. Being able to concurrently file for (and receive) the financial support for that capital program for the next five years for a consolidated distributor on a rebasing deferral

Alectra recognizes that MAADs policy is a work in progress; this rate application is a good opportunity to address an identified misalignment and to enhance policy

Alectra's Proposal: A New Capital Funding Rate Rider

- Alectra is proposing a new approach to capital funding during the rebasing deferral period: a capital funding rate rider for each of the five years covered by our DSP (2020-2024), across all of our rate zones.
- Although Alectra is the first distributor that consolidated under the terms of the 2015 OEB MAADs policy to file a DSP, our proposal falls within existing rules and codes
- Alectra will demonstrate that ensuring capital funding is available to fund all of the work required for the 2020-2024 period is critical to meeting customers' needs and expectations over the next five years
- Alectra's proposed model is consistent with the government's Bill 87 goals, and would go a long way to reducing red tape in the energy sector

Alectra's Proposal: A New Capital Funding Rate Rider

- This process, if approved, could be used as a model for Ontario's other consolidating utilities, with associated savings extended to all their customers

	Current Process, per Application	Proposed Process per Application
Time to Adjudicate	10-12 months	6-8 months
Intervenor Time	500-700 hours	200-300 hours
Pages	2000-3000 pages	900-1100 pages
Intervenor Costs	$175K-$250K	$70K-100K
Legal & Consultant Costs	$500K-$1.00M	<$100K
Total Costs	$675K-$1.25M	$70K-$200K
Regulatory costs 2021-2024	**$2.7M-$5.0M**	**$280K-$800K**

- The proposed process, which results in significant cost savings for customers, is contingent on the five years of capital funding in the 2020 EDR Application being approved
- Total potential savings over five years of **$2.42M-$4.2M**

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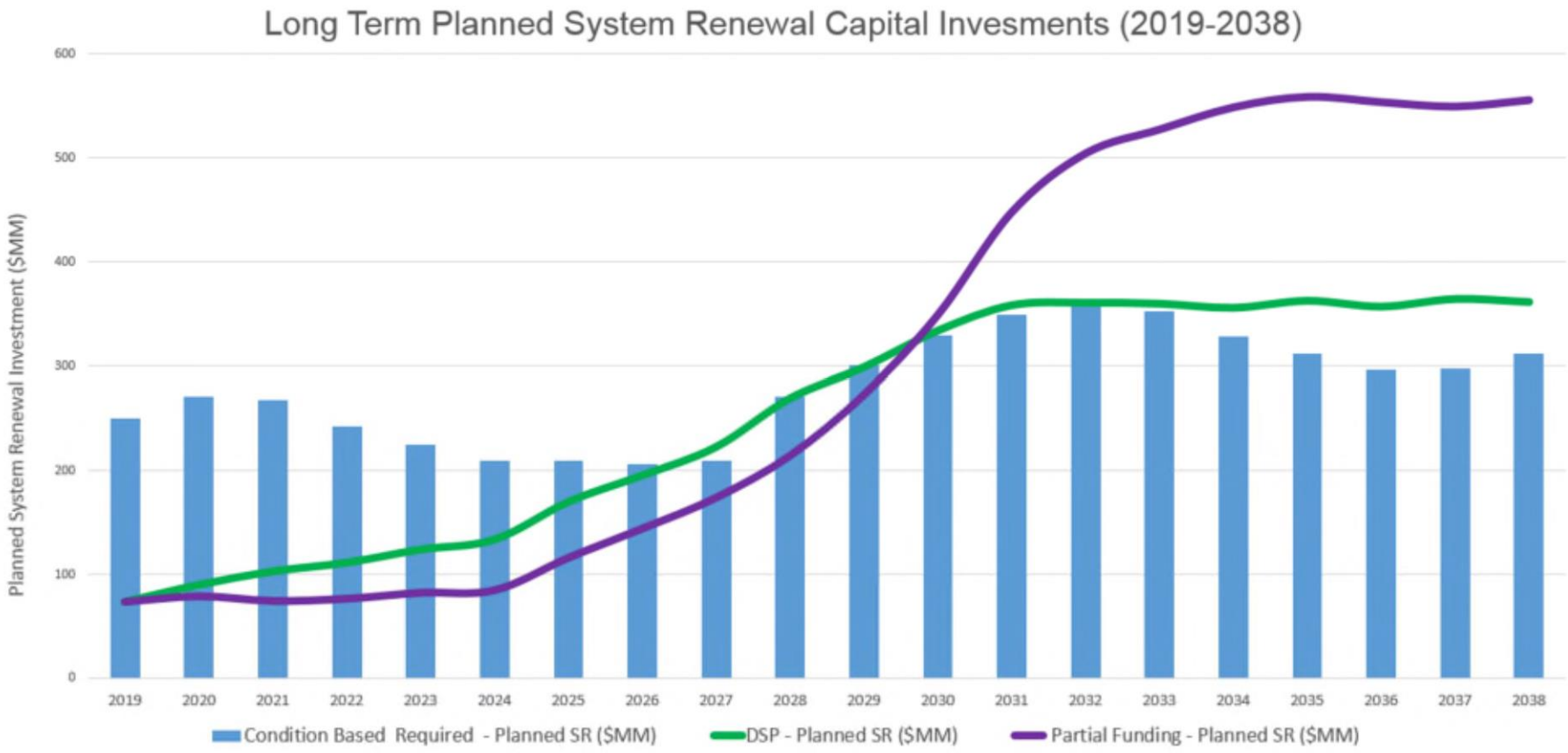
Customer Bill Impact

- The addition the proposed capital funding rate riders from 2020 to 2024 would have fairly limited impact on customers' bills
- Average annual impact of the rate rider over the five-year period depends on rate zone
  - Residential customers: 0.09% to 0.28% total bill increase
    - Mississauga: $0.19 increase per month
    - Brampton: $0.18 increase per month
    - Hamilton & St. Catharines: $0.20 increase per month
    - York and Simcoe: $0.30 increase per month
    - Guelph: $0.10 increase per month
  - Small business (General Service <50kW): 0.06%-0.23% total bill increase
  - Large use: 0.01%-0.06% total bill increase

2020-2024 Distribution System Plan (DSP) Consequences

Failing to invest at the level set out in this DSP will have serious, long-term negative consequences for Alectra Utilities and for the service quality experienced by its customers.

Finalized DSP



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Potential Implications of Continued Unpredictable Regulation

Impact on Alectra

- Deferral of specific capital investments across our service territory
- Reductions in service reliability and potential safety hazards from deteriorating equipment
- Revenue uncertainty and budget pressure on our municipalities, who count on funds to offset property taxes and provide programs and services to residents

Impact on sector

- OEB decision on Alectra's 2018 EDR application sent a negative signal to the utility sector
- If consolidation does not result in both recovery of transaction cost/shareholder incentives (via rebasing deferral) and allowance for necessary capital investments, outlook for further M&A activity is poor
- Utilities must be confident that:
  - the 10 year rebasing deferral period is real, and
  - adequate incremental capital funding will be available
- Customer savings that are a key part of the consolidation business case will not be realized

J2.6

Reference:

With reference to G-Staff-4 and CCC-9, to map the projects to the list of projects provided in the interrogatories; to identify the ones included in base that are not part of the M-factor list.

Response:

Alectra Utilities' planned Distributed Energy Resource ("DER") related capital investments that are included in the Distribution System Plan ("DSP") and proposed for funding through or base rates or the M-factor mechanism are provided in Table 1, below.

Table 1 – Planned DER-related Capital Investments in DSP

Project Code	Project Name	$MM	Funding
150679	Alectra Drive for Workplace	0.8	M-factor
150680	Alectra Drive at Home	2.7	M-factor
150693	Blockchain (Smart DER Platform)	2.4	M-factor
150747	Net Zero Energy Emissions (DER Control Platform)	1.6	M-factor
150694	Cityview Microgrid Enhancement	0.1	M-factor
150332	Residential Solar Storage (Non-Wires Alternative Pilot)	4.0	M-factor
150681	Data Analytics	0.7	Base
	Total	**12.4**	

J2.7

Reference:

To provide the transcript reference to Mr. Shepherd's remarks on costs.

Response:

The reference is included in the Technical Conference Transcript, Day 2, line 22, p.21. An extract of the reference is provided, below.

MR. BASILIO: We don't have a specific plan to bring them below inflation.

MR. SHEPHERD: Thank you.

MR. BASILIO: We do have plans, though, to operate our utility as cost-efficiently and effectively as possible, while providing a high level of our service to our customers. Those are the objectives at the end of the day.

MR. SHEPHERD: No. From the customer's point of view, actually, it is to keep their rates down.

MR. BASILIO: I think it is also, though, Mr. Shepherd, to ensure a high level of customer service and reliability, and I think that is what we have seen in our evidence with respect to our customer consultations, including support for some of these incremental investments that support reliability.

MR. SHEPHERD: Well, my clients don't. Thank you.

J3.1

Reference:

To provide a calculation of the impact on the threshold calculation using the five-year historical average.

Response:

OEB Staff submitted a compendium on October 17, 2019, which included at Tab 2, Historical OEB-issued Input Price Indices ("IPI") for Inflation for Price Cap rate adjustments. OEB Staff calculated a compound average growth rate of IPIs from 2007 to 2019 of 1.74%.

Alectra Utilities submits that the use of a five-year historical average growth rate of 1.66% is consistent with the presentation of five years of historical information in a Distribution System Plan ("DSP"). As provided in the OEB's *Filing Requirements for Electricity Distribution Rate Applications – Chapter 5 Consolidated Distribution System Plan Filing Requirements* (the "Chapter 5 Filing Requirements"), the *"DSP's duration is a minimum of ten years in total, comprising of an historical period and a forecast period. The historical period is the first five years of the DSP duration, consisting of five historical years, ending with the Bridge year. The forecast period is the last five years of the DSP duration, consisting of five forecast years, beginning with the Test year."* Alectra Utilities' calculation of the five-year historical average is provided in Attachment 1.

The impact to the threshold calculation using a five-year historical average is provided in Table 1, below. The threshold calculation was also updated for changes to the Guelph RZ, Horizon Utilities RZ and PowerStream RZ ICM Models as identified in response to J2.1 and J3.2. A summary of the threshold calculation is provided in Attachment 2.

Table 1 – Impact of Inflation Factors on the Threshold Calculation ($000s)

				12-year IPI	*5-year IPI*
Eligible Incremental Capital	**As Filed Infl. of 1.5%**	**G-Staff-8 Infl. of 1.5%**	**J2.1 and J3.2 Infl. of 1.5%**	**J2.1 and J3.2 Infl. of 1.74%**	**J2.1 and J3.2 Infl. of 1.66%**
2020 - 2024 DSP Capital Forecast	$1,456.5	$1,456.5	$1,456.5	$1,456.5	$1,456.5
Less: Materiality Threshold	$1,182.2	$1,182.0	$1,058.4	$1,100.1	$1,086.1
Maximum M-factor Eligible Capital	**$274.3**	**$274.4**	**$398.1**	**$356.4**	**$370.4**
M-factor Proposed Capital	**$265.0**	**$265.0**	**$265.0**	**$265.0**	**$265.0**
Difference	*($9.3)*	*($9.5)*	*($133.2)*	*($91.4)*	*($105.4)*

As identified in Table 1, above, the materiality threshold based on an inflation factor of 1.5% is $1,058.4MM. The threshold value based on an inflation factor of 1.74% as calculated by OEB Staff, is $1,100.1MM. OEB Staff's inflation factor is a compound average growth rate over the 2007 to 2019 period. Alectra Utilities submits that it is not appropriate to use data over a 12-year period which included an economic recession and subsequent recovery. Further the calculation of the inflation factor has evolved over this period from a 1-Factor IPI to a 2-Factor IPI beginning in 2014. Alectra Utilities submits that the use of a five-year historical average (2015 to 2019) of 1.66% is consistent with the DSP fling requirements and results in a threshold value of $1,086.1MM. The maximum eligible capital based on an inflation factor of 1.66% is $370.4MM; Alectra Utilities submits that its proposed M-factor projects of $265MM is still within the maximum eligible capital and does not propose any changes to the amount of capital relief sought. Alectra Utilities proposes to update the threshold calculation to include an inflation factor of 1.66%.

J3.1

ATTACHMENT 1 – Historical IPI - Exhibit

Historical OEB-issued Input Price Indices (IPIs) for Inflation for Price Cap rate adjustments

	Year		GDP-IPI			2-Factor IPI	Index (Cumulative IPI Inflation since 2006)	Source (includes hyperlink)
			01-Jan	01-May	Average	01-Jan		
4th Generation IRM	2019	2019 EDR				1.50%	125.2	2019 EDR > Updates
	2018	2018 EDR				1.20%	123.3	2018 EDR > Updates
	2017	2017 EDR				1.90%	121.9	2017 EDR > Updates
	2016	2016 EDR				2.10%	119.6	2016 EDR > Updates
	2015	2015 EDR				1.60%	117.1	2015 EDR > Updates
	2014	2014 EDR				1.70%	115.3	EB-2010-0379, Report of the Board on Rate Setting Parameters and Benchmarking under the Renewed Regulatory Framework for Ontario's Electricity Distributors, p. 11 and Appendix C, November 21, 2013, corrected December 4, 2013
2nd and 3rd Generation IRM	2013	2013 EDR	2.20%	1.60%	1.90%		113.4	2013 EDR > Updates
	2012	2012 EDR	1.70%	2.00%	1.85%		111.2	2012 EDR > Updates
	2011	2011 EDR		1.30%	1.30%		109.2	2011 EDR > Updates
	2010	2010 EDR		1.30%	1.30%		107.8	2010 EDR > Updates
	2009	2009 EDR		2.30%	2.30%		106.4	2009 EDR > Updates
	2008	2008 EDR		2.10%	2.10%		104.0	2008 EDR > Updates
	2007	2007 EDR		1.90%	1.90%		101.9	2007 EDR > Updates
2006 EDR (COS)	2006		1.80%				100.0	

	CAGR	
5-year	**1.66%**	**Compound Average Growth Rate of IPIs 2014 to 2019**
12-year	**1.74%**	**Compound Average Growth Rate of IPIs 2007 to 2019 (i.e., average annual IPI inflation from 2006 to 2019)**

Notes:

1) For 2nd Generation and 3rd Generation IRM, inflation under Price Cap IR was measured solely by the Implicit Price Index for Gross Domestic Product (Final Domestic Demand) (GDP-IPI)

2) From 2009 to 2010, there was an overlap between 2nd Generation and 3rd Generation IRM, due to staggered CoS rebasing of distribution rates for electricity distributors.

3) For 2012 and 2013, IPIs were issued for both January 1 and May 1, depending on the applied-for Effective Date for rates. As a number of utilities applied under both tranches, the January 1 and May 1 IPIs have been averaged as an approximate annual IPI for that year.

4) 4th Generation IRM is for 2014 and going forward. One IPI is announced by the OEB for rates effective on January 1 or later in the calendar year. A 2-factor IPI, which is a weighted average of labour (30%, measured by the annual percentage change in Average Weekly Earnings - Ontario - All Businesses except Unclassified, including Overtime) and non-labour (70%, GDP-IPI)

5) The Index starts at 100 in 2006. Each year's index value is measured by inflating the previous year's index value by the current year's IPI. The index thus shows the cumulative, multiplicative impact of IPI adjustments since 2006.

6) The growth rate is the geometric mean or compound growth rate from 2006 to 2019, similar to a compound average growth rate reported for bank interest rates or for growth in mutual fund values.

J3.1

ATTACHMENT 2 – Threshold Capital Expenditure Calculation Summary

Alectra 2020 EDR Application
Threshold Calculation for M-factor

Description	ERZ	BRZ	GRZ	PRZ	HRZ	ALECTRA
Inflation	1.66%	1.66%	1.66%	1.66%	1.66%	1.66%
Less: Productivity Factor	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Less: Stretch Factor	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%
Price Cap Index	1.36%	1.36%	1.36%	1.36%	1.36%	1.36%
Growth Factor	-0.06%	1.84%	-0.19%	0.89%	2.93%	
Rebasing Year	2013	2015	2016	2017	2019	
# Years since rebasing	7	5	4	3	1	
Price Cap Index	1.36%	1.36%	1.36%	1.36%	1.36%	
Growth Factor	-0.06%	1.84%	-0.19%	0.89%	2.93%	
Dead Band	10%	10%	10%	10%	10%	
Rate Base	$610,456,833	$404,618,521	$151,391,730	$1,082,805,165	$555,697,950	$2,804,970,200
Depreciation	$28,721,695	$15,227,319	$6,295,624	$52,272,173	$22,664,822	$125,181,633
Threshold CAPEX						
Threshold Capital Expenditure 2020	**$40,181,548**	**$31,586,347**	**$8,747,814**	**$83,061,342**	**$49,018,573**	$212,595,624
Threshold Capital Expenditure 2021	**$40,293,337**	**$32,065,416**	**$8,769,009**	**$83,638,435**	**$50,062,659**	$214,828,856
Threshold Capital Expenditure 2022	**$40,406,580**	**$32,559,954**	**$8,790,450**	**$84,228,558**	**$51,152,003**	$217,137,544
Threshold Capital Expenditure 2023	**$40,521,297**	**$33,070,460**	**$8,812,141**	**$84,832,003**	**$52,288,564**	$219,524,466
Threshold Capital Expenditure 2024	**$40,637,508**	**$33,597,451**	**$8,834,084**	**$85,449,071**	**$53,474,391**	$221,992,506
Threshold Capital Expenditure 2020-2024	**$202,040,271**	**$162,879,628**	**$43,953,499**	**$421,209,409**	**$255,996,191**	**$1,086,078,996**

				12-year IPI	*5-year IPI*
Eligible Incremental Capital	**As Filed Infl. of 1.5%**	**G-Staff-8 Infl. of 1.5%**	**J2.1 and J3.2 Infl. of 1.5%**	**J2.1 and J3.2 Infl. of 1.74%**	**J2.1 and J3.2 Infl. of 1.66%**
2020 - 2024 DSP Capital Forecast	$1,456.5	$1,456.5	$1,456.5	$1,456.5	$1,456.5
Less: Materiality Threshold	$1,182.2	$1,182.0	$1,058.4	$1,100.1	$1,086.1
Maximum M-factor Eligible Capital	**$274.3**	**$274.4**	**$398.1**	**$356.4**	**$370.4**
M-factor Proposed Capital	**$265.0**	**$265.0**	**$265.0**	**$265.0**	**$265.0**
Difference	*($9.3)*	*($9.5)*	*($133.2)*	*($91.4)*	*($105.4)*

Ontario Energy Board

Capital Module
Applicable to ACM and ICM
Alectra Utilities Corporation - Enersource RZ

No Input Required.

Final Threshold Calculation

$$\textbf{Threshold Value}\ (\%) = 1 + \left[\left(\frac{RB}{d}\right) \times (g + PCI \times (1+g))\right] \times \left((1+g) \times (1+PCI)\right)^{n-1} + 10\%$$

Cost of Service Rebasing Year		**2013**	
Price Cap IR Year in which Application is made		**7**	n
Price Cap Index		**1.36%**	PCI
Growth Factor Calculation			
Revenues Based on 2018 Actual Distribution Demand		**$132,802,853**	
Revenues Based on 2013 Board-Approved Distribution Demand		**$133,185,702**	
Growth Factor		**-0.06%**	g $(Note\ 1)$
Dead Band		**10%**	
Average Net Fixed Assets			
Gross Fixed Assets Opening	$	541,300,088	
Add: CWIP Opening	$	4,371,726	
Capital Additions	$	46,257,875	
Capital Disposals	-$	1,026,755	
Capital Retirements	$	-	
Deduct: CWIP Closing	-$	4,371,726	
Gross Fixed Assets - Closing	$	586,531,208	
Average Gross Fixed Assets	$	563,915,648	
Accumulated Depreciation - Opening	$	45,750,490	
Depreciation Expense	$	28,721,695	
Disposals	$	-	
Retirements	-$	1,026,755	
Accumulated Depreciation - Closing	$	73,445,430	
Average Accumulated Depreciation	$	59,597,960	
Average Net Fixed Assets	$	504,317,688	
Working Capital Allowance			
Working Capital Allowance Base	$	786,215,891	
Working Capital Allowance Rate		13.5%	
Working Capital Allowance	$	106,139,145	
Rate Base	**$**	**610,456,833**	RB
Depreciation	**$**	**28,721,695**	d

Threshold Value (varies by Price Cap IR Year subsequent to CoS rebasing)

Price Cap IR Year 2014	**137.7%**	
Price Cap IR Year 2015	**138.0%**	
Price Cap IR Year 2016	**138.4%**	
Price Cap IR Year 2017	**138.8%**	
Price Cap IR Year 2018	**139.1%**	
Price Cap IR Year 2019	**139.5%**	
Price Cap IR Year 2020	**139.9%**	
Price Cap IR Year 2021	**140.3%**	$Threshold\ Value \times d$
Price Cap IR Year 2022	**140.7%**	
Price Cap IR Year 2023	**141.1%**	
Price Cap IR Year 2024	**141.5%**	

Threshold CAPEX

Price Cap IR Year 2014	**$**	**39,540,347**
Price Cap IR Year 2015	**$**	**39,643,789**
Price Cap IR Year 2016	**$**	**39,748,577**
Price Cap IR Year 2017	**$**	**39,854,729**
Price Cap IR Year 2018	**$**	**39,962,263**
Price Cap IR Year 2019	**$**	**40,071,197**
Price Cap IR Year 2020	**$**	**40,181,548**
Price Cap IR Year 2021	**$**	**40,293,337**
Price Cap IR Year 2022	**$**	**40,406,580**
Price Cap IR Year 2023	**$**	**40,521,297**
Price Cap IR Year 2024	**$**	**40,637,508**

Ontario Energy Board

Capital Module
Applicable to ACM and ICM
Alectra Utilities Corporation - Brampton RZ

No Input Required.

Final Threshold Calculation

$$\textbf{Threshold Value}\ (\%) = \mathbf{1} + \left[\left(\frac{\boldsymbol{RB}}{\boldsymbol{d}}\right) \times (\boldsymbol{g} + \boldsymbol{PCI} \times (\mathbf{1} + \boldsymbol{g}))\right] \times \left((\mathbf{1} + \boldsymbol{g}) \times (\mathbf{1} + \boldsymbol{PCI})\right)^{n-1} + \mathbf{10}\%$$

Cost of Service Rebasing Year		**2015**	
Price Cap IR Year in which Application is made		**5**	n
Price Cap Index		**1.36%**	PCI
Growth Factor Calculation			
Revenues Based on 2018 Actual Distribution Demand		**$77,519,160**	
Revenues Based on 2015 Board-Approved Distributio		**$73,455,693**	
Growth Factor		**1.84%**	g $(Note\ 1)$
Dead Band		**10%**	
Average Net Fixed Assets			
Gross Fixed Assets Opening	$	627,821,483	
Add: CWIP Opening	$	-	
Capital Additions	$	32,518,047	
Capital Disposals	-$	2,963,781	
Capital Retirements	$	-	
Deduct: CWIP Closing	$	-	
Gross Fixed Assets - Closing	$	657,375,749	
Average Gross Fixed Assets	$	642,598,616	
Accumulated Depreciation - Opening	$	295,604,516	
Depreciation Expense	$	15,227,319	
Disposals	-$	2,191,181	
Retirements	$	-	
Accumulated Depreciation - Closing	$	308,640,654	
Average Accumulated Depreciation	$	302,122,585	
Average Net Fixed Assets	$	340,476,031	
Working Capital Allowance			
Working Capital Allowance Base	$	493,403,770	
Working Capital Allowance Rate		13.0%	
Working Capital Allowance	$	64,142,490	
Rate Base	**$**	**404,618,521**	RB
Depreciation	**$**	**15,227,319**	d

Threshold Value (varies by Price Cap IR Year subsequent to CoS rebasing)

Price Cap IR Year 2016	**195.8%**	
Price Cap IR Year 2017	**198.6%**	
Price Cap IR Year 2018	**201.4%**	
Price Cap IR Year 2019	**204.4%**	
Price Cap IR Year 2020	**207.4%**	
Price Cap IR Year 2021	**210.6%**	
Price Cap IR Year 2022	**213.8%**	
Price Cap IR Year 2023	**217.2%**	$Threshold\ Value\ \times d$
Price Cap IR Year 2024	**220.6%**	

Threshold CAPEX

Price Cap IR Year 2016	**$**	**29,815,311**
Price Cap IR Year 2017	**$**	**30,237,193**
Price Cap IR Year 2018	**$**	**30,672,697**
Price Cap IR Year 2019	**$**	**31,122,264**
Price Cap IR Year 2020	**$**	**31,586,347**
Price Cap IR Year 2021	**$**	**32,065,416**
Price Cap IR Year 2022	**$**	**32,559,954**
Price Cap IR Year 2023	**$**	**33,070,460**
Price Cap IR Year 2024	**$**	**33,597,451**

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Alectra Utilities Corporation - Guelph RZ

No Input Required.

Final Threshold Calculation

$$\textbf{Threshold Value}\ (\%) = 1 + \left[\left(\frac{RB}{d}\right) \times (g + PCI \times (1 + g))\right] \times \left((1 + g) \times (1 + PCI)\right)^{n-1} + 10\%$$

Cost of Service Rebasing Year		**2016**	
Price Cap IR Year in which Application is made		**4**	n
Price Cap Index		**1.36%**	PCI
Growth Factor Calculation			
Revenues Based on 2018 Actual Distribution Demand		**$30,566,888**	
Revenues Based on 2016 Board-Approved Distribution Demand		**$30,686,246**	
Growth Factor		**-0.19%**	$g\ (Note\ 1)$
Dead Band		**10%**	
Average Net Fixed Assets			
Gross Fixed Assets Opening	$	163,625,735	
Add: CWIP Opening	$	-	
Capital Additions	$	11,363,000	
Capital Disposals	$	-	
Capital Retirements	$	-	
Deduct: CWIP Closing	$	-	
Gross Fixed Assets - Closing	$	174,988,735	
Average Gross Fixed Assets	$	169,307,235	
Accumulated Depreciation - Opening	$	32,529,814	
Depreciation Expense	$	6,295,624	
Disposals	$	-	
Retirements	$	-	
Accumulated Depreciation - Closing	$	38,825,438	
Average Accumulated Depreciation	$	35,677,626	
Average Net Fixed Assets	$	133,629,609	
Working Capital Allowance			
Working Capital Allowance Base	$	236,828,275	
Working Capital Allowance Rate		7.5%	
Working Capital Allowance	$	17,762,121	
Rate Base	**$**	**151,391,730**	RB
Depreciation	**$**	**6,295,624**	d

Threshold Value (varies by Price Cap IR Year subsequent to CoS rebasing)

Price Cap IR Year 2017	**138.0%**	
Price Cap IR Year 2018	**138.3%**	
Price Cap IR Year 2019	**138.6%**	
Price Cap IR Year 2020	**139.0%**	
Price Cap IR Year 2021	**139.3%**	
Price Cap IR Year 2022	**139.6%**	
Price Cap IR Year 2023	**140.0%**	
Price Cap IR Year 2024	**140.3%**	$Threshold\ Value\ \times d$

Threshold CAPEX

Price Cap IR Year 2017	**$**	**8,685,680**
Price Cap IR Year 2018	**$**	**8,706,153**
Price Cap IR Year 2019	**$**	**8,726,863**
Price Cap IR Year 2020	**$**	**8,747,814**
Price Cap IR Year 2021	**$**	**8,769,009**
Price Cap IR Year 2022	**$**	**8,790,450**
Price Cap IR Year 2023	**$**	**8,812,141**
Price Cap IR Year 2024	**$**	**8,834,084**

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Alectra Utilities Corporation - PowerStream RZ

No Input Required.

Final Threshold Calculation

$$\textbf{\textit{Threshold Value}}\ (\%) = \mathbf{1} + \left[\left(\frac{\boldsymbol{RB}}{\boldsymbol{d}}\right) \times (\boldsymbol{g} + \boldsymbol{PCI} \times (\mathbf{1} + \boldsymbol{g}))\right] \times \left((\mathbf{1} + \boldsymbol{g}) \times (\mathbf{1} + \boldsymbol{PCI})\right)^{n-1} + \mathbf{10}\%$$

Cost of Service Rebasing Year		**2017**	
Price Cap IR Year in which Application is made		**3**	n
Price Cap Index		**1.36%**	PCI
Growth Factor Calculation			
Revenues Based on 2018 Actual Distribution Demand		**$208,214,383**	
Revenues Based on 2017 Board-Approved Distribution Demand		**$206,386,657**	
Growth Factor		**0.89%**	g $(Note\ 1)$
Dead Band		**10%**	
Average Net Fixed Assets			
Gross Fixed Assets Opening	$	1,183,508,943	
Add: CWIP Opening	$	57,486,862	
Capital Additions	$	114,494,289	
Capital Disposals	-$	2,734,108	
Capital Retirements	$	-	
Deduct: CWIP Closing	-$	39,959,632	
Gross Fixed Assets - Closing	$	1,312,796,354	
Average Gross Fixed Assets	$	1,248,152,649	
Accumulated Depreciation - Opening	$	229,378,962	
Depreciation Expense	$	52,272,173	
Disposals	-$	717,703	
Retirements	$	-	
Accumulated Depreciation - Closing	$	280,933,432	
Average Accumulated Depreciation	$	255,156,197	
Average Net Fixed Assets	$	992,996,452	
Working Capital Allowance			
Working Capital Allowance Base	$	1,197,449,515	
Working Capital Allowance Rate		7.5%	
Working Capital Allowance	$	89,808,714	
Rate Base	**$**	**1,082,805,165**	RB
Depreciation	**$**	**52,272,173**	d

Threshold Value (varies by Price Cap IR Year subsequent to CoS rebasing)

Price Cap IR Year 2018	**156.8%**	
Price Cap IR Year 2019	**157.8%**	
Price Cap IR Year 2020	**158.9%**	
Price Cap IR Year 2021	**160.0%**	
Price Cap IR Year 2022	**161.1%**	
Price Cap IR Year 2023	**162.3%**	
Price Cap IR Year 2024	**163.5%**	

$Threshold\ Value\ \times d$

Threshold CAPEX

Price Cap IR Year 2018	**$**	**81,945,096**
Price Cap IR Year 2019	**$**	**82,496,989**
Price Cap IR Year 2020	**$**	**83,061,342**
Price Cap IR Year 2021	**$**	**83,638,435**
Price Cap IR Year 2022	**$**	**84,228,558**
Price Cap IR Year 2023	**$**	**84,832,003**
Price Cap IR Year 2024	**$**	**85,449,071**

Ontario Energy Board

Capital Module
Applicable to ACM and ICM
Alectra Utilities Corporation - Horizon RZ

No Input Required.

Final Threshold Calculation

$$\textbf{Threshold Value}\ (\%) = 1 + \left[\left(\frac{RB}{d}\right) \times (g + PCI \times (1+g))\right] \times \left((1+g) \times (1+PCI)\right)^{n-1} + 10\%$$

Cost of Service Rebasing Year		**2019**	
Price Cap IR Year in which Application is made		**1**	n
Price Cap Index		**1.36%**	PCI
Growth Factor Calculation			
Revenues Based on 2019 Board-Approved Distribution Demand		**$118,939,797**	
Revenues Based on 2018 Actual Distribution Demand		**$115,548,803**	
Growth Factor		**2.93%**	$g\ (Note\ 1)$
Dead Band		**10%**	
Average Net Fixed Assets			
Gross Fixed Assets Opening	$	625,929,889	
Add: CWIP Opening	$	3,164,006	
Capital Additions	$	49,472,477	
Capital Disposals	-$	4,597,818	
Capital Retirements	$	-	
Deduct: CWIP Closing	-$	3,164,006	
Gross Fixed Assets - Closing	$	670,804,548	
Average Gross Fixed Assets	$	648,367,219	
Accumulated Depreciation - Opening	$	161,031,595	
Depreciation Expense	$	22,664,822	
Disposals	-$	1,426,748	
Retirements	$	-	
Accumulated Depreciation - Closing	$	182,269,669	
Average Accumulated Depreciation	$	171,650,632	
Average Net Fixed Assets	$	476,716,587	
Working Capital Allowance			
Working Capital Allowance Base	$	658,178,026	
Working Capital Allowance Rate		12.0%	
Working Capital Allowance	$	78,981,363	
Rate Base	**$**	**555,697,950**	RB
Depreciation	**$**	**22,664,822**	d

Threshold Value (varies by Price Cap IR Year subsequent to CoS rebasing)

		$Threshold\ Value \times d$
Price Cap IR Year 2020	**216.3%**	**$ 49,018,573**
Price Cap IR Year 2021	**220.9%**	**$ 50,062,659**
Price Cap IR Year 2022	**225.7%**	**$ 51,152,003**
Price Cap IR Year 2023	**230.7%**	**$ 52,288,564**
Price Cap IR Year 2024	**235.9%**	**$ 53,474,391**

Threshold CAPEX

J3.2

Reference:

To redo Tables 1 and 2 with the accurate number.

Response:

Alectra Utilities has updated Tab 5 Revenue Requirement Check, in the ICM Model for the Horizon Utilities RZ to correct the values presented for gross fixed assets – re-based opening, re-based capital additions, accumulated depreciation – re-based opening and re-based depreciation expense as approved in Horizon Utilities' Settlement Agreement. The 2018 Billing Determinants for some classes were also updated in Tab 6 of the ICM Model to ensure the inputs reconciled to the 2018 billing determinants in Horizon Utilities' 2020 Rate Generator Model. The updated ICM Model for the Horizon Utilities RZ is provided as Attachment 1. Alectra Utilities also identified that Tab 6 in the ICM for the PowerStream Rate Zone included 2016 actual billing determinants instead of 2017 Board-approved billing determinants. The updated ICM Model for the PowerStream RZ is provided as Attachment 2.

Alectra Utilities has also updated Tables 1 and 2 prepared by OEB Staff which includes the in-service additions approved in each legacy utilities' last rebasing application. Tables 1a and 2a reflect the updated re-based additions number for the Horizon Utilities RZ. A comparison of Tables 1 and 2 before and after the update is presented below. These tables are also provided as Attachment 3.

Although Alectra Utilities has updated OEB Staff's table, as identified at the Oral Hearing (Transcript Volume 3, October 18, 2019, p.127), this information does not represent the level of capital funding included in base rates. Depreciation, additional revenue from growth and PCI increases are a utility's means to fund capital additions between test years. The OEB's materiality threshold calculation is the most appropriate method of determining the level of capital funded in base rates as it considers each of the above factors – depreciation, growth and PCI increases. The materiality threshold formula assumes that a distributor will shoulder funding above and beyond depreciation, determined by the relationship between depreciation and rate base, compounded by growth and IPI, and, an additional 10% dead band. Effectively the

threshold formula calculates the amount funded in rates, plus an amount that a utility should absorb, before seeking additional funding though rate relief.

The OEB's approach to calculating the materiality threshold is also aligned with established ratemaking principles. That approach was considered and refined in the OEB's January 22, 2016 *Report of the OEB on New Policy Options for the Funding of Capital Investments: Supplemental Report* (EB-2014-0219). There, the OEB altered the materiality threshold formula by adding elements that reflect the cumulative impact of growth and price cap adjustments over time. The OEB recognized that the materiality threshold needed to change over time during incentive rate terms, and during the period between rebasing applications for consolidated utilities.

The update to the in-service additions in Table 1 results in a difference of $9,382 compared to the difference previously calculated by OEB Staff; the update to Table 2 results in a difference of $10,283 compared to the difference previously calculated by OEB Staff.

Table 1 - Last Rebasing Forecasted In-service Additions of Alectra Utilities' Predecessor LDCs Adjusted for Inflation ($000s)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Inflation - 0.3%		1.40%	1.30%	1.80%	1.60%	0.90%	1.20%	1.40%	1.40%	1.40%	1.40%	1.40%
Horizon							51,272	51,990	52,718	53,456	54,204	54,963
HOBNI			32,518	33,103	33,633	33,936	34,343	34,824	35,311	35,806	36,307	36,815
PowerStream					114,494	115,524	116,911	118,547	120,207	121,890	123,597	125,327
Enersource	46,258	46,906	47,515	48,371	49,145	49,587	50,182	50,884	51,597	52,319	53,052	53,794
Guelph				11,363	11,545	11,649	11,788	11,954	12,121	12,291	12,463	12,637
Total							264,496	268,199	271,954	275,761	279,622	283,537

2020-2024 Total: 1,379,072
Alectra 2020-2024 DSP Capital Forecast per Application: 1,456,500

Difference: -77,428

Table 1a - Last Rebasing Forecasted In-service Additions of Alectra Utilities' Predecessor LDCs Adjusted for Inflation [Alectra Update] ($000s)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Inflation - 0.3%		1.40%	1.30%	1.80%	1.60%	0.90%	1.20%	1.40%	1.40%	1.40%	1.40%	1.40%
Horizon							49,472	50,165	50,867	51,580	52,302	53,034
HOBNI			32,518	33,103	33,633	33,936	34,343	34,824	35,311	35,806	36,307	36,815
PowerStream					114,494	115,524	116,911	118,547	120,207	121,890	123,597	125,327
Enersource	46,258	46,906	47,515	48,371	49,145	49,587	50,182	50,884	51,597	52,319	53,052	53,794
Guelph				11,363	11,545	11,649	11,788	11,954	12,121	12,291	12,463	12,637
Total							262,697	266,374	270,104	273,885	277,719	281,607

2020-2024 Total: 1,369,690
Alectra 2020-2024 DSP Capital Forecast per Application: 1,456,500

Difference: -86,810

Table 2 - Last Rebasing Forecasted In-service Additions of Alectra Utilities' Predecessor LDCs Adjusted for Inflation and Growth ($000s)

	Growth Factors	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Inflation - 0.3%			1.40%	1.30%	1.80%	1.60%	0.90%	1.20%	1.40%	1.40%	1.40%	1.40%	1.40%
Horizon	3.04%							51,272	53,570	55,972	58,481	61,102	63,841
HOBNI	1.84%			32,518	33,712	34,882	35,844	36,941	38,148	39,393	40,680	42,008	43,380
PowerStream	2.31%					114,494	118,193	122,374	126,954	131,705	136,634	141,747	147,052
Enersource	-0.06%	46,258	46,877	47,458	48,284	49,027	49,438	50,002	50,671	51,350	52,037	52,734	53,440
Guelph	1.60%				11,363	11,730	12,024	12,363	12,737	13,122	13,519	13,927	14,348
Total								272,953	282,080	291,542	301,350	311,519	322,062

2020-2024 Total: 1,508,554
Alectra 2020-2024 DSP Capital Forecast per Application: 1,456,500

Difference: 52,054

Table 2a - Last Rebasing Forecasted In-service Additions of Alectra Utilities' Predecessor LDCs Adjusted for Inflation and Growth [Alectra Update] ($000s)

	Growth Factors	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Inflation - 0.3%			1.40%	1.30%	1.80%	1.60%	0.90%	1.20%	1.40%	1.40%	1.40%	1.40%	1.40%
Horizon	3.04%							49,472	51,690	54,007	56,428	58,957	61,600
HOBNI	1.84%			32,518	33,712	34,882	35,844	36,941	38,148	39,393	40,680	42,008	43,380
PowerStream	2.31%					114,494	118,193	122,374	126,954	131,705	136,634	141,747	147,052
Enersource	-0.06%	46,258	46,877	47,458	48,284	49,027	49,438	50,002	50,671	51,350	52,037	52,734	53,440
Guelph	1.60%				11,363	11,730	12,024	12,363	12,737	13,122	13,519	13,927	14,348
Total								271,153	280,200	289,577	299,298	309,375	319,821

2020-2024 Total: 1,498,271
Alectra 2020-2024 DSP Capital Forecast per Application: 1,456,500

Difference: 41,771

The update to the depreciation expense value and 2018 Billing Determinants result in a change to the calculation of the threshold. Table 3 below, summarizes the change to the threshold values over the 2020 to 2024 period based on an inflation factor of 1.5%.

Table 3 – HRZ Threshold Value Summary

Threshold Summary	HRZ As Filed	HRZ J3.2	Change
Threshold Capital Expenditure 2020	**$50.0**	**$48.1**	**($1.9)**
Threshold Capital Expenditure 2021	**$51.1**	**$49.1**	**($2.0)**
Threshold Capital Expenditure 2022	**$52.1**	**$50.1**	**($2.1)**
Threshold Capital Expenditure 2023	**$53.2**	**$51.1**	**($2.1)**
Threshold Capital Expenditure 2024	**$54.4**	**$52.2**	**($2.2)**
Threshold Capital Expenditure 2020-2024	**$260.9**	**$250.6**	**($10.3)**

The update to the billing determinants in Tab 6 of the ICM Model for the PowerStream RZ results in a change to the growth factor and threshold calculation. Table 4 below, summarizes the change to the threshold values over the 2020 to 2024 period based on an inflation factor of 1.5%.

Table 4 – PRZ Threshold Value Summary

Threshold Summary	PRZ As Filed	HRZ J3.2	Change
Threshold Capital Expenditure 2020	**$98.5**	**$81.2**	**($17.4)**
Threshold Capital Expenditure 2021	**$100.0**	**$81.7**	**($18.3)**
Threshold Capital Expenditure 2022	**$101.5**	**$82.2**	**($19.3)**
Threshold Capital Expenditure 2023	**$103.0**	**$82.7**	**($20.4)**
Threshold Capital Expenditure 2024	**$104.7**	**$83.2**	**($21.4)**
Threshold Capital Expenditure 2020-2024	**$507.7**	**$410.9**	**($96.8)**

J3.2

ATTACHMENT 1 – G-Staff-8 2020 ACM ICM Model – HRZ - Revised

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Note: Depending on the selections made below, certain worksheets in this workbook will be hidden.

Version 5.00

Utility Name	Alectra Utilities Corporation-Horizon Utilities Rate Zone
Assigned EB Number	
Name of Contact and Title	
Phone Number	
Email Address	
Is this Capital Module being filed in a CoS or Price-Cap IR Application?	**Price-Cap IR**
Rate Year	**2020**
Indicate the Price-Cap IR Year (1, 2, 3, 4, etc) in which Alectra Utilities Corporation-Horizon Utilities Rate Zone is applying:	**1**
Next OEB Scheduled Rebasing Year	**2027**
Alectra Utilities Corporation-Horizon Utilities Rate Zone is applying for:	**ICM Approval**
Last Rebasing Year:	**2019**
The most recent complete year for which actual billing and load data exists	**2018**
Current IPI	**1.50%**
Strech Factor Assigned to Middle Cohort*	**III**
Stretch Factor Value	**0.30%**
Price Cap Index	**1.20%**

Based on the inputs above, the growth factor utilized in the Materiality Threshold Calculation will be determined by:

Revenues Based on 2019 Board-Approved Distribution Demand

Revenues Based on 2018 Actual Distribution Demand

Notes

Pale green cells represent input cells.

Pale blue cells represent drop-down lists. The applicant should select the appropriate item from the drop-down list.

White cells contain fixed values, automatically generated values or formulae.

While this model has been provided in Excel format and is required to be filed with the applications, the onus remains on the applicant to ensure the accuracy of the data and the results.

**As per ACM/ICM policy, the middle cohort stretch factor is applied to all ACM/ICM applications.*

OEB policies regarding rate-setting and rebasing following distributor consolidations could allow a distributor to not rebase rates for up to ten years. A distributor could also apply for and receive OEB approval to defer rebasing. If a distributor is under Price Cap IR for more than four years after rebasing and applies for an ICM, this spreadsheet will need to be adapted to accommodate those circumstances. The distributor should contact OEB staff to discuss the circumstances so that a customized model can be provided.

Ontario Energy Board

Capital Module

Applicable to ACM and ICM

Alectra Utilities Corporation-Horizon Utilities Rate Zone

Select the appropriate rate classes as they appear on your most recent Board-Approved Tariff of Rates and Charges, excluding the MicroFit Class.

How many classes are on your most recent Board-Approved Tariff of Rates and Charges? **8**

Select Your Rate Classes from the **Blue Cells** below. Please ensure that a rate class is assigned to **each shaded cell.**

	Rate Class Classification
1	RESIDENTIAL
2	GENERAL SERVICE LESS THAN 50 kW
3	GENERAL SERVICE 50 TO 4,999 KW
4	LARGE USE
5	LARGE USE WITH DEDICATED ASSETS
6	UNMETERED SCATTERED LOAD
7	SENTINEL LIGHTING
8	STREET LIGHTING

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Alectra Utilities Corporation-Horizon Utilities Rate Zone

Input the billing determinants associated with Alectra Utilities Corporation-Horizon Utilities Rate Zone's Revenues Based on 2019 Board-Approved Distribution Demand. Input the current approved distribution rates. Sheets 4 & 5 calculate the NUMERATOR portion of the growth factor calculation.

		2019 Board-Approved Distribution Demand			Current Approved Distribution Rates		
Rate Class	**Units**	**Billed Customers or Connections**	**Billed kWh**	**Billed kW (if applicable)**	**Monthly Service Charge**	**Distribution Volumetric Rate kWh**	**Distribution Volumetric Rate kW**
RESIDENTIAL	$/kWh	227,762	1,652,719,193		26.70	0.0000	0.0000
GENERAL SERVICE LESS THAN 50 kW	$/kWh	18,709	594,472,785		42.29	0.0109	0.0000
GENERAL SERVICE 50 TO 4,999 KW	$/kW	2,316	1,840,510,488	5,066,406	389.40	0.0000	2.6150
LARGE USE	$/kW	6	242,051,739	569,520	24279.37	0.0000	1.4325
LARGE USE WITH DEDICATED ASSETS	$/kW	5	403,775,839	2,136,952	5755.85	0.0000	0.3396
UNMETERED SCATTERED LOAD	$/kWh	3,006	10,504,342		8.63	0.0134	0.0000
SENTINEL LIGHTING	$/kW	378	363,731	1,030	5.63	0.0000	15.4416
STREET LIGHTING	$/kW	52,273	39,610,413	109,773	1.95	0.0000	5.1752

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Alectra Utilities Corporation-Horizon Utilities Rate Zone

Calculation of pro forma 2019 Revenues. No input required.

	2019 Board-Approved Distribution Demand			Current Approved Distribution Rates										
Rate Class	**Billed Customers or Connections**	**Billed kWh**	**Billed kW (if applicable)**	**Monthly Service Charge**	**Distribution Volumetric Rate kWh**	**Distribution Volumetric Rate kW**	**Service Charge Revenue**	**Distribution Volumetric Rate Revenue kWh**	**Distribution Volumetric Rate Revenue kW**	**Revenues from Rates**	**Service Charge % Revenue**	**Distribution Volumetric Rate % Revenue kWh**	**Distribution Volumetric Rate % Revenue kW**	**Total % Revenue**
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K = G / J**	**L = H / J**	**M = I / J**	**N**
RESIDENTIAL	227,762	1,652,719,193		26.70	0.0000	0.0000	72,974,945	0	0	72,974,945	100.0%	0.0%	0.0%	61.4%
GENERAL SERVICE LESS THAN 50 kW	18,709	594,472,785		42.29	0.0109	0.0000	9,494,443	6,479,753	0	15,974,197	59.4%	40.6%	0.0%	13.4%
GENERAL SERVICE 50 TO 4,999 KW	2,316	1,840,510,488	5,066,406	389.40	0.0000	2.6150	10,822,205	0	13,248,651	24,070,856	45.0%	0.0%	55.0%	20.2%
LARGE USE	6	242,051,739	569,520	24,279.37	0.0000	1.4325	1,748,115	0	815,837	2,563,952	68.2%	0.0%	31.8%	2.2%
LARGE USE WITH DEDICATED ASSETS	5	403,775,839	2,136,952	5,755.85	0.0000	0.3396	345,351	0	725,709	1,071,060	32.2%	0.0%	67.8%	0.9%
UNMETERED SCATTERED LOAD	3,006	10,504,342		8.63	0.0134	0.0000	311,301	140,758	0	452,060	68.9%	31.1%	0.0%	0.4%
SENTINEL LIGHTING	378	363,731	1,030	5.63	0.0000	15.4416	25,538	0	15,905	41,443	61.6%	0.0%	38.4%	0.0%
STREET LIGHTING	52,273	39,610,413	109,773	1.95	0.0000	5.1752	1,223,188	0	568,097	1,791,285	68.3%	0.0%	31.7%	1.5%
Total	**304,455**	**4,784,008,529**	**7,883,681**				**96,945,086**	**6,620,512**	**15,374,200**	**118,939,797**				**100.0%**

Ontario Energy Board

Capital Module

Applicable to ACM and ICM

Alectra Utilities Corporation-Horizon Utilities Rate Zone

Applicants Rate Base

Last COS Rebasing: 2019

Average Net Fixed Assets

Gross Fixed Assets - Re-based Opening	$ 625,929,889	A			
Add: CWIP Re-based Opening	$ 3,164,006	B			
Re-based Capital Additions	$ 49,472,477	C			
Re-based Capital Disposals	-$ 4,597,818	D			
Re-based Capital Retirements		E			
Deduct: CWIP Re-based Closing	-$ 3,164,006	F			
Gross Fixed Assets - Re-based Closing	$ 670,804,548	G			
Average Gross Fixed Assets			$	648,367,219	H = (A + G) / 2
Accumulated Depreciation - Re-based Opening	$ 161,031,595	I			
Re-based Depreciation Expense	$ 22,664,822	J			
Re-based Disposals	-$ 1,426,748	K			
Re-based Retirements	$ -	L			
Accumulated Depreciation - Re-based Closing	$ 182,269,669	M			
Average Accumulated Depreciation			$	171,650,632	N = (I + M) / 2
Average Net Fixed Assets			**$**	**476,716,587**	O = H - N

Working Capital Allowance

Working Capital Allowance Base	$ 658,178,026	P			
Working Capital Allowance Rate	12.0%	Q			
Working Capital Allowance			**$**	**78,981,363**	R = P * Q
Rate Base			**$**	**555,697,950**	S = O + R

Return on Rate Base

Deemed ShortTerm Debt %	4.00%	T	$	22,227,918	W = S * T
Deemed Long Term Debt %	56.00%	U	$	311,190,852	X = S * U
Deemed Equity %	40.00%	V	$	222,279,180	Y = S * V
Short Term Interest	2.82%	Z	$	626,827	AC = W * Z
Long Term Interest	3.74%	AA	$	11,638,538	AD = X * AA
Return on Equity	8.98%	AB	$	19,960,670	AE = Y * AB
Return on Rate Base			**$**	**32,226,036**	AF = AC + AD + AE

Distribution Expenses

OM&A Expenses	$ 63,557,394	AG			
Amortization	$ 25,278,432	AH			
Ontario Capital Tax		AI			
Grossed Up Taxes/PILs	$ 3,145,640	AJ			
Low Voltage		AK			
Transformer Allowance	$ -	AL			
		AM			
		AN			
		AO			
			$	**91,981,466**	AP = SUM (AG : AO)

Revenue Offsets

Specific Service Charges	-$ 757,312	AQ			
Late Payment Charges	-$ 875,000	AR			
Other Distribution Income	$ -	AS			
Other Income and Deductions	-$ 4,321,587	AT	**-$**	**5,953,899**	AU = SUM (AQ : AT)
Revenue Requirement from Distribution Rates			**$**	**118,253,603**	AV = AF + AP + AU

Rate Classes Revenue

Rate Classes Revenue - Total (Sheet 4)			$	118,939,797	AW

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Alectra Utilities Corporation-Horizon Utilities Rate Zone

Input the billing determinants associated with Alectra Utilities Corporation-Horizon Utilities Rate Zone's Revenues Based on 2018 Actual Distribution Demand. This sheet calculates the DENOMINATOR portion of the growth factor calculation. Pro forma Revenue Calculation.

	2018 Actual Distribution Demand			Current Approved Distribution Rates										
Rate Class	Billed Customers or Connections	Billed kWh	Billed kW	Monthly Service Charge	Distribution Volumetric Rate kWh	Distribution Volumetric Rate kW	Service Charge Revenue	Distribution Volumetric Rate Revenue kWh	Distribution Volumetric Rate Revenue kW	Total Revenue By Rate Class	Service Charge % Revenue	Distribution Volumetric Rate % Revenue kWh	Distribution Volumetric Rate % Revenue kW	Total % Revenue
	A	B	C	D	E	F	G	H	I	J	K = G / J_{total}	L = H / J_{total}	M = I / J_{total}	N
RESIDENTIAL	226,840	1,659,016,812		26.70	0.0000	0.0000	72,679,536	0	0	72,679,536	62.9%	0.0%	0.0%	62.9%
GENERAL SERVICE LESS THAN 50 kW	18,992	580,343,049		42.29	0.0109	0.0000	9,638,060	6,325,739	0	15,963,799	8.3%	5.5%	0.0%	13.8%
GENERAL SERVICE 50 TO 4,999 KW	2,057		4,746,295	389.40	0.0000	2.6150	9,611,950	0	12,411,561	22,023,511	8.3%	0.0%	10.7%	19.1%
LARGE USE	4		360,260	24,279.37	0.0000	1.4325	1,165,410	0	516,072	1,681,482	1.0%	0.0%	0.4%	1.5%
LARGE USE WITH DEDICATED ASSETS	7		2,002,430	5,755.85	0.0000	0.3396	483,491	0	680,025	1,163,517	0.4%	0.0%	0.6%	1.0%
UNMETERED SCATTERED LOAD	2,970	11,372,501		8.63	0.0134	0.0000	307,573	152,392	0	459,965	0.3%	0.1%	0.0%	0.4%
SENTINEL LIGHTING	338		1,321	5.63	0.0000	15.4416	22,835	0	20,398	43,234	0.0%	0.0%	0.0%	0.0%
STREET LIGHTING	52,548		58,768	1.95	0.0000	5.1752	1,229,623	0	304,136	1,533,759	1.1%	0.0%	0.3%	1.3%
Total	**303,756**	**2,250,732,362**	**7,169,074**				**95,138,479**	**6,478,131**	**13,932,194**	**115,548,803**				**100.0%**

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Alectra Utilities Corporation-Horizon Utilities Rate Zone

Current Revenue from Rates

This sheet is used to determine the applicant's most current allocation of revenues (after the most recent revenue to cost ratio adjustment, if applicable) to appropriately allocate the incremental revenue requirement to the classes.

	Current OEB-Approved Base Rates			2019 Board-Approved Distribution Demand										
Rate Class	Monthly Service Charge	Distribution Volumetric Rate kWh	Distribution Volumetric Rate kW	Re-based Billed Customers or Connections	Re-based Billed kWh	Re-based Billed kW	Current Base Service Charge Revenue	Current Base Distribution Volumetric Rate kWh Revenue	Current Base Distribution Volumetric Rate kW Revenue	Total Current Base Revenue	Service Charge % Total Revenue	Distribution Volumetric Rate % Total Revenue	Distribution Volumetric Rate % Total Revenue	Total % Revenue
	A	B	C	D	E	F	G	H	I	J	L = G / J_{total}	M = H / J_{total}	N = I / J_{total}	O
RESIDENTIAL	26.70	0	0	227,762	1,652,719,193	0	72,974,945	0	0	72,974,945	61.35%	0.00%	0.00%	61.4%
GENERAL SERVICE LESS THAN 50 kW	42.29	0.0109	0	18,709	594,472,785	0	9,494,443	6,479,753	0	15,974,197	7.98%	5.45%	0.00%	13.4%
GENERAL SERVICE 50 TO 4,999 KW	389.40	0	2.615	2,316	1,840,510,488	5,066,406	10,822,205	0	13,248,651	24,070,856	9.10%	0.00%	11.14%	20.2%
LARGE USE	24279.37	0	1.4325	6	242,051,739	569,520	1,748,115	0	815,837	2,563,952	1.47%	0.00%	0.69%	2.2%
LARGE USE WITH DEDICATED ASSETS	5755.85	0	0.3396	5	403,775,839	2,136,952	345,351	0	725,709	1,071,060	0.29%	0.00%	0.61%	0.9%
UNMETERED SCATTERED LOAD	8.63	0.0134	0	3,006	10,504,342	0	311,301	140,758	0	452,060	0.26%	0.12%	0.00%	0.4%
SENTINEL LIGHTING	5.63	0	15.4416	378	363,731	1,030	25,538	0	15,905	41,443	0.02%	0.00%	0.01%	0.0%
STREET LIGHTING	1.95	0	5.1752	52,273	39,610,413	109,773	1,223,188	0	568,097	1,791,285	1.03%	0.00%	0.48%	1.5%
Total							**96,945,086**	**6,620,512**	**15,374,200**	**118,939,797**				**100.0%**

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Alectra Utilities Corporation-Horizon Utilities Rate Zone

No Input Required.

Final Materiality Threshold Calculation

$$\textbf{Threshold Value}\ (\%) = 1 + \left[\left(\frac{RB}{d}\right) \times (g + PCI \times (1 + g))\right] \times \left((1 + g) \times (1 + PCI)\right)^{n-1} + 10\%$$

Cost of Service Rebasing Year		**2019**	
Price Cap IR Year in which Application is made		**1**	n
Price Cap Index		**1.20%**	PCI
Growth Factor Calculation			
Revenues Based on 2019 Board-Approved Distribution Demand		**$118,939,797**	
Revenues Based on 2018 Actual Distribution Demand		**$115,548,803**	
Growth Factor		**2.93%**	g $(Note\ 1)$
Dead Band		**10%**	

Average Net Fixed Assets		
Gross Fixed Assets Opening	$	625,929,889
Add: CWIP Opening	$	3,164,006
Capital Additions	$	49,472,477
Capital Disposals	-$	4,597,818
Capital Retirements	$	-
Deduct: CWIP Closing	-$	3,164,006
Gross Fixed Assets - Closing	$	670,804,548
Average Gross Fixed Assets	$	648,367,219
Accumulated Depreciation - Opening	$	161,031,595
Depreciation Expense	$	22,664,822
Disposals	-$	1,426,748
Retirements	$	-
Accumulated Depreciation - Closing	$	182,269,669
Average Accumulated Depreciation	$	171,650,632
Average Net Fixed Assets	$	476,716,587

Working Capital Allowance			
Working Capital Allowance Base	$	658,178,026	
Working Capital Allowance Rate		12%	
Working Capital Allowance	$	78,981,363	
Rate Base	**$**	**555,697,950**	RB
Depreciation	**$**	**22,664,822**	d

Threshold Value (varies by Price Cap IR Year subsequent to CoS rebasing)

Price Cap IR Year 2020	**212%**
Price Cap IR Year 2021	**217%**
Price Cap IR Year 2022	**221%**
Price Cap IR Year 2023	**226%**
Price Cap IR Year 2024	**230%**
Price Cap IR Year 2025	**235%**
Price Cap IR Year 2026	**241%**
Price Cap IR Year 2027	**246%**
Price Cap IR Year 2028	**252%**
Price Cap IR Year 2029	**258%**

Threshold CAPEX		$Threshold\ Value\ \times d$
Price Cap IR Year 2020	**$**	**48,103,364**
Price Cap IR Year 2021	**$**	**49,069,616**
Price Cap IR Year 2022	**$**	**50,076,160**
Price Cap IR Year 2023	**$**	**51,124,676**
Price Cap IR Year 2024	**$**	**52,216,914**
Price Cap IR Year 2025	**$**	**53,354,697**
Price Cap IR Year 2026	**$**	**54,539,924**
Price Cap IR Year 2027	**$**	**55,774,575**
Price Cap IR Year 2028	**$**	**57,060,709**
Price Cap IR Year 2029	**$**	**58,400,474**

Note 1: The growth factor g is annualized, depending on the number of years between the numerator and denominator for the calculation. Typically, for ACM review in a cost of service and in the fourth year of Price Cap IR, the ratio is divided by 2 to annualize it. No division is normally required for the first three years under Price Cap IR.

J3.2

ATTACHMENT 2 – G-Staff-8 2020 ACM ICM Model – PRZ - Revised

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Note: Depending on the selections made below, certain worksheets in this workbook will be hidden.

Version 5.00

Utility Name	Alectra Utilities Corporation-PowerStream Rate Zone
Assigned EB Number	
Name of Contact and Title	
Phone Number	
Email Address	
Is this Capital Module being filed in a CoS or Price-Cap IR Application?	Price-Cap IR
Rate Year	2020
Indicate the Price-Cap IR Year (1, 2, 3, 4, etc) in which Alectra Utilities Corporation-PowerStream Rate Zone is applying:	3
Next OEB Scheduled Rebasing Year	2027
Alectra Utilities Corporation-PowerStream Rate Zone is applying for:	ICM Approval
Last Rebasing Year:	2017
The most recent complete year for which actual billing and load data exists	2018
Current IPI	1.50%
Strech Factor Assigned to Middle Cohort*	III
Stretch Factor Value	0.30%
Price Cap Index	1.20%

Based on the inputs above, the growth factor utilized in the Materiality Threshold Calculation will be determined by:

Revenues Based on 2018 Actual Distribution Demand

Revenues Based on 2017 Board-Approved Distribution Demand

Notes

Pale green cells represent input cells.

Pale blue cells represent drop-down lists. The applicant should select the appropriate item from the drop-down list.

White cells contain fixed values, automatically generated values or formulae.

While this model has been provided in Excel format and is required to be filed with the applications, the onus remains on the applicant to ensure the accuracy of the data and the results.

**As per ACM/ICM policy, the middle cohort stretch factor is applied to all ACM/ICM applications.*

OEB policies regarding rate-setting and rebasing following distributor consolidations could allow a distributor to not rebase rates for up to ten years. A distributor could also apply for and receive OEB approval to defer rebasing. If a distributor is under Price Cap IR for more than four years after rebasing and applies for an ICM, this spreadsheet will need to be adapted to accommodate those circumstances. The distributor should contact OEB staff to discuss the circumstances so that a customized model can be provided.

Ontario Energy Board

Capital Module

Applicable to ACM and ICM

Alectra Utilities Corporation-PowerStream Rate Zone

Select the appropriate rate classes as they appear on your most recent Board-Approved Tariff of Rates and Charges, excluding the MicroFit Class.

How many classes are on your most recent Board-Approved Tariff of Rates and Charges? **7**

Select Your Rate Classes from the **Blue Cells** below. Please ensure that a rate class is assigned to **each shaded cell.**

	Rate Class Classification
1	RESIDENTIAL
2	GENERAL SERVICE LESS THAN 50 kW
3	GENERAL SERVICE 50 TO 4,999 KW
4	LARGE USE
5	UNMETERED SCATTERED LOAD
6	SENTINEL LIGHTING
7	STREET LIGHTING

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Alectra Utilities Corporation-PowerStream Rate Zone

Input the billing determinants associated with Alectra Utilities Corporation-PowerStream Rate Zone's Revenues Based on 2018 Actual Distribution Demand.
Input the current approved distribution rates. Sheets 4 & 5 calculate the NUMERATOR portion of the growth factor calculation.

		2018 Actual Distribution Demand			Current Approved Distribution Rates		
Rate Class	**Units**	**Billed Customers or Connections**	**Billed kWh**	**Billed kW (if applicable)**	**Monthly Service Charge**	**Distribution Volumetric Rate kWh**	**Distribution Volumetric Rate kW**
RESIDENTIAL	$/kWh	334,683	2,783,708,695		24.91	0.0045	0.0000
GENERAL SERVICE LESS THAN 50 kW	$/kWh	32,624	1,049,615,664		29.35	0.0187	0.0000
GENERAL SERVICE 50 TO 4,999 KW	$/kW	5,207	4,679,965,944	12,192,876	143.95	0.0000	4.2924
LARGE USE	$/kW	2	53,218,181	102,871	6201.88	0.0000	2.2894
UNMETERED SCATTERED LOAD	$/kWh	3,082	13,830,788		8.78	0.0199	0.0000
SENTINEL LIGHTING	$/kWh	172	286,385	796	4.28	0.0000	10.0777
STREET LIGHTING	$/kW	91,446	48,883,953	134,152	1.21	0.0000	6.4556

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Alectra Utilities Corporation-PowerStream Rate Zone

Calculation of pro forma 2017 Revenues. No input required.

	2018 Actual Distribution Demand			Current Approved Distribution Rates										
Rate Class	**Billed Customers or Connections**	**Billed kWh**	**Billed kW (if applicable)**	**Monthly Service Charge**	**Distribution Volumetric Rate kWh**	**Distribution Volumetric Rate kW**	**Service Charge Revenue**	**Distribution Volumetric Rate Revenue kWh**	**Distribution Volumetric Rate Revenue kW**	**Revenues from Rates**	**Service Charge % Revenue**	**Distribution Volumetric Rate % Revenue kWh**	**Distribution Volumetric Rate % Revenue kW**	**Total % Revenue**
	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K = G / J**	**L = H / J**	**M = I / J**	**N**
RESIDENTIAL	334,683	2,783,708,695		24.91	0.0045	0.0000	100,043,442	12,526,689	0	112,570,131	88.9%	11.1%	0.0%	54.1%
GENERAL SERVICE LESS THAN 50 kW	32,624	1,049,615,664		29.35	0.0187	0.0000	11,490,173	19,627,813	0	31,117,986	36.9%	63.1%	0.0%	14.9%
GENERAL SERVICE 50 TO 4,999 KW	5,207	4,679,965,944	12,192,876	143.95	0.0000	4.2924	8,994,572	0	52,336,699	61,331,271	14.7%	0.0%	85.3%	29.5%
LARGE USE	2	53,218,181	102,871	6,201.88	0.0000	2.2894	148,845	0	235,514	384,359	38.7%	0.0%	61.3%	0.2%
UNMETERED SCATTERED LOAD	3,082	13,830,788		8.78	0.0199	0.0000	324,720	275,233	0	599,952	54.1%	45.9%	0.0%	0.3%
SENTINEL LIGHTING	172	286,385	796	4.28	0.0000	10.0777	8,834	0	8,022	16,856	52.4%	0.0%	47.6%	0.0%
STREET LIGHTING	91,446	48,883,953	134,152	1.21	0.0000	6.4556	1,327,796	0	866,032	2,193,828	60.5%	0.0%	39.5%	1.1%
Total	**467,216**	**8,629,509,610**	**12,430,695**				**122,338,381**	**32,429,735**	**53,446,266**	**208,214,383**				**100.0%**

Ontario Energy Board

Capital Module

Applicable to ACM and ICM

Alectra Utilities Corporation-PowerStream Rate Zone

Applicants Rate Base	Last COS Rebasing: 2017				
Average Net Fixed Assets					
Gross Fixed Assets - Re-based Opening	$ 1,183,508,943	A			
Add: CWIP Re-based Opening	$ 57,486,862	B			
Re-based Capital Additions	$ 114,494,289	C			
Re-based Capital Disposals	-$ 2,734,108	D			
Re-based Capital Retirements		E			
Deduct: CWIP Re-based Closing	-$ 39,959,632	F			
Gross Fixed Assets - Re-based Closing	$ 1,312,796,354	G			
Average Gross Fixed Assets			$	1,248,152,649	H = (A + G) / 2
Accumulated Depreciation - Re-based Opening	$ 229,378,962	I			
Re-based Depreciation Expense	$ 52,272,173	J			
Re-based Disposals	-$ 717,703	K			
Re-based Retirements	$ -	L			
Accumulated Depreciation - Re-based Closing	$ 280,933,432	M			
Average Accumulated Depreciation			$	255,156,197	N = (I + M) / 2
Average Net Fixed Assets			**$**	**992,996,452**	O = H - N
Working Capital Allowance					
Working Capital Allowance Base	$ 1,197,449,515	P			
Working Capital Allowance Rate	7.5%	Q			
Working Capital Allowance			**$**	**89,808,714**	R = P * Q
Rate Base			**$**	**1,082,805,165**	S = O + R
Return on Rate Base					
Deemed ShortTerm Debt %	4.00%	T	$	43,312,207	W = S * T
Deemed Long Term Debt %	56.00%	U	$	606,370,893	X = S * U
Deemed Equity %	40.00%	V	$	433,122,066	Y = S * V
Short Term Interest	1.76%	Z	$	762,295	AC = W * Z
Long Term Interest	3.88%	AA	$	23,542,374	AD = X * AA
Return on Equity	8.78%	AB	$	38,028,117	AE = Y * AB
Return on Rate Base			**$**	**62,332,786**	AF = AC + AD + AE
Distribution Expenses					
OM&A Expenses	$ 96,167,243	AG			
Amortization	$ 50,974,104	AH			
Ontario Capital Tax		AI			
Grossed Up Taxes/PILs	$ 2,745,639	AJ			
Low Voltage		AK			
Transformer Allowance	$ 2,236,782	AL			
		AM			
		AN			
		AO			
			$	**152,123,768**	AP = SUM (AG : AO)
Revenue Offsets					
Specific Service Charges	-$ 3,474,784	AQ			
Late Payment Charges	-$ 2,076,532	AR			
Other Distribution Income	-$ 2,025,296	AS			
Other Income and Deductions	-$ 5,141,699	AT	**-$**	**12,718,312**	AU = SUM (AQ : AT)
Revenue Requirement from Distribution Rates			**$**	**201,738,243**	AV = AF + AP + AU
Rate Classes Revenue					
Rate Classes Revenue - Total (Sheet 4)			$	208,214,383	AW

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Alectra Utilities Corporation-PowerStream Rate Zone

Input the billing determinants associated with Alectra Utilities Corporation-PowerStream Rate Zone's Revenues Based on 2017 Board-Approved Distribution Demand. This sheet calculates the DENOMINATOR portion of the growth factor calculation.
Pro forma Revenue Calculation.

	2017 Board-Approved Distribution Demand			Current Approved Distribution Rates										
Rate Class	Billed Customers or Connections	Billed kWh	Billed kW	Monthly Service Charge	Distribution Volumetric Rate kWh	Distribution Volumetric Rate kW	Service Charge Revenue	Distribution Volumetric Rate Revenue kWh	Distribution Volumetric Rate Revenue kW	Total Revenue By Rate Class	Service Charge % Revenue	Distribution Volumetric Rate % Revenue kWh	Distribution Volumetric Rate % Revenue kW	Total % Revenue
	A	B	C	D	E	F	G	H	I	J	K = G / J_{total}	L = H / J_{total}	M = I / J_{total}	N
RESIDENTIAL	331,461	2,689,802,037		24.91	0.0045	0.0000	99,080,322	12,104,109	0	111,184,431	48.0%	5.9%	0.0%	53.9%
GENERAL SERVICE LESS THAN 50 kW	32,775	1,031,991,524		29.35	0.0187	0.0000	11,543,355	19,298,241	0	30,841,596	5.6%	9.4%	0.0%	14.9%
GENERAL SERVICE 50 TO 4,999 KW	5,081	4,566,530,904	12,192,632	143.95	0.0000	4.2924	8,776,919	0	52,335,652	61,112,571	4.3%	0.0%	25.4%	29.6%
LARGE USE	2	75,964,677	149,679	6,201.88	0.0000	2.2894	148,845	0	342,675	491,520	0.1%	0.0%	0.2%	0.2%
UNMETERED SCATTERED LOAD	3,044	14,542,413		8.78	0.0199	0.0000	320,716	289,394	0	610,110	0.2%	0.1%	0.0%	0.3%
SENTINEL LIGHTING	207	377,900	975	4.28	0.0000	10.0777	10,632	0	9,824	20,455	0.0%	0.0%	0.0%	0.0%
STREET LIGHTING	89,729	45,603,291	127,503	1.21	0.0000	6.4556	1,302,865	0	823,107	2,125,972	0.6%	0.0%	0.4%	1.0%
Total	**462,299**	**8,424,812,745**	**12,470,788**				**121,183,654**	**31,691,745**	**53,511,258**	**206,386,657**				**100.0%**

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Alectra Utilities Corporation-PowerStream Rate Zone

Current Revenue from Rates

This sheet is used to determine the applicant's most current allocation of revenues (after the most recent revenue to cost ratio adjustment, if applicable) to appropriately allocate the incremental revenue requirement to the classes.

	Current OEB-Approved Base Rates			2018 Actual Distribution Demand										
Rate Class	Monthly Service Charge	Distribution Volumetric Rate kWh	Distribution Volumetric Rate kW	Re-based Billed Customers or Connections	Re-based Billed kWh	Re-based Billed kW	Current Base Service Charge Revenue	Current Base Distribution Volumetric Rate kWh Revenue	Current Base Distribution Volumetric Rate kW Revenue	Total Current Base Revenue	Service Charge % Total Revenue	Distribution Volumetric Rate % Total Revenue	Distribution Volumetric Rate % Total Revenue	Total % Revenue
	A	B	C	D	E	F	G	H	I	J	L = G / J_{total}	M = H / J_{total}	N = I / J_{total}	O
RESIDENTIAL	24.91	0.0045	0	334,683	2,783,708,695	0	100,043,442	12,526,689	0	112,570,131	48.05%	6.02%	0.00%	54.1%
GENERAL SERVICE LESS THAN 50 kW	29.35	0.0187	0	32,624	1,049,615,664	0	11,490,173	19,627,813	0	31,117,986	5.52%	9.43%	0.00%	14.9%
GENERAL SERVICE 50 TO 4,999 KW	143.95	0	4.2924	5,207	4,679,965,944	12,192,876	8,994,572	0	52,336,699	61,331,271	4.32%	0.00%	25.14%	29.5%
LARGE USE	6201.88	0	2.2894	2	53,218,181	102,871	148,845	0	235,514	384,359	0.07%	0.00%	0.11%	0.2%
UNMETERED SCATTERED LOAD	8.78	0.0199	0	3,082	13,830,788	0	324,720	275,233	0	599,952	0.16%	0.13%	0.00%	0.3%
SENTINEL LIGHTING	4.28	0	10.0777	172	286,385	796	8,834	0	8,022	16,856	0.00%	0.00%	0.00%	0.0%
STREET LIGHTING	1.21	0	6.4556	91,446	48,883,953	134,152	1,327,796	0	866,032	2,193,828	0.64%	0.00%	0.42%	1.1%
Total							**122,338,381**	**32,429,735**	**53,446,266**	**208,214,383**				**100.0%**

Ontario Energy Board

Capital Module
Applicable to ACM and ICM

Alectra Utilities Corporation-PowerStream Rate Zone

No Input Required.

Final Materiality Threshold Calculation

$$\textbf{Threshold Value}\ (\%) = 1 + \left[\left(\frac{RB}{d}\right) \times (g + PCI \times (1 + g))\right] \times \left((1 + g) \times (1 + PCI)\right)^{n-1} + 10\%$$

Cost of Service Rebasing Year		**2017**	
Price Cap IR Year in which Application is made		**3**	n
Price Cap Index		**1.20%**	PCI
Growth Factor Calculation			
Revenues Based on 2018 Actual Distribution Demand		**$208,214,383**	
Revenues Based on 2017 Board-Approved Distribution Demand		**$206,386,657**	
Growth Factor		**0.89%**	$g\ (Note\ 1)$
Dead Band		**10%**	

Average Net Fixed Assets		
Gross Fixed Assets Opening	$	1,183,508,943
Add: CWIP Opening	$	57,486,862
Capital Additions	$	114,494,289
Capital Disposals	-$	2,734,108
Capital Retirements	$	-
Deduct: CWIP Closing	-$	39,959,632
Gross Fixed Assets - Closing	$	1,312,796,354
Average Gross Fixed Assets	$	1,248,152,649
Accumulated Depreciation - Opening	$	229,378,962
Depreciation Expense	$	52,272,173
Disposals	-$	717,703
Retirements	$	-
Accumulated Depreciation - Closing	$	280,933,432
Average Accumulated Depreciation	$	255,156,197
Average Net Fixed Assets	$	992,996,452
Working Capital Allowance		
Working Capital Allowance Base	$	1,197,449,515
Working Capital Allowance Rate		8%
Working Capital Allowance	$	89,808,714
Rate Base	**$**	**1,082,805,165**
Depreciation	**$**	**52,272,173**

Threshold Value (varies by Price Cap IR Year subsequent to CoS rebasing)		
Price Cap IR Year 2018	**153%**	
Price Cap IR Year 2019	**154%**	
Price Cap IR Year 2020	**155%**	
Price Cap IR Year 2021	**156%**	
Price Cap IR Year 2022	**157%**	
Price Cap IR Year 2023	**158%**	
Price Cap IR Year 2024	**159%**	
Price Cap IR Year 2025	**160%**	
Price Cap IR Year 2026	**161%**	
Price Cap IR Year 2027	**162%**	
Threshold CAPEX		$Threshold\ Value\ \times d$
Price Cap IR Year 2018	**$ 80,197,265**	
Price Cap IR Year 2019	**$ 80,673,061**	
Price Cap IR Year 2020	**$ 81,158,829**	
Price Cap IR Year 2021	**$ 81,654,781**	
Price Cap IR Year 2022	**$ 82,161,129**	
Price Cap IR Year 2023	**$ 82,678,091**	
Price Cap IR Year 2024	**$ 83,205,889**	
Price Cap IR Year 2025	**$ 83,744,752**	
Price Cap IR Year 2026	**$ 84,294,910**	
Price Cap IR Year 2027	**$ 84,856,600**	

Note 1: The growth factor g is annualized, depending on the number of years between the numerator and denominator for the calculation. Typically, for ACM review in a cost of service and in the fourth year of Price Cap IR, the ratio is divided by 2 to annualize it. No division is normally required for the first three years under Price Cap IR.

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ATTACHMENT 3 – OEB Staff Table Alectra In-Service Additions

Alectra Update to OEB Staff Table - Alectra In-Service Additions

Table 1a - Last Rebasing Forecasted In-service Additions of Alectra Utilities' Predecessor LDCs Adjusted for Inflation ($,000) (Alectra Update)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Inflation - 0.3%		1.40%	1.30%	1.80%	1.60%	0.90%	1.20%	1.40%	1.40%	1.40%	1.40%	1.40%
Horizon							49,472	50,165	50,867	51,580	52,302	53,034
HOBNI			32,518	33,103	33,633	33,936	34,343	34,824	35,311	35,806	36,307	36,815
PowerStream					114,494	115,524	116,911	118,547	120,207	121,890	123,597	125,327
Enersource	46,258	46,906	47,515	48,371	49,145	49,587	50,182	50,884	51,597	52,319	53,052	53,794
Guelph				11,363	11,545	11,649	11,788	11,954	12,121	12,291	12,463	12,637
Total							262,697	266,374	270,104	273,885	277,719	281,607

2020-2024 Total:	1,369,690
Alectra 2020-2024 DSP Capital Forecast per Application:	1,456,500
Difference:	-86,810

Table 2a - Last Rebasing Forecasted In-service Additions of Alectra Utilities' Predecessor LDCs Adjusted for Inflation and Growth ($,000) (Alectra Update)

	Growth Factors	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Inflation - 0.3%			1.40%	1.30%	1.80%	1.60%	0.90%	1.20%	1.40%	1.40%	1.40%	1.40%	1.40%
Horizon	3.04%							49,472	51,690	54,007	56,428	58,957	61,600
HOBNI	1.84%			32,518	33,712	34,882	35,844	36,941	38,148	39,393	40,680	42,008	43,380
PowerStream	2.31%					114,494	118,193	122,374	126,954	131,705	136,634	141,747	147,052
Enersource	-0.06%	46,258	46,877	47,458	48,284	49,027	49,438	50,002	50,671	51,350	52,037	52,734	53,440
Guelph	1.60%				11,363	11,730	12,024	12,363	12,737	13,122	13,519	13,927	14,348
Total								271,153	280,200	289,577	299,298	309,375	319,821

2020-2024 Total: 1,498,271

Alectra 2020-2024 DSP Capital Forecast per Application: 1,456,500

Difference: 41,771

OEB Staff Table - Alectra In-Service Additions

Table 1 - Last Rebasing Forecasted In-service Additions of Alectra Utilities' Predecessor LDCs Adjusted for Inflation ($,000)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Inflation - 0.3%		1.40%	1.30%	1.80%	1.60%	0.90%	1.20%	1.40%	1.40%	1.40%	1.40%	1.40%
Horizon							51,272	51,990	52,718	53,456	54,204	54,963
HOBNI			32,518	33,103	33,633	33,936	34,343	34,824	35,311	35,806	36,307	36,815
PowerStream					114,494	115,524	116,911	118,547	120,207	121,890	123,597	125,327
Enersource	46,258	46,906	47,515	48,371	49,145	49,587	50,182	50,884	51,597	52,319	53,052	53,794
Guelph				11,363	11,545	11,649	11,788	11,954	12,121	12,291	12,463	12,637
Total							264,496	268,199	271,954	275,761	279,622	283,537

2020-2024 Total:	1,379,072
Alectra 2020-2024 DSP Capital Forecast per Application:	1,456,500
Difference:	-77,428

OEB Staff Table - Alectra In-Service Additions

Table 2 - Last Rebasing Forecasted In-service Additions of Alectra Utilities' Predecessor LDCs Adjusted for Inflation and Growth ($,000)

	Growth Factors	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Inflation - 0.3%			1.40%	1.30%	1.80%	1.60%	0.90%	1.20%	1.40%	1.40%	1.40%	1.40%	1.40%
Horizon	3.04%							51,272	53,570	55,972	58,481	61,102	63,841
HOBNI	1.84%			32,518	33,712	34,882	35,844	36,941	38,148	39,393	40,680	42,008	43,380
PowerStream	2.31%					114,494	118,193	122,374	126,954	131,705	136,634	141,747	147,052
Enersource	-0.06%	46,258	46,877	47,458	48,284	49,027	49,438	50,002	50,671	51,350	52,037	52,734	53,440
Guelph	1.60%				11,363	11,730	12,024	12,363	12,737	13,122	13,519	13,927	14,348
Total								272,953	282,080	291,542	301,350	311,519	322,062

2020-2024 Total:	1,508,554
Alectra 2020-2024 DSP Capital Forecast per Application:	1,456,500
Difference:	52,054

J3.3

Reference:

To provide the business cases for all of the M-factor projects.

Response:

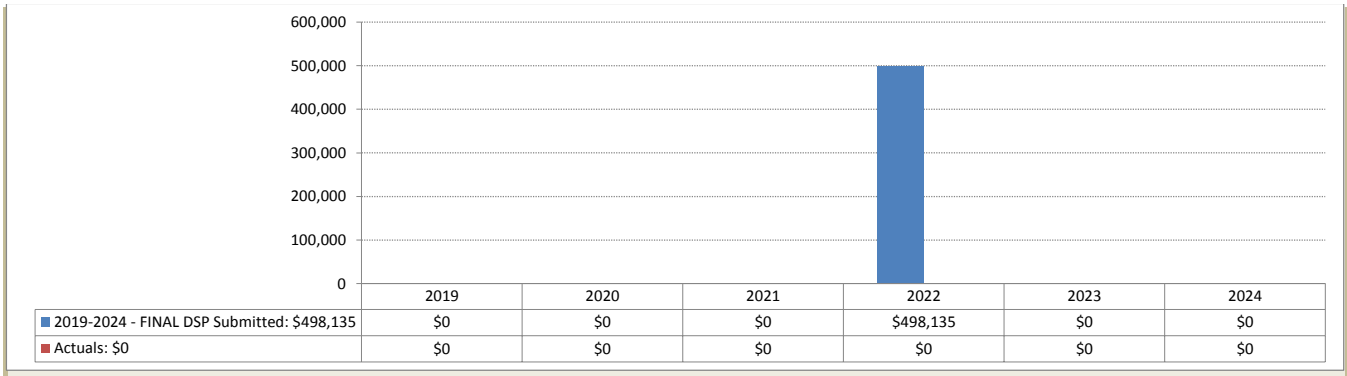
Please refer to Attachment 1, business cases for all M-factor projects.

J3.3

ATTACHMENT 1 – M-factor Business Cases

OEB Multi-Project Report

Project Code	100159	
Project Name	Hydro One Asset Purchase - Alliston	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream North
	Location	Alliston
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	Purchase the 44 kV Poleline along Industrial Parkway (approx 4.5 km's). The pole line is required for the new Alliston 10MVA substation 13.8kV integration (101571). The proposed section is between the 138M7 PME on 30th Sideroad (southwestern boundary at Alliston) to two poles east of Tottenham Road (County Road 10). The poles are owned by Hydro One (as per the Joint Use Agreement and Distribution Connection Agreement [DCA]). The purchase will involve conductors and associated hardware only. Purchase to include 7 Hydro One owned poles (Alectra conductor) west of the Recreation Centre running parallel along the train tracks north of Industrial Parkway. Hydro One's asking price in 2014 was $262,000 + HST. Cost including 7 poles west of Recreation Centre totaling $297,500 + HST.
	Main Driver - System Service	System Efficiency
	Priority and Reasons for Priority	The pole line is required for the new Alliston 10MVA substation 13.8kV integration (101571). In addition, the project will improve reliability by reducing restoration times as well as improve operating flexibility of the 44 kV system within the Alliston area.
	Customer Attachment / Load (KVA)	Total connected load of 59,856 kVA on the 138M7 downstream of the PME along Industrial Parkway.
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Not Applicable.
	Economic Development	Not Applicable.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo consists of continuing to stay as joint use on the existing pole line. The status quo is not recommended because it is in our customer's best interest, as well as Alectras', to purchase this section of line as it is inside our service territory. Under the current Hydro One ownership, Alectra is not permitted to operate or maintain the equipment on the line. If Alectra purchases this line restoration time will decrease and therefore reliability will increase. In addition, the pole line is required for the new Alliston 10MVA substation 13.8kV integration (101571).
	Alternative #1	Not Applicable.
	Alternative #2	Not Applicable.
	Justification for Recommended Alternative	This expenditure is required for the new Alliston 10MVA substation 13.8kV integration (101571). In addition, it will improve reliability by reducing restoration times as well as improve operating flexibility of the 44 kV system within the Alliston area. The pole line is within Alectra service territory.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable.
	Identify any reliability, efficiency, safety or coordination benefits	Improve reliability by reducing restoration times as well as improve operating flexibility of the 44 kV system within the Alliston area.



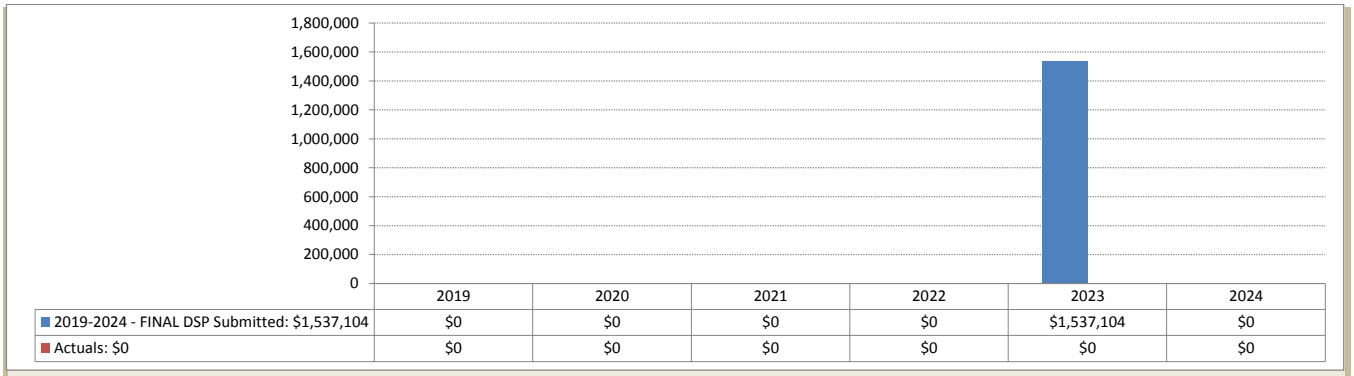
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $498,135	$0	$0	$0	$498,135	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	100319	
Project Name	Radial Supply Remediation/Conversion - 13.8 kV to 27.6 kV on Miller Ave	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Miller Ave from Woodbine Ave to Rodick Rd in the City of Markham
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Overhead Asset Renewal
	Alectra Subcategory	Voltage Conversion
4. Evaluation Criteria (OEB)	Project Summary	This project is to rebuild existing pole line to 27.6 kV with provision for 2nd 27.6kV in the future (approx. 1 km) and convert existing 11 customers (2MVA connected in total) on Miller Ave & Rodick Rd into 27.6kV supply. They are supplied by 13.8kV feeder AMB-F1 from Amber MS.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	High City of Markham is to widen the Miller Ave and it is a good opportunity to upgrade the existing pole line. It will decrease the outage impacts due to deteriorating underground system assets. There have been many outages in Amber MS due to animal contacts and customers on Miller Ave have been complaining about reliability and power interruption. There are 13 customers on Miller Ave, and they are supplied by feeder AMBF1 from Amber MS. The SAIDI of AMBF1 was 3.86 hours in 2017 and 3 hours in 2018. Both are higher than Alectra average of approx. 1 hour (Excluding LOS and MED). The 13.8kV feeder on Miller Ave is a radial feeder any outage in the Amber MS affects the customers on Miller Avenue until repairs are completed. The customer on Miller Avenue will be a loop supply once converted to 27.6kV. This project will allow the decommission of Amber MS and John MS since the only customers on these MS will be the customers on Miller Ave . Once this project is completed, both MS and associated 13.8kV feeders can be removed.
	Customer Attachment / Load (KVA)	11 customers 2,84 kVA
	Safety	Not applicable
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	Not applicable
	Economic Development	Not applicable
	Environmental Benefits	Not applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Status quo is do nothing continue to supply customers with the existing pole line on Miller Ave. This option is not feasible. The existing 13.8kV pole line has to be relocated when the City of Markham widens the Miller Ave.
	Alternative #1	The existing 13.8kV pole line has to be relocated when the City of Markham widens the Miller Ave. Alternative 1 is to rebuild the existing 13.8kV pole line into 13.8kV during road widening and all customers remain as 13.8kV supply. The customers will be on radial supply again. Amber MS will continue to be required to supply the 13.8kV customers. Alectra long term goal is to convert 13.8kV into 27.6kV and eliminate MS in Markham. This option does not line with Alectra's long term goal.
	Alternative #2	Not applicable

	Justification for Recommended Alternative	The existing 13.8kV supply is a radial feeder. There have been many outages in Amber MS due to animal contacts and customers on Miller Ave have been complaining about reliability and power interruption. A project (103676) "Install one 13.8kV cct on Rodick Rd" was approved in Alectra's 2015 capital budget to extend one 13.8kV cct on Rodick Rd from 14th Ave to Miller Ave so that customers on Miller Ave will be on a 13.8kV loop supply. If a pole failure on Woodbine Ave occurs, customers can still be supplied from Rodick Rd. The project was budgeted for $250k, but the budget increased to $668k after the design was completed. The project was put on hold as City of Markham informed PowerStream in 2015 that it had plans to widen Miller Avenue. In that case, all the existing 13.8kV poles would have to be relocated. In addition, the customers on Miller Avenue are supplied by 13.8kV feeder from Amber MS which is a 1972 vintage station and has very little load (3MVA) due to the conversion of customers supplied by this MS to the present day 27.6kV standard. Amber MS will be decommissioned, after all the customers fed from Amber MS are converted to present day 27.6KV supply standard. Given the change in circumstances, the most cost effective option was to coordinate Alectra Utilities' distribution work with the road widening work and convert all the existing customers on Miller Avenue to the present day 27.6kV loop supply standard and then decommission Amber MS after remaining customers on Amber MS are converted as well. The customers will be a loop supply once converted to 27.6kV. This option will allow Alectra to supply customers with 27.6kV and provide the customers with better reliability since many of the outages on the 13.8kV Amber-F1 feeders were due to problems inside the Amber MS. In the long term, this project will allow two new 27.6kV feeders from MTS#4 to be routed to Woodbine Ave via ccts on Miller Ave. Four feeders from MTS4 have been planned to go south via Rodick Rd to supply customer south of Hwy 407.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The risk is to get approval from the City of Markham in time. Capital design will start the design of the project in advance and should get the approvals in place in advance. The other risk is the coordination with the Miller Ave widening project. The project will be deferred if the City of Markham defers the road widening work. Project management will be implemented to ensure the project is on time and on budget.
	Comparative Information on Equivalent Historical Projects (if any)	Alectra has been working very closely with York Region on several road widening project in the past a few years. Usually Alectra provide high level estimates at the early stage of the project. A details estimate will be prepared once the pole line design is completed. Alectra has an existing 13.8kV pole line on Miller Ave and City of Markham will partially be responsible for the cost of relocation and Alectra will be 100% responsible for the conversion and 2nd cct.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Not applicable
	Condition of Asset vs. Typical Life Cycle and Performance Record	Not applicable
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	0
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Not applicable
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Not applicable
	Value of Customer Impact	Low
	Factors Affecting Project Timing, if any	The project will be deferred if the City of Markham defers the road widening work.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not applicable
	Reliability and Safety Factors	This project will provide much better reliability for customers on Miller Ave since the 27.6kV feeders in the area are much more reliable than 13.8kV feeders from Amber MS. The customers on Miller Ave are supplied by 13.8kV Amb-F1 feeder. After this project is completed, the customers will be on a 27.6kV feeder 10M3, which has a better reliability. Therefore, the outage time and outage frequency will be reduced significantly. The existing pole line on Miller Ave was installed in 1970 and is 49 years old. It is near the end of life. After this project, pole line will be brand new, and it will improve safety to the line crew and the public.
	Analysis for "Like for Like" Renewal Project	Not applicable



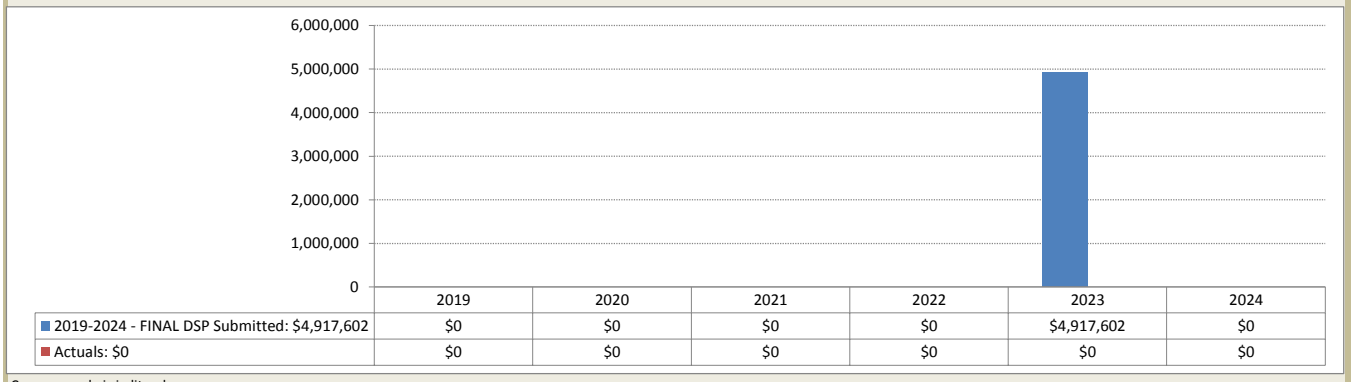
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,537,104	$0	$0	$0	$0	$1,537,104	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	100337	
Project Name	Markham TS #4 Feeder Egress Part 3	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	On Rodick Rd from Markham TS#4 to 14th Ave in Markham, approx. 1.5km.
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	This is the Part 3 of Markham TS #4 Feeder Integration Plan. This project is to install four 27.6kV feeders from MTS4 along Rodick Rd to 14th Ave. These feeders will be connected to existing feeders on 14th Ave and Miller Ave. This project will increase supply capacity by 80 MVA to support growth and development in Markham. The feeders will be underground from MTS4 to Rodick, and crossing Hwy 407 via ducts in the bridge to Miller Ave, appox 0.8 km. They will be overhead installation from Miller Ave to 14th Ave, approx 0.7 km.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	High. Alectra Utilities requires to prepare the distributions system to address the system capacity need driven by intensification and redevelopment. One data center at 371 Gough Rd has been in service since 2014. The initial load is 2 MW and ultimate will be 7 MW . One data center at 4175-14th Ave has been in service since 2015. The initial load will be 5MW and ultimate will be 10 MW eventually. CDM is considered and load forecast is net of CDM.
	Customer Attachment / Load (KVA)	Not Applicable.
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Not Applicable.
	Economic Development	Not Applicable.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, (i.e., not build project as proposed), but to supply load growth from existing facilities. It will impact Alectra distribution system in two following aspects: Capacity A few data center projects are underway along 14th Ave and the peak demand is expected to increase by 20MVA. The Woodbine Ave and Steelcase area is to be redeveloped and new load is expected to added to the system. The existing feeders don't have sufficient capacity for the new load and new feeders are required. Status Quo will jeopardize Alectra's obligation to supply new customers along 14th Ave. The impact severity and timing will depend on the schedule of the ramping-up of customers on 14th Ave. Power Quality Both MTS1 and MTS3 are Jones type stations that tie breakers are closed normally. Feeders on both 27.6kV buses are subject to the same voltage sag impact when a fault occurred on the feeders. A few voltage sensitive customers have complained about the impact. There are no specific costs with the status quo, there are financial risks that are detailed in the risk section. Alectra will not be able supply customers along 14th Ave and Woodbine Ave. There will be more complaints about power quality in the future. Customers will be at risk of lengthier and more impactive outages. This will negatively impact SAIDI and SAIFI. Alectra will be at risk of compromising supply to new loads along 14th Ave and Woodbine Ave that may have negative impacts on our corporate reputation and mission. Alectra is obligated to service future growth within its service territory using "good utility practice". Failure to provide adequate levels of service could lead to regulatory sanctions, and customer damage claims.

	Alternative #1	Alectra Utilities' load forecast process considers the impact of CDM and distributed generation, which is accounted for as part of the load forecast underpinning the lines capacity projects. Alectra Utilities has considered solar and storage options and determined that this option is not economical for the capacity that is required. Based on typical loading of 15-20 MW the cost of non- wire alternatives would 15 times that of traditional solution.
	Alternative #2	Not Applicable.
	Justification for Recommended Alternative	The primary driver for this Investment is to increase supply reliability and supply capacity to the area bounded by Woodbine Ave, Steeles Ave, Kennedy Rd and Hwy 407. The recommended alternative was chosen for the following reasons: To increase supply capacity to the area. This project is going to add 80 MVA capacity to the distribution system to increase supply capacity to Steelcase area, and Warden Ave/14th Ave area. There will be intensification in the south end of Markham. Additional supply capacity is required for the new growth. To increase supply reliability to the area. This project will also provide supply capacity from different transmission line so it will also increase supply reliability. There are many data centers in the Warden/14th Av area. They always demand high supply diversity, i.e., feeders from different buses, different transformer stations and even different transmission lines. MTS4 is supplied from Buttonville Line and it is a different transmission line than that supplying the area now. New feeders from MTS4 will provide transmission line diversity to the area and satisfy customers' needs. A few data center projects are underway and the peak demand is expected to increase by 20MVA.The existing feeders don't have sufficient capacity for the new load and new feeders are required. There are many sensitive big customers along 14th Ave that have two supplies to their facilities. The feeders are from either MTS1 or MTS3. MTS1 is on the transmission line C35P/C36P and MTS3 is on the transmission line V71P/V75P. But both MTS1 and MTS3 are Jones type stations that tie breakers are closed normally. Feeders on both 27.6kV buses are subject to the same voltage sag impact when a fault occurred on the feeders. A few voltage sensitive customers have complained about the impact. Funding this project will enable Alectra to meet its regulatory duty to supply the customers in our service area. Additionally it will allow us to operate the system in an efficient and effective manner by providing coordinated protections between source and load and having adequate backup capacity in the event of an outage. MTS4 has two 75/100/125 MVA transformers and the 27.kV bus tie is normally open. It will improve voltage sag issue to the customers. The new four ccts on Rodick Rd serve as ties between ccts on Woodbine Ave from MTS4 and ccts on 14th Ave from MTS1. They will provide 120 MVA contingency capacity and will allow load transfer between transformer stations under contingency such as pole failures, TS failure, and transmission line outage.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The risk is to get approval from the City of Markham and MTO in time. Capital design will start the design of the project in advance and should get the approvals in place in time. Customers load ramping up schedule will impact the timing and priority.
	Comparative Information on Equivalent Historical Projects (if any)	There are two similar feeder egress projects from MTS4: -Four feeders from MTS4 to Woodbine Ave via Yorktech Blvd via underground ductbank. -Four feeders from MTS4 to Hwy 7 via Rodick Rd via underground ductbank.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable.
	Identify any reliability, efficiency, safety or coordination benefits	This project will increase power supply reliability and reduce risk of prolonged outages. The project will provide for incremental feeder tie points between MTS1 and MTS4. It will improve the operational efficiency and effectiveness of these stations.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $4,917,602	$0	$0	$0	$0	$4,917,602	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

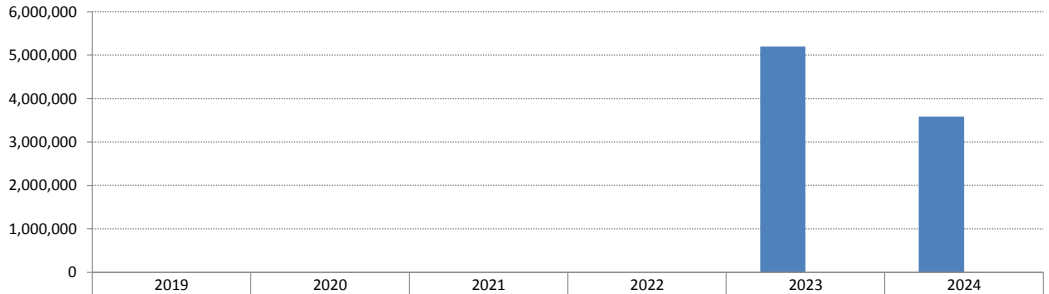
Currency scale is in literal

OEB Multi-Project Report

Project Code	100340	
Project Name	Vaughan TS#4 Feeder Integration - Part 3	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Various locations in Vaughan The project scope includes following constructions in year one: -New 4 ccts in UG on easement from VTS4 to Kirby Sdrd – 0.2 km -New 4 ccts pole line on Kirby Sdrd from VTS4 to Kipling Ave – 0.3 km - 4 ccts existing/new pole line on Kipling Ave from Kirby Sdrd to Teston Rd – 2 km -New 4 ccts pole line on Teston Rd from Kipling Ave to Pine Valley Drive – 2 km -2nd cct on existing pole line on Teston Rd from Pine Valley Drive (PVD) to Weston Rd – 2 km -2nd cct on existing pole line on Pine Valley Drive from Teston Rd to MMD – 2 km The project scope includes following constructions in year two: -Adding 2 ccts on existing pole line on Teston Rd from Weston Rd to Jane St – 2 km -Adding 2 ccts on existing pole line or rebuild pole into 4 ccts where necessary on Weston Rd from MMD to Rutherford Rd – 2km
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	This project is necessary to bring four 27.6kV feeders (25M5/25M6/25M7/25M8) out from VTS4 and integrate them into the existing distribution system. This project will be implemented in 2 years to minimize the impact on Alectra budget and resources. The project scope includes following constructions in year one: -New 4 ccts in UG on easement from VTS4 to Kirby Sdrd – 0.2 km -New 4 ccts pole line on Kirby Sdrd from VTS4 to Kipling Ave – 0.3 km - 4 ccts existing/new pole line on Kipling Ave from Kirby Sdrd to Teston Rd – 2 km -New 4 ccts pole line on Teston Rd from Kipling Ave to Pine Valley Drive – 2 km -2nd cct on existing pole line on Teston Rd from Pine Valley Drive (PVD) to Weston Rd – 2 km -2nd cct on existing pole line on Pine Valley Drive from Teston Rd to MMD – 2 km The project scope includes following constructions in year two: -Adding 2 ccts on existing pole line on Teston Rd from Weston Rd to Jane St – 2 km -Adding 2 ccts on existing pole line or rebuild pole into 4 ccts where necessary on Weston Rd from MMD to Rutherford Rd – 2km
	Main Driver - System Service	Support Capacity Delivery

	Priority and Reasons for Priority	High. Alectra Utilities requires to prepare the distributions system to address the system capacity need driven by intensification and redevelopment. The site for Vaughan TS4 (VTS4) is located at north-west corner of Kirby Sdrd and Kipling Ave in Vaughan. It will supply City of Vaughan. VTS4 has been constructed with 2x75/125 MVA transformers in a DESN arrangement with 12 feeder positions. Vaughan TS4 has been in-service since December 2017 with four feeders. Major future load growth areas in Vaughan are summarized below: Data Center Digital Realty has built a new data center at 1 Century Place (former Tostar building) in 2017. As per their website, this Canadian wholesale data centre spans over 66,000 square metres (711,000 square feet) with a critical power capacity of up to 46 MW. The data centre offers the best in flexibility and performance. It features 23 computer rooms ranging from 800 to 1,200 square meters (8,600 to 13,000 square feet) and can accommodate power capacities between 1.0 and 3.0 megawatts. Resiliencies range from N to 2N. The customer indicated that the ultimate load may go to 72MW. The data center is supplied by two dedicated 27.6kV feeders from VTS2. VTS2 had approx. 30MW capacity left. To accommodate this data center, 40MW of loads on VTS2 have to be transferred to other stations through feeder reconfiguration. Two new feeders are required from VTS4. West Vaughan Employment Area The West Vaughan Employment Area Secondary Plan sets out detailed policies to create a large economic opportunity for York Region. With over 500 hectares of employment designated lands, this area will continue to allow the City of Vaughan to attract a wide range of businesses requiring large tracks of land with excellent Regional road and provincial highway access. The Secondary Plan is planned to accommodate approximately 20,120 employees. The peak demand for this development is estimated to be 50MW to 80 MW when fully built out, but no time line is
	Customer Attachment / Load (KVA)	Not Applicable.
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Not Applicable.
	Economic Development	Not Applicable.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, (i.e., not build project as proposed), but to supply load growth from existing facilities. It will impact Alectra distribution system in two following aspects: Reliability VTS4 is supplied from 230kV Minden transmission line, while the existing transformer stations in Vaughan are supplied by 230kV Parkway line (VTS1/VTS1E and VTS2) or Kleinburg Line (VTS3). VTS4 will provide backup capacity to other TS in case of transmission line contingency. This will add transmission line diversity to Alectra's distribution system. Capacity Two feeders 21M5 and 21M11 from VTS2 supply Vaughan Metro Center (VMC). The peak of VTS2 was 110 MW in 2017 due to abnormal feeder configuration and cool than normal summer weather. It was 133MW in 2016 and only 20MW capacity left before it reaches the 10 day Limited Time Rating (LTR) of 153 MW. A new data center with demand up to 72MW has been built near VTS2. It does not have extra capacity to supply new loads in the VMC development (approx. 100MW)., In fact, VTS2 needs to off loaded to supply the new data center. CDM is considered for all projects and load forecast is net of CDM. The peak demand of VTS3 was 145 MW in 2017, and it has only 8 MW left for future development in Vaughan West Employment land. Status Quo will cause VTS#2 and VTS#3 to exceed its LTR under 1-in-10 weather (extreme summer temperatures) in the long term. The impact severity and timing will depend on the schedule of the VMC and Vaughan West Employment development. There are no specific costs with the status quo, there are financial risks that are detailed in the risk section. Operating transformer stations over LTRs violates Alectra's planning philosophy and good utility practice. Customers will be at risk of lengthier and more impactive outages. This will negatively impact SAIDI and SAIFI. Alectra will be at risk of compromising supply to new loads in Vaughan north and new hospital areas that may have negative impacts on our corporate reputation and mission. Alectra is obligated to service future growth within its service territory using "good utility practice". Failure to provide adequate levels of service could lead to regulatory sanctions, and customer damage claims.
	Alternative #1	Not Applicable.
	Alternative #2	Not Applicable.

	Justification for Recommended Alternative	Status quo was not chosen for the following reasons: • it does not address risks to the reliability of customers in Vaughan and does not meet system needs for supply capacity to ensure loadings on VTS2 are kept to acceptable level. The recommended alternative (VTS4 Feeder Integration Plan-Part 3) was chosen for the following reasons: • It improves the reliability situation mentioned in the status quo option • It will increase supply capacity to VMC and Vaughan West. • It will meet the immediate need for supply capacity. • It is consistent with the VTS4 feeder integration plan Funding this project will enable Alectra to meet its regulatory duty to supply the customers in our service area. Additionally it will allow us to operate the system in an efficient and effective manner by providing coordinated protections between source and load and having adequate backup capacity in the event of an outage. They will provide 80 MVA supply capacity. 25M5 and 25M6 will be tapped to existing ccts on Weston Rd s/o Rutherford, and they will replace existing feeders 21M3 and 21M4 from VTS2. It will reduce peak on VTS2 by 40MVA right way. Feeder 21M3 and 21M4 will be re-routed to VMC area to supply the new development. The peak demand on VTS2 will increase as new customers are connected to feeder 21M3 and 21M4. 25M7 and 25M8 will be tapped to existing lower ccts on Teston Rd from Weston Rd to Jane St. Feeder 25M7/25M8 will off load feeder 22M13 and 22M12 from VTS3 so that they can be used to supply new development in Vaughan West. Feeder 25M7/25M8 will also supply new hospital. Feeders 25M5/25M6/25M7/25M8 also serve as ties between VTS4 and VTS1, VTS2, VTS3. They will provide 120 MVA contingency capacity and will allow load transfer between transformer stations under contingency such as pole failures, TS failure, and transmission line outage. This project will increase power supply reliability and reduce risk of prolonged outages. The completion of this project will allow for VTS1, VTS1E, VTS2, VTS3 and VTS4 to adequately supply new developments in their respective service areas. The project will provide for incremental feeder tie points between VTS4 and VTS1, VTS2, VTS3. It will improve the operational efficiency and effectiveness of these stations.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The risk is to get approval from the City of Vaughan in time. Capital design will start the design of the project in advance and should get the approvals in place in advance.
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable.
	Identify any reliability, efficiency, safety or coordination benefits	This project will increase power supply reliability and reduce risk of prolonged outages. The completion of this project will allow for VTS1, VTS1E, VTS2, VTS3 and VTS4 to adequately supply new developments in their respective service areas. The project will provide for incremental feeder tie points between VTS4 and VTS1, VTS2, VTS3. It will improve the operational efficiency and effectiveness of these stations.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $8,787,686	$0	$0	$0	$0	$5,202,312	$3,585,374
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

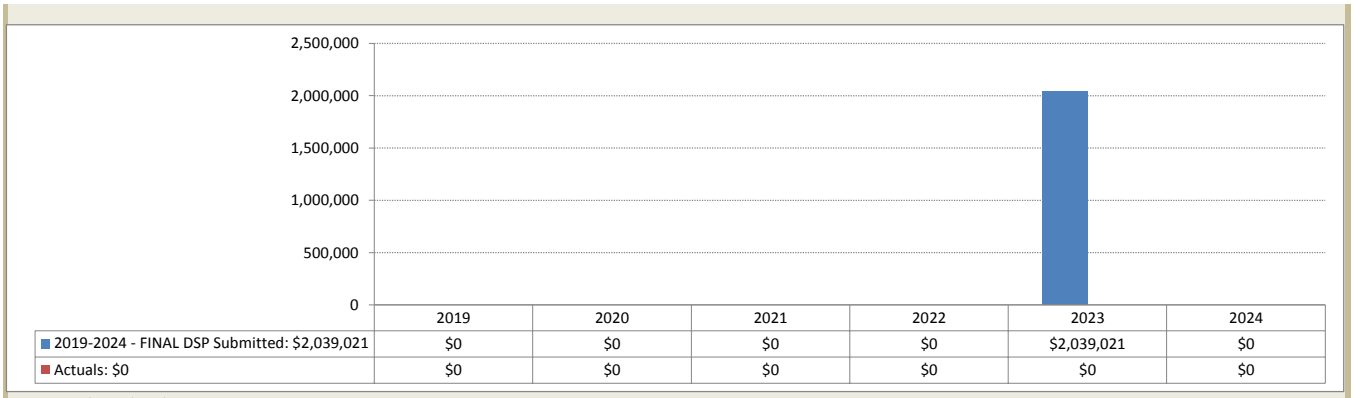
OEB Multi-Project Report

Project Code	100632
Project Name	27.6 kV Pole Line on 14th Ave from Hwy 48 to 9th Line
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	On 14th Ave from Hwy 48 to 9th Line in Markham, approx. 2km.
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	Rebuild the existing 2 ccts pole line into four 27.6 kV ccts on 14th Ave between Hwy 48 and 9th Line, and install necessary load interrupter switches as per Alectra's design standard. This project will extend 2 feeders (24M3/24M6) on 14th Ave from Hwy 48 to 9th Line. 24M3/24M6 will connect to the existing 2 ccts on 14th Ave east of 9th Line so that feeder 24M3/24M6 can be rerouted to Box Grove area and Cornell area. The purpose of this project is to increase the supply capacity to Markham East.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	High. Alectra Utilities requires to prepare the distributions system to address the system capacity need driven by green field expansion. Installing two additional 27.6kV circuits on 14th Ave will: 1. Address the loading issue of Cornell and Box Grove both in the short and long term. 2. Provide alternate supply route for Cornell development to increase reliability. 3. Consistent with the original Markham TS4 feeder integration plan and business case. The Cornell Community (OPA#20) is bounded by north of 16th Ave to the north, Reesor Road to the east, south of Hwy 7 to the south, and 9th Line to the west. It will accommodate approximately 16,000 dwelling units with approximately 46,000 people and 10,000 to 13,000 jobs. The commercial/business parks will be located at east end of Cornell development (Reesor Rd/Hwy 7 area). The total load is estimated to be 46 MW when it is fully built out. CDM is considered for all projects and load forecast is net of CDM. This development has been infilling for the past 5 years and is about 25% completed. Adjacent to the Cornell Development is the development named Box Grove (OPA#92). It has 2,600 dwelling units and will have 10,000 additional residents when completed. This development is at 50% completion and is expected to be fully developed with next few years. The existing feeders in the area don't have sufficient capacity to supply future growth. The original feeder integration plan for Markham Transformer Station Four (MTS4) was to reroute two new feeders (24M3 and 24M6) to provide additional capacity for developments in Cornell and Boxgrove. All existing supplies to Cornell are radial from 9th Line, meaning that any pole failure on 9th Line will cause large scale and prolonged outages to the customers. This project will increase reliability of Cornell area and avoid blackout situation by supplying Cornell from Reesor Rd. These two feeders will allow loads to be supplied from both the east and west. Two new feeders are required for Markham east. It has been planned to reroute feeder 24M3/M6 to this area by rebuilding multiple sections of pole lines: Section 1: Rebuild pole line on 14th Ave from 9th Line to Reesor Rd into 2 ccts pole line (2km). This section has been completed. Section 2: Rebuild pole line on Reesor Rd from 14th Ave to Hwy 7 into 2 ccts pole line (2km). This section has been completed. Section 3: Rebuild pole line on 14th Ave from Hwy 48 to 9th Line into 4 ccts pole line (2km)
	Customer Attachment / Load (KVA)	Not Applicable.
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Not Applicable.
	Economic Development	Not Applicable.
	Environmental Benefits	Not Applicable.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing and supply the future growth from the existing area feeders: 24M4, 24M5, 24M7 and 24M8. The peaks of these feeders in summer 2018 were: 24M4 327A 24M5 402A 24M7 223A 24M8 204A Feeders 24M5 was over planning limit and feeder 24M4 is approaching the planning limit (400A). They have no extra capacity to supply new loads. Existing load over planning limits should be redirected to alternate supplies. Feeder 24M8 has additional capacity to supply new load or to take on redirected load. Feeders 24M4/24M7/24M8 combined have only 22 MVA capacity for future load growth. Feeder 24M7 supplies customers on the east side of 9th Line between Hwy 7 and Steeles Ave, and load on Reesor Rd between Steeles Ave and Major Mack Dr. The peak demand of 24M7 was 223A in 2018. The incremental capacity remaining in the feeder is insufficient to accommodate future growth in the area. In addition, feeder 24M7 is a rural feeder with a total trunk feeder length of 40 km. Alectra's typical urban feeder length average is 10km to 16 km. To continue to supply Cornell and Box Grove from the 24M7, as configured, will result in decreased reliability (long feeder length greatly exposes customers to higher than normal interruptions) and voltage drop issues as the feeder is loaded up. In summary, there is insufficient capacity to service the Cornell and Box Grove areas after 2023. New feeder capacity is required to supply load growth in the area beyond 2023. Several sections need to be built to route capacity to the Cornell area. This project is required to meet future growth. Based on status of Cornell development, additional 30 MW's is expected to be added to the system when it is fully developed. Two additional 27.6 kV feeders are required. Looping Alectra has adopted "Open Grid Network" planning philosophy, i.e., loop supply with normal open points. Under Status Quo, all existing supplies to Cornell and Box Grove are radial from 9th Line meaning that any pole failure on 9th Line will cause large scale and prolonged outages to the customers. It has been planned to form a double ccts 27.6kV loop around Cornell and Box Grove via 9th Line, 14th Ave, Hwy 7, Reesor Rd and 16th Ave.
	Alternative #1	Non- wires Alectra Utilities' load forecast process considers the impact of CDM and distributed generation and has been considered during the needs Alectra Utilities has considered non wire alternative (solar and storage option) and determined that this option is not economical for the capacity that is required. Based on typical capacity of 20 MW per feeder the cost of non-wire alternatives would 15 times that of traditional solution and hence this option has been rejected.
	Alternative #2	Not applicable
	Justification for Recommended Alternative	Installing 4 circuits on 14th Ave from Hwy 48 to 9th Line will reroute feeder 24M3/24M6 from Hwy 48 to 9th Line to Box Grove area. Status Quo was not chosen for the following reasons: 1. Status Quo does meet long term supply to Cornell and Box Grove. The recommended alternative (Build 4 ccts on 14th Ave) was chosen for the following reasons: 1. It addresses the loading issue of Cornell and Box Grove both in the short and long term. 2. It reduces the risk of customer outages that might arise as a result of increasing loading on existing feeders. 3. It is consistent with the original Markham TS4 feeder integration plan and business case. This project is needed to provide 40 MVA supply capacity to Markham east and address the loading issue of Cornell and Box Grove both in the short and long term. This project will also reduce the risk of customer outages that might arise as a result of the long and rural feeder. Execution of this investment will alleviate capacity constraints and as well as ensure the availability of sufficient capacity to efficiently connect customers to Alectra Utilities's distribution system. It will allow Alectra Utilities to maintain supply to customers during contingency events and operation flexibility during maintenance and other capital work. This option will help Alectra Utilities maintain service quality and reliability standards for the existing customers as additional load is added to the system. Alectra Utilities plans to construct and configure feeders to present day technical standards to ensure customer choice for integrating distributed generation, electric vehicles and energy storage solutions.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The risk is to get approval from the City of Markham in time. Capital design will start the design of the project in advance and approvals should be in place in time. A large number of residential and commercial projects are under construction now. New customers and load are expected in the years to come.
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable.
	Identify any reliability, efficiency, safety or coordination benefits	These two feeders are necessary to increase supply capacity to Cornell by 40 MVA. They will increase supply reliability too. All existing supplies to Cornell are radial from 9th Line, meaning that any pole failure on 9th Line will cause large scale and prolonged outages to the customers. This project will increase reliability of Cornell area and avoid blackout situation by supplying Cornell from Reesor Rd. These two feeders will allow loads to be supplied from both the east and west.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $2,039,021	$0	$0	$0	$0	$2,039,021	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

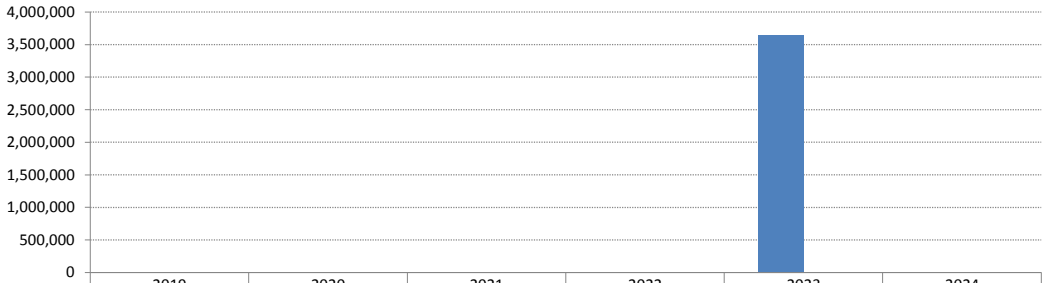
Project Code	100904
Project Name	Install Double Cct Pole Line on Major Mackenzie - Hwy 27 to Huntington Rd
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	From Hwy 27 to Huntington Rd in Vaughan The schedule of this project will depend on YR road widening work of Major Mack Dr.
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	This project is to: 1. re-build existing single phase 4.8kV pole line into double 27.6kV ccts on Major Mack Dr from Hwy 27 to Huntington Rd 2. extend two ccts from on Major Mack Dr from Hwy 27 to Huntington Rd 3. supply existing customers and new developments along Major Mack from the new ccts.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	Alectra Utilities requires to prepare the distributions system to address the system capacity need driven by green field expansion. The vacant lands on both sides of Major Mack Dr are part of the The Vaughan Enterprise Zone. They will be developed and customers are expected in the coming years. There is one 4.8kV single phase cct on the west half of the section and there is one 27.6kV cct (1/0 AL) on the east half the section. They don't have sufficient capacity for future developments in the area. York Region is going to widen Major Mackenzie Drive from Hwy 27 to Huntington Rd, and further west to Hwy 50. Existing pole line has to be relocated due to road widening work. There is opportunity for Alectra to rebuild the existing single phase 4.8 kV cct to double 27.6kV ccts in conjunction with the pole line relocation project. Building 2 ccts in conjunction with the road widening project will reduce the cost and traffic impact. The Vaughan Enterprise Zone The Vaughan Enterprise Zone covers more than 3,800 acres, or approximately 1,566 hectares of employment land at Vaughan's western boundaries. The size of the enterprise zone makes it one of the largest employment areas in the Greater Toronto Area, and paired with transportation infrastructure in close proximity, potentially one of the most valuable employment areas in the province. The existing profile of the Enterprise Zone includes national head offices, international and national logistics and distribution centers, and some manufacturing. Overall, the area is projected to accommodate 60,000 jobs over the next 20 years. The estimated demand will be 90MW. CDM is considered and load forecast is net of CDM. The strength of the area is the existing transportation network that services it. Presently the employment area has direct access to Highway 407, as well as Highways 7, 27, and 50. In addition, Highway 427, which already connects to the Enterprise Zone, is planned to expand northward through the Enterprise Zone to Major Mackenzie Drive, opening up industrial and commercial opportunities north of Highway 7. All of these routes provide access to the Highway 401 corridor, which connects to the rest of Canada and important North American trade networks.
	Customer Attachment / Load (KVA)	Not Applicable.
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Not Applicable.
	Economic Development	This project will support ICI development in west Vaughan.
	Environmental Benefits	Not Applicable.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, (i.e., not build project as proposed), but to supply load growth from existing facilities. It will impact Alectra distribution system in two following aspects: Capacity There is one single phase 4.8kV cct on Major Mack Dr between Huntington and Hwy 27. It does not have the capacity to supply Vaughan West Employment Area. Status Quo will jeopardize Alectra's obligation to supply new customers in Vaughan West Employment Area developments. The impact severity and timing will depend on the Vaughan West Employment Area development progressing. Reliability There is one single phase 4.8kV cct on Major Mack Dr between Huntington and Hwy 27. This does not conform to Alectra's adopted "Open Grid Network" planning philosophy, i.e., loop supply with normal open points. The Kleindor development (north east corner of Major Mack Dr and the railway track) is supplied from Hwy 27 through a radial underground cable. It has 622 customers, and 83 transformers or 4,575 kVA connected. Any failure on the cable will cause large scale and prolonged outages to the customers. There are no specific costs with the status quo, there are financial risks that are detailed in the risk section. Alectra will not be able supply all customers in Vaughan West employment developments when fully built. In addition, customers in Kleindor development will be on a radial supply. Supplying large number of customers in new developments radially violates Alectra's planning philosophy and good utility practice. Customers will be at risk of lengthier and more impactive outages. This will negatively impact SAIDI and SAIFI. Alectra will be at risk of compromising supply to new loads in Kleindor, and Vaughan west development areas that may have negative impacts on our corporate reputation and mission. Alectra is obligated to service future growth within its service territory using "good utility practice". Failure to provide adequate levels of service could lead to regulatory sanctions, and customer damage claims.
	Alternative #1	Non- wires Alectra Utilities' load forecast process considers the impact of CDM and distributed generation and has been considered during the needs. For this project these options have not been considered as new feeders are needed to connect the customers to grid.
	Alternative #2	Not Applicable.
	Justification for Recommended Alternative	There is one single phase 4.8kV cct on Major Mack Dr between Huntington and Hwy 27. It does not have the capacity to supply Vaughan West. This project is required to supply new development on Major Mack between Hwy 27 and Huntington Rd. It includes following major future load growth areas in Vaughan are summarized below: West Vaughan Employment Area The West Vaughan Employment Area Secondary Plan sets out detailed policies to create a large economic opportunity for York Region. With over 500 hectares of employment designated lands, this area will continue to allow the City of Vaughan to attract a wide range of businesses requiring large tracks of land with excellent Regional road and provincial highway access. The Secondary Plan is planned to accommodate approximately 20,120 employees. There are 1,400 acres of vacant land on both sides of Major Mackenzie Drive that has been zoned as employment land. The potential load from these lands will be significant. The peak demand for this development is estimated to be 50MW to 80 MW when fully built out, but no time line is available at this time. Four 27.6kV feeders are required to supply the new load. This project improves the reliability situation mentioned in the status quo option. There is one single phase 4.8kV cct on Major Mack Dr between Huntington and Hwy 27. Alectra has adopted "Open Grid Network" planning philosophy, i.e., loop supply with normal open points. The Kleindor development is supplied from Hwy 27 through a radial underground cable, meaning that any pole failure on the cable will cause large scale and prolonged outages to the customers. Funding this project will enable Alectra to meet its regulatory duty to supply the customers in our service area. Additionally it will allow us to operate the system in an efficient and effective manner by providing coordinated protections between source and load and having adequate backup capacity in the event of an outage. In the short term, this project increase supply reliability for Kleindor development. In the long term, a new transformer station VTS4 has been built in the Kirby and Kipling area and two new feeders from VTS4 will be extend to Hwy 27/Major Mack Dr area. This project will reroute the 40MVA capacity of VTS4 to supply Vaughan West development. The two ccts on Major Mack Dr serve as ties between ccts on Hwy 27 from VTS4 and ccts on Huntington Rd from Kleinburg TS. They will provide 60 MVA contingency capacity and will allow load transfer between transformer stations under contingency such as pole failures, TS failure, and transmission line outage. Execution of this investment will alleviate capacity constraints and as well as ensure the availability of sufficient
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The risk is to get approval from the City of Vaughan and York Region in time. York Region is going to rebuild Major Mack Dr in advance. The pole line construction schedule will depend on road widening schedule. Capital design will work closely with the Region and City to coordinate the project.
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable.

Description of Incorporation of Advanced Technology, if applicable	Not Applicable.
Identify any reliability, efficiency, safety or coordination benefits	It will also establish ties between feeders on Hwy 27 and feeders on Huntington Rd. It will also increase power supply reliability in the west part of Vaughan. This project will increase power supply reliability and reduce risk of prolonged outages. The project will provide for incremental feeder tie points between VTS3 and Kleinburg TS. It will improve the operational efficiency and effectiveness of these stations.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $3,650,586	$0	$0	$0	$0	$3,650,586	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

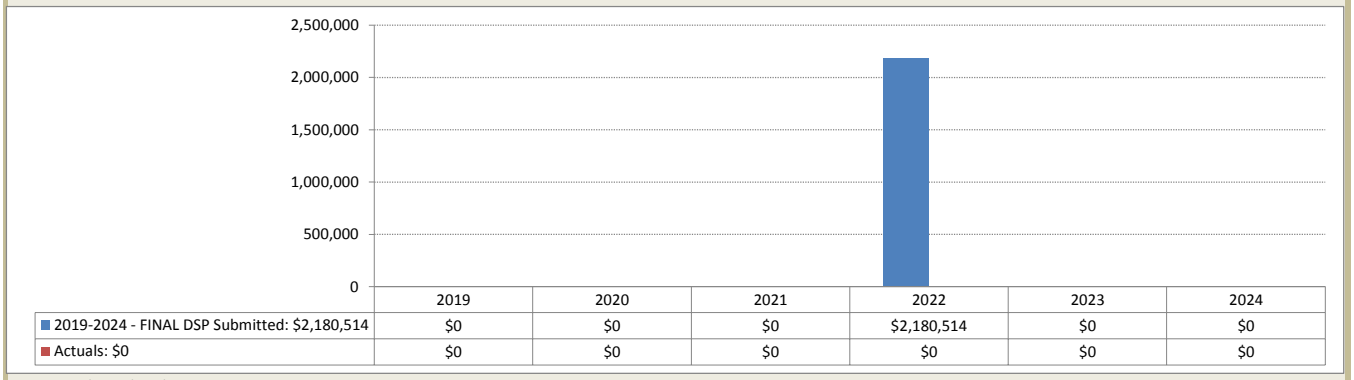
Project Code	100909
Project Name	Rebuild 27.6 kV pole line for 4 Ccts on Warden Ave from Major Mack to Elgin Mills
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	On Warden Ave from Major Mack Dr to Elgin Mills Rd in Markham - 2 km
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	Rebuild the existing single cct pole line into 4 ccts, 2 ccts now and 2 ccts provision for future on Warden Ave from Major Mack Dr to Elgin Mills Rd in Markham - 2 km, and install several load interrupter switches as per Alectra design standard. This project is the third part of a multiple year project of rerouting two feeders 12M10/12M11 to Markham Future Urban Area. The first part is to add two ccts on Warden Ave from Hwy 7 to 16th Ave that has been completed in 2017. The second part is to extend the two ccts on Warden Ave f from 16th Ave to Major Mack Dr, and the fourth part is to extend 2 ccts on Warden Ave from Elgin Mills to 19th Ave. The total length is 8km from Hwy 7 to 19th Ave. The timing of the fourth part depends on the progress of the FUA development.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	High. Alectra Utilities requires to prepare the distributions system to address the system capacity need driven by green field expansion in Markham FUA. The existing feeders supplying Markham north don't have sufficient capacity for future growth. The city of Markham is being supplied by nine 230/27.6 KV stations and 53-27.6KV feeders. The York Region recently issued the growth plans which account for approximately 613,900 new residents and 305,100 new jobs between 2016 and 2041.This growth is distributed throughout the York region. The city of Markham is working on an Official Planning Amendment which expands the Urban Area of the Town of Markham to provide opportunities for urban growth to the year 2031. The north Markham Future Urban Area covers about 1,288 hectares, or 3,183 acres, bordered by Major Mackenzie Drive to the south, the Hydro Corridor and Woodbine Avenue to the west, the northerly City limits and Elgin Mills Road to the north, and the Robinson Creek to the east. See attached for details. Approximately 675 hectares (1,668 acres) of developable lands are designated for future neighbourhoods, located primarily between Major Mackenzie Drive and Elgin Mills Road. Approximately 300 hectares (741 acres) located north of Elgin Mills Road are designated for employment uses. In total, the Future Urban Area is intended to accommodate approximately 12,000 residential units with a population of approximately 38,000 persons, and approximately 19,000 jobs. Based on 2.5kW per unit and 1.5kW per job, it is expected approx. 60 MW of new loads are expected on both sides of Warden Ave north of Major Mackenzie Dr. CDM is considered for all projects and load forecast is net of CDM. The existing feeders supplying Markham north don't have sufficient capacity to provide for future load growth.
	Customer Attachment / Load (KVA)	Not Applicable. The Future Urban Area is intended to accommodate approximately 12,000 residential units with a population of approximately 38,000 persons, and approximately 19,000 jobs. The expected load is 60MW. This project provide 40 MVA capacity.
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Not Applicable.
	Economic Development	This provide 40 MVA capacity to area on Warden Ave north of Elgin Mills Rd. It will provide capacity for new residential and non-residential development in the FUA area.
	Environmental Benefits	Not Applicable.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, (i.e., not build the proposed project), but to supply load growth from existing facilities. It will impact Alectra's distribution system capacity. Markham north is supplied by two feeders by 10M2 on Woodbine Ave and 12M1 on Warden Ave. Due to a cooler than normal summer weather in 2017, the peak in 2017 was 250A on 10M2 and 240A on 12M1. Each feeder has a capacity of 400A or 20 MVA. The total of these two feeders capacity is 800A (40MVA). There is only 310A or 15MVA capacity left on these two feeders for future development. A new development King Square on Woodbine Ave north of 16th Ave is under construction in 2017 and will add new 4MW (approx. 80A) to the system. A Power-to-Gas project (H2 plant) has been built in the Woodbine Ave/Elgin Mills area, and the estimated peak would be 2MW in 2018, and may go up to 5MW after 2020. They will be supplied by feeder 10M2. A development has also been proposed in the land south of 19th Ave and east of Woodbine Ave, and the estimated load is 10MW. The timeline is unknown at this time. Therefore, existing feeders 10M2 and 12M1 do not have sufficient capacity to supply new loads in the Hwy 404 North development and new urban expansion. In the meanwhile, feeders 12M10/12M11 end on Warden Ave just south of 16th Ave. They are very lightly utilized. There are no specific costs with the status quo, there are financial risks that are detailed in the risk section. It will cause feeder 10M2 and 12M1 overloading as the developments in Markham progress. Customers will be at risk of lengthier and more impactive outages. This will negatively impact SAIDI and SAIFI. Alectra is obligated to service future growth within its service territory using "good utility practice". Failure to provide adequate levels of service could lead to regulatory sanctions, and customer damage claims. Background The city of Markham is being supplied by nine 230/27.6 KV stations and 53-27.6KV feeders. The York Region recently issued the growth plans which account for approximately 613,900 new residents and 305,100 new jobs between 2016 and 2041.This growth is distributed throughout the York region.
	Alternative #1	Alectra load forecast is net of CDM and DG. Feeders are required to connect customers hence non wire alternative has not been considered for this investment.
	Alternative #2	Not applicable
	Justification for Recommended Alternative	This project includes following constructions: Re-build the single 27.6kV cct pole line into 4 ccts 27.6kV pole line on Warden Ave from Major Mack Dr to Elgin Mills Rd. Connect the new pole line to the existing ccts on Major Mack and Elgin Mills Install LIS switches as per PowerStream design standard This project will extend feeder 12M10/12M11 to Markham North and to increase supply capacity and reliability to Hwy 404 North area and FUA area north of Major Mack between Woodbine Ave and Kennedy Rd. York Region is working on an Official Planning Amendment which expands the Urban Area of the City of Markham to both sides of Warden Ave to provide opportunities for urban growth to the year 2031. The north Markham Future Urban Area covers about 1,288 hectares (3,183 acres bordered by Major Mackenzie Drive to the south, the Hydro Corridor and Woodbine Avenue to the west, the northerly City limits and Elgin Mills Road to the north, and the Robinson Creek to the east. Approximately 675 hectares (1,668 acres) of developable lands are designated for future neighbourhoods, located primarily between Major Mackenzie Drive and Elgin Mills Road. Approximately 300 hectares (741 acres) located north of Elgin Mills Road are designated for employment uses. In total, the Future Urban Area is intended to accommodate approximately 12,000 residential units with a population of approximately 38,000 persons, and approximately 19,000 jobs. It is expected approx. 60 MW of new loads are expected on both sides of Warden Ave north of Major Mackenzie Dr. Markham north is supplied by two feeders by 10M2 on Woodbine Ave and 12M1 on Warden Ave. Due to a cooler than normal summer weather in 2017, the peak in 2017 was 250A on 10M2 and 240A on 12M1. Each feeder has a capacity of 400A or 20 MVA. The total of these two feeders capacity is 800A (40MVA). There is only 310A or 15MVA capacity left on these two feeders for future development. For the new urban area, they expect to see building permit issued in 2019 and new houses in 2020. It is not clear where the development will start first, but the total distance is 8km from Hwy 7 to 19th Ave. Two new 27.6kV feeders are required for the Hwy 404 Development and urban expansion in Markham. The two feeders 12M10/12M11 have been planned to be rerouted to Warden Ave/Elgin Mills area to supply new growth in Markham north.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The risk is to get approval from the City of Markham and York Region in time. Capital Design will start the design of the project in advance and should get the approvals in place in time. Customers load ramping up schedule in Markham north area will impact the timing and priority.
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable.

Identify any reliability, efficiency, safety or coordination benefits	This project will increase supply reliability to Markham north. In the short term, the new ccts (12M10/12M11) will off load existing feeders 10M2, 12M4 and 12M1. They will reduce feeder exposure of existing feeders as well as number of customers on the feeders. As a result, they will increase supply reliability. Markham north area is supplied by feeders on Woodbine Ave. Pole line failure will cause extensive and prolonged outages. In the long term, this project will allow Markham North to be supplied from Woodbine Ave and Warden Ave. In case of pole line failure on Woodbine Ave, customers in Markham North will be supplied from Warden Ave, This project will also reduce line losses of existing feeders in the area by reducing loading on these feeders. It will increase system efficiency.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $2,180,514	$0	$0	$0	$2,180,514	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

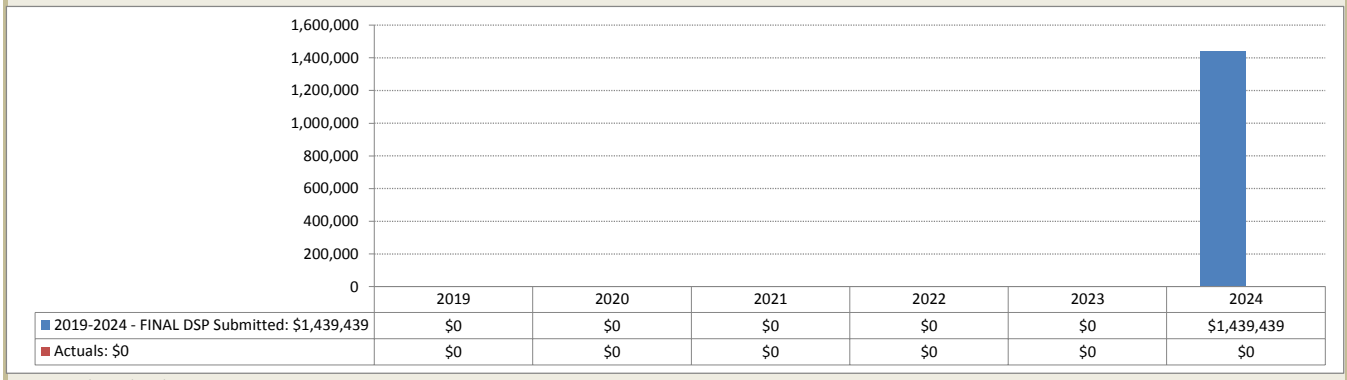
Currency scale is in literal

OEB Multi-Project Report

Project Code	100913	
Project Name	Pole Line Installation Double Cct on Major Mack - Huntington Rd to Hwy 50	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	On Major Mack Dr from Huntington Rd to Hwy 50 in Vaughan, approx. 2 km. This project depends on YR road widening work schedule.
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	The objectives of this project is to install double a 27.6kV ccts pole line on Major Mack Dr from Huntington Rd to Hwy 50 in Vaughan, approx. 2km., install LIS at intersections, and connect the new ccts to the existing ccts on Hwy 50, and Huntington Rd.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	Alectra Utilities requires to prepare the distributions system to address the system capacity need driven by green field expansion. The vacant lands on both sides of Major Mack Dr are part of the The Vaughan Enterprise Zone. They will be developed and customers are expected in the coming years. There is one radial supply on Major mack Dr east of Hwy 50. It does not have sufficient capacity for future developments in the area. York Region is going to widen Major Mackenzie Drive from Hwy 27 to Huntington Rd, and further west to Hwy 50. Existing pole line has to be relocated due to road widening work. There is opportunity for Alectra to rebuild the existing single phase 4.8 kV cct to double 27.6kV ccts in conjunction with the pole line relocation project. Building 2 ccts in conjunction with the road widening project will reduce the cost and traffic impact. The Vaughan Enterprise Zone The Vaughan Enterprise Zone covers more than 3,800 acres, or approximately 1,566 hectares of employment land at Vaughan's western boundaries. The size of the enterprise zone makes it one of the largest employment areas in the Greater Toronto Area, and paired with transportation infrastructure in close proximity, potentially one of the most valuable employment areas in the province. The existing profile of the Enterprise Zone includes national head offices, international and national logistics and distribution centers, and some manufacturing. Overall, the area is projected to accommodate 60,000 jobs over the next 20 years. The estimated demand will be 90MW. CDM is considered and load forecast is net of CDM. The strength of the area is the existing transportation network that services it. Presently the employment area has direct access to Highway 407, as well as Highways 7, 27, and 50. In addition, Highway 427, which already connects to the Enterprise Zone, is planned to expand northward through the Enterprise Zone to Major Mackenzie Drive, opening up industrial and commercial opportunities north of Highway 7. All of these routes provide access to the Highway 401 corridor, which connects to the rest of Canada and important North American trade networks.
	Customer Attachment / Load (KVA)	Not Applicable.
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Not Applicable.
	Economic Development	Not Applicable.
	Environmental Benefits	Not Applicable.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, (i.e., not build project as proposed), but to supply load growth from existing facilities. It will impact Alectra distribution system in two following aspects: Reliability There is one radial single phase 4.8kV cct on Major Mack Dr between Huntington and Hwy 50. Customers on Major Mack Dr between Hwy 50 and Huntington Rd will be on a radial supply. Alectra has adopted "Open Grid Network" planning philosophy, i.e., loop supply with normal open points. Capacity There is one single phase 4.8kV cct on Major Mack Dr between Huntington and Hwy 50. It does not have the capacity to supply new customers on Major Mack Dr between Hwy 50 and Huntington Rd. It cannot supply development in Vaughan West area either. Status Quo will jeopardize Alectra's obligation to supply new customers in Vaughan west developments. The impact severity and timing will depend on the schedule of the Vaughan West development. There are no specific costs with the status quo, there are financial risks that are detailed in the risk section. Alectra will not be able supply all customers in Vaughan west developments when fully built. In addition, customers on Major Mack Dr between Hwy 50 and Huntington Rd will be on a radial supply. Supplying large number of customers in the new development area in radial violates Alectra's planning philosophy and good utility practice. Customers will be at risk of lengthier and more impactive outages. This will negatively impact SAIDI and SAIFI. Alectra will be at risk of compromising supply to new loads in Vaughan west areas that may have negative impacts on our corporate reputation and mission. Alectra is obligated to service future growth within its service territory using "good utility practice". Failure to provide adequate levels of service could lead to regulatory sanctions, and customer damage claims. Alectra Utilities is required to ensure its distribution system can support projected load growth while maintaining reliability and quality of service for customers on both a short-term and long-term basis, as required by the DSC. Alectra Utilities must be able to connect new customers in a timely manner.
	Alternative #1	Non- wires Alectra Utilities' load forecast process considers the impact of CDM and distributed generation and has been considered during the needs. For this project these options have not been considered as new feeders are needed to connect the customers to grid.
	Alternative #2	Not Applicable.
	Justification for Recommended Alternative	There is one radial supply on Major mack Dr east of Hwy 50. It does not have sufficient capacity to supply Vaughan West as well as development of the west side of Hwy 50 in Brampton. This project is required to supply new development on Major Mack between Hwy 50 and Huntington Rd. Future load growth areas in Vaughan are summarized below: Orlando Development A new development of 7 new buildings on the north west corner of major Mack and Hwy 50 in Brampton. The total area is 4.3 million square feet and the peak demand is expected to be 19.8MW. Based on distribution infrastructure, it seems more economical to supply these customers from Vaughan side. One 27.6kV feeder is required. West Vaughan Employment Area The West Vaughan Employment Area Secondary Plan sets out detailed policies to create a large economic opportunity for York Region. With over 500 hectares of employment designated lands, this area will continue to allow the City of Vaughan to attract a wide range of businesses requiring large tracks of land with excellent Regional road and provincial highway access. The Secondary Plan is planned to accommodate approximately 20,120 employees. There are 1,400 acres of vacant land on both sides of Major Mackenzie Drive that has been zoned as employment land. The potential load from these lands will be significant. The peak demand for this development is estimated to be 50MW to 80 MW when fully built out, but no time line is available at this time. Four 27.6kV feeders are required to supply the new load. This project improves the reliability situation mentioned in the status quo option. There is one single phase 4.8kV cct on Major Mack Dr between Huntington and Hwy 50. Alectra has adopted "Open Grid Network" planning philosophy, i.e., loop supply with normal open points. Funding this project will enable Alectra to meet its regulatory duty to supply the customers in our service area. Additionally it will allow us to operate the system in an efficient and effective manner by providing coordinated protections between source and load and having adequate backup capacity in the event of an outage. In the short term, this project provides capacity for Vaughan west development. In the long term, a new transformer station VTS4 has been built in the Kirby and Kipling area and two new feeders from VTS4 will be extend to Hwy 27/Major Mack Dr area. This project will reroute the 40MVA capacity of VTS4 to supply Vaughan West development. The two ccts on Major Mack Dr serve as ties between ccts on Hwy 50 from VTS3 and ccts on Huntington Rd from Kleinburg TS. They will provide 60 MVA contingency capacity and will allow load transfer between transformer stations
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The risk is to get approval from the City of Vaughan and York Region in time. York Region is going to rebuild Major Mack Dr in advance. The pole line construction schedule will depend on road widening schedule. Capital design will work closely with the Region and City to coordinate the project.
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable.

Description of Incorporation of Advanced Technology, if applicable	Not Applicable.
Identify any reliability, efficiency, safety or coordination benefits	This project will also establish ties between feeders on Hwy 50 and feeders on Huntington Rd. It will also increase power supply reliability in the west part of Vaughan. This project will increase power supply reliability and reduce risk of prolonged outages. The project will provide for incremental feeder tie points between VTS3 and Kleinburg TS. It will improve the operational efficiency and effectiveness of these stations.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,439,439	$0	$0	$0	$0	$0	$1,439,439
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

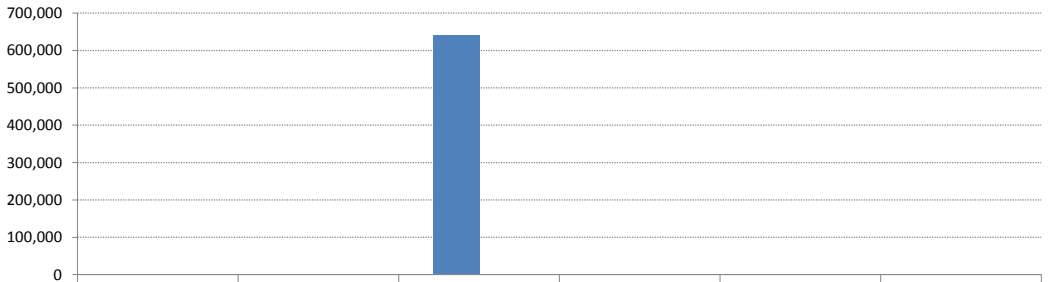
OEB Multi-Project Report

Project Code	100919
Project Name	Install 2nd 27.6 kV Cct on Woodbine Ave from Elgin Mills Rd to 19th Ave
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	on Woodbine Ave from Elgin Mills Rd to 19th Ave in Markham. See attached schematic diagram for details.
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	This project is to add one additional 27.6kV cct on the existing pole line on Woodbine Ave from Elgin Mills Rd to 19th Ave that has provision for 2nd cct. There is only one cct on Woodbine Ave from Elgin Mills Rd to 19th Ave that supplies all customers north of Elgin Mills Rd and east of Woodbine Ave. Any upstream failure will cause outages to all customers in the area. This is to increase supply capacity to 19th Ave and Woodbine Ave area as well as Markham Future Urban Area (FUA).
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	There is only one cct (feeder 10M2) on Woodbine Ave from Elgin Mills Rd to 19th Ave that supplies all customers north of Elgin Mills Rd and east of Woodbine Ave. The same feeder supplies other customers south of Elgin Mills Rd as well. There is only 8 MVA capacity for future development.
	Customer Attachment / Load (KVA)	Not applicable.
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, (i.e., not build project as proposed), but to supply load growth from existing facilities. It will impact Alectra distribution system in two following aspects: Reliability There is only one cct on Woodbine Ave from Elgin Mills Rd to 19th Ave that supplies all customers north of Elgin Mills Rd and east of Woodbine Ave. Any upstream failure will cause outages to all customers in the area. Capacity There is only one cct (feeder 10M2) on Woodbine Ave from Elgin Mills Rd to 19th Ave that supplies all customers north of Elgin Mills Rd and east of Woodbine Ave. The same feeder supplies other customers south of Elgin Mills Rd as well. The peak demand of 10M2 was 250A in 2017. There is only 8 MVA capacity for future development. Hwy 404 North Town of Markham's Official Plan Amendment No. 113 (OPA 113) has been approved by the Region of York (ROPA46). The lands subject to ROPA 46 and OPA 113 comprise approximately 180 hectares (450 acres). The proposed land uses of OPA 113 are primarily "Industrial". See attached map for details. A major car manufacturer Canada has built its new head office in the OPA 113 area in Markham. It will initially relocate 500 employees to the new site that is being built on a 19-hectare parcel of land facing Highway 404, just north of Elgin Mills Rd. The complex is to be supplied by 2x1000 kVA and 1x750 kVA transformers. The peak demand is 1.2MW. A Power-to-Gas project (H2 plant) has been built in the Woodbine Ave/19th Ave area, and the estimated peak would be 2MW in 2018, and may go up to 5MW after 2020. Two large (10MVA each) developments have been proposed in the 19th Ave and Woodbine Ave area: one in the south east corner of 19th Ave and Woodbine Ave, and one on the south west corner of 19th Ave and Woodbine Ave. The timeline is unknown at this time. The new load is estimated to be 25 MW when the land is fully developed and one new 27.6 kV feeder on Woodbine Ave is required for this development. Addition feeder is required to supply the new load because the existing feeders supply other load south of Elgin Mills. Status Quo will jeopardize Alectra's obligation to supply new customers along Woodbine Ave and 19th Ave. The impact severity and timing will depend on the schedule of the Hwy 404 North development. There are no specific costs with the status quo, there are financial risks that are detailed in the risk section.
	Alternative #1	Not applicable.
	Alternative #2	Not applicable.

	Justification for Recommended Alternative	This project will add one cct to Markham North and to increase supply capacity and reliability to Hwy 404 North area and new urban area north of Major Mack between Woodbine Ave and Kennedy Rd. York Region is working on an Official Planning Amendment which expands the Urban Area of the City of Markham to both sides of Warden Ave to provide opportunities for urban growth to the year 2031. The north Markham Future Urban Area covers about 1,288 hectares (3,183 acres bordered by Major Mackenzie Drive to the south, the Hydro Corridor and Woodbine Avenue to the west, the northerly City limits and Elgin Mills Road to the north, and the Robinson Creek to the east. Approximately 675 hectares (1,668 acres) of developable lands are designated for future neighbourhoods, located primarily between Major Mackenzie Drive and Elgin Mills Road. Approximately 300 hectares (741 acres) located north of Elgin Mills Road are designated for employment uses. In total, the Future Urban Area is intended to accommodate approximately 12,000 residential units with a population of approximately 38,000 persons, and approximately 19,000 jobs. It is expected approx. 60 MW of new loads are expected on both sides of Warden Ave north of Major Mackenzie Dr. As of now, two large (10MW each) developments have been proposed in the 19th Ave and Woodbine Ave area: one in the south east corner of 19th Ave and Woodbine Ave, and one on the south west corner of 19th Ave and Woodbine Ave. Addition feeder is required to supply the new load because the existing feeders supply other load south of Elgin Mills. This project will increase supply capacity by 20 MVA and will also increase supply reliability to Markham north. Do Nothing option will not allow Alectra to supply the new load growth.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The risk is to get approval from the City of Markham and York Region in time. Engineering Design will design the project in advance and get the permits in place in 2020. Customers load ramping up schedule in Markham north area will impact the timing and priority.
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not applicable.
	Identify any reliability, efficiency, safety or coordination benefits	This project will increase supply reliability to Markham north. A 2 ccts pole line has been proposed on 19th Ave from Woodbine Ave to Leslie St to provide back up between Markham and Richmond Hill. This project will also increase back up capacity by 30 MVA between Markham and Richmond Hill.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $641,082	$0	$0	$641,082	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	100924	
Project Name	Install two additional 27.6 kV ccts on Hwy 7 from Jane St to Weston Rd	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Situated on Hwy 7 from Jane St to Weston Rd in Vaughan - 2km
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	This project is to reroute two 27.6kV feeders (21M3 & 21M4) to supply new load in Vaughan Metro Center (VMC) in conjunction with York Region's Hwy 7wideing project. The project objectives will be achieved by rebuilding the existing pole line on Hwy 7 between Weston Rd and Jane St from 2 ccts into 4 ccts, in overhead or in underground duct bank, or combination of above options. It will be determined in the design stage and coordinate with York Region's Hwy 7 widening work and the City of Vaughan's urban design plan. There is an existing 2 ccts overhead pole line between Jane St and Weston Rd. The existing poles have to be relocated from east side of Hwy 400 to Weston Rd including the Hwy 400 crossing due to York Region's Hwy 7 widening project in 2017 and 2018. To accommodate future 2 ccts, additional pole height and additional ducts are required. As a result, Phase 1 of the project has to be built in 2018, i.e., build 2 additional ccts for the Hwy 400 crossing in conjunction with York Region's Hwy 7 widening project.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	Very high. Alectra Utilities requires to prepare the distributions system to address the system capacity need driven by intensification and redevelopment in VMC. This project will be built in conjunction with Hwy 7 widening project in the area. The development of VMC is underway. New capacity is required as the development progresses. Vaughan Metro Center (VMC) Vaughan Tomorrow is the City's growth management strategy, which has led to a new city-wide Official Plan and this Secondary Plan for the VMC. The Vaughan Tomorrow process, which involved extensive public outreach over two years, confirmed the objective to develop the Vaughan Metropolitan Centre as a vibrant and thriving downtown for the city. The new Official Plan for the city establishes the boundaries for the VMC and, in doing so, divides the former Vaughan Corporate Centre area into three distinct places within the overall city structure. Lands west of Highway 400 within the former VCC, centred at Weston Road and Highway 7, are identified as a Primary Centre. The VMC extends from Highway 400 to Creditstone Road at its most easterly edge, with Portage Parkway and Highway 407 remaining the northern and southern boundaries, respectively. And lands east of Creditstone (and on both sides south of Highway 7) are designated an Employment Area. City of Vaughan Official Plan states that the VMC will comprise distinct development precincts including residential neighbourhoods, office districts, employment areas and mixed-use areas, all linked by a robust system of parks, squares and open spaces and a fine grain grid pattern of streets. It establishes growth targets for the VMC of 12,000 residential units and 6,500 new jobs by 2031. And it states as a policy that the City shall encourage and facilitate the establishment of the following in the VMC: • major offices; • government offices; • post-secondary educational institutions; • cultural facilities; • public institutions; • major civic public spaces and parks; • socially diverse residential neighbourhoods that contain a mix of housing types, including
	Customer Attachment / Load (KVA)	Not Applicable.
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Not Applicable.
	Economic Development	This project will support development of VMC.
	Environmental Benefits	Not Applicable.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, (i.e., not build project as proposed), but to supply load growth from existing facilities. It will impact Alectra distribution system in following aspects: Capacity Vaughan Metro Center (VMC) is supplied by two feeders 21M5 and 21M11 from VTS2. The peak of VTS2 was 133 MW in 2016 and only 20MW capacity left before it reaches the 10 day Limited Time Rating (LTR) of 153 MW. VTS4 will be in service in 2017 and will off load VTS2 so that will have extra capacity to supply new loads in the VMC development (approx. 80MW). As of 2016, there are four feeders supplying area: 21M5, 21M11, 20M19, and 20M20. The peak demands of these feeders were: 21M5 188A 21M11 252A 20M19 367A 20M20 333A There is only 23MVA capacity left on these 4 feeders. To meet the load growth in VMC, more feeders are required in VMC area. As per VTS4 feeder integration plan, two feeders from VTS4 will off load existing feeder 21M3 and 21M4 from VTS2 so that they can be used to supply new growth in VMC area (40MVA). In additional, two other feeders 20M17 and 20M18 will be off loaded and supply VMC too (40 MVA). Status Quo will cause existing feeders to exceed their loading limits under 1-in-10 weather (extreme summer temperatures) in the long term. The impact severity and timing will depend on the schedule of the VMC development. There are no specific costs with the status quo, there are financial risks that are detailed in the risk section. Four existing feeders supplying VMC area don't have sufficient capacity to supply VMC that is expected to have 80MW once fully developed. Operating feeders over loading guide line violates Alectra's planning philosophy and good utility practice.
	Alternative #1	Non- wires Alectra Utilities' load forecast process considers the impact of CDM and distributed generation and has been considered during the needs . Alectra Utilities has considered non wire alternative (solar and storage option) and determined that this option is not economical for the capacity that is required. Based on typical capacity of 20 MW per feeder the cost of non-wire alternatives would 15 times that of traditional solution and hence this option has been rejected.
	Alternative #2	Not Applicable.
	Justification for Recommended Alternative	The recommended alternative (Install two additional 27.6 kV ccts on Hwy 7 from Jane St to Weston Rd) was chosen for the following reasons: • it improves the reliability situation mentioned in the status quo option • it will increase supply capacity to VMC. • it will meet the immediate need for supply capacity. • it is consistent with the VTS4 feeder integration plan The project objectives are to re-route two 21M3& 21M4 27.6kV ccts from Weston Rd/Hwy 7 east to Jane St/Hwy 7 area, and to install switches or switchgear where required. This is required to supply the Vaughan Metro Center development that is estimated to have a peak demand of 80 MW when fully built out. As of 2016, there are four feeders supplying area: 21M5, 21M11, 20M19, and 20M20. The peak demands of these feeders were: 21M5 188A 21M11 252A 20M19 367A 20M20 333A There is only 23MVA capacity left on these 4 feeders. To meet the load growth in VMC, more feeders are required in VMC area. As per VTS4 feeder integration plan, two feeders from VTS4 will off load existing feeder 21M3 and 21M4 from VTS2 so that they can be used to supply new growth in VMC area (40MVA). To meet the load growth in VMC, more feeders are required in VMC area. As per VTS4 feeder integration plan, two feeders from VTS4 will off load existing feeder 21M3 and 21M4 from VTS2 so that they can be used to supply new growth in VMC area (40MVA). In additional, two other feeders 20M17 and 20M18 will be off loaded and supply VMC too (40 MVA). This project is needed to add 40 MVA supply capacity for the new development in VMC area. Funding this project will enable PowerStream to meet its regulatory duty to supply the customers in our service area. Additionally it will allow us to operate the system in an efficient and effective manner by providing coordinated protections between source and load and having adequate backup capacity in the event of an outage.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	York Region is working on the design of Hwy 7 widening from Hwy 400 to Pine Valley Dr. The Hwy y widening schedule will dominate the schedule of this project. The risk is to get approval from the City of Vaughan and York Region in time. Capital design will start the design of the project and should get the approvals in place in advance. Project management will be applied to ensure the project is completed on time and on budget.
	Comparative Information on Equivalent Historical Projects (if any)	Alectra has built many 4 ccts pole lines in the past. The cost estimate is based on actual cost of project in the past.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0

7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable.
	Identify any reliability, efficiency, safety or coordination benefits	This project will increase supply capacity to VMC by 40 MVA. It will also increase supply reliability too. This project will increase power supply reliability and reduce risk of prolonged outages. The completion of this project will allow for VTS2 to adequately supply new developments in VMC. The project will provide for incremental feeder tie points between VTS2 and VTS1, Finch TS. It will improve the operational efficiency and effectiveness of these stations. Execution of this investment will alleviate capacity constraints and as well as ensure the availability of sufficient capacity to efficiently connect customers to Alectra Utilities's distribution system. It will allow Alectra Utilities to maintain supply to customers during contingency events and operation flexibility during maintenance and other capital work. This option will help Alectra Utilities maintain service quality and reliability standards for the existing customers as additional load is added to the system. Alectra Utilities plans to construct and configure feeders to present day technical standards to ensure customer choice for integrating distributed generation, electric vehicles and energy storage solutions.

	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $2,620,083	$0	$0	$0	$0	$2,620,083	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

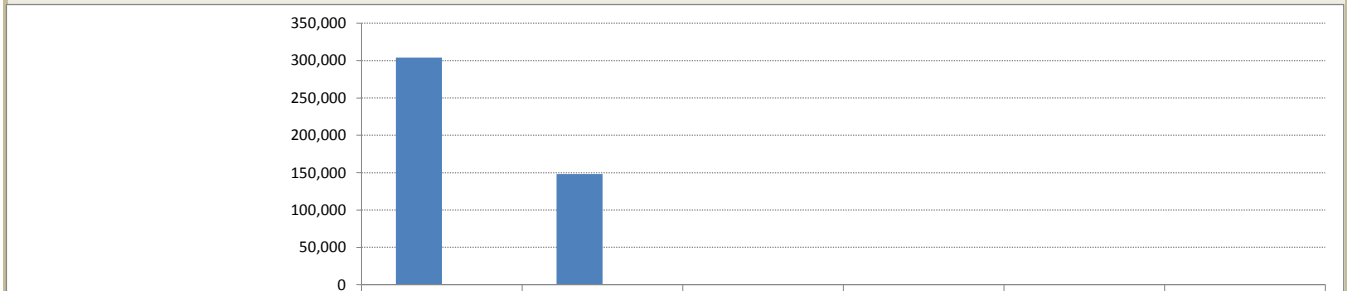
OEB Multi-Project Report

Project Code	101003
Project Name	Richmond Hill TS#2 Upgrade Bus, Line & Transformer Protections
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Richmond Hill TS#2 (Lazenby TS#2) in Richmond Hill
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	System Control, Comm'ns & Performance
	Alectra Subcategory	Station Reliability Projects
4. Evaluation Criteria (OEB)	Project Summary	Carry out engineering design and replacement of "C" and "D" Bus Differential and Overcurrent Protection relays as well as "CD", T3C and T4D Breaker Control Modules, Line Distance Protections and T3/T4 Transformer Differential Protections at Richmond Hill TS#2. More detailed scope of work follows. A. Modification of Line Protections L1 & L2 Distance Relays. 1. Replace 2 units with same Alstom P441 model, but to include DNP3 over Fibre Ethernet communications 2. Install fibre communication cable. B. Modification of Bus Protection and Main Breaker Relays 1. Remove existing Alstom MFAC Differential electromechanical relay for C&D Bus differential "A" Protections. 2. Install 2 units of Alstom P642 relay with DNP3 over Fibre Ethernet communication for C&D Bus Differential "A" Protections. 3. Replace 2 units with same Alstom P122 model, but to include DNP3 over Fibre Ethernet communications for C&D Bus Overcurrent "B" Protections. 4. Replace 3 units with same Alstom P143 model, but to include DNP3 over Fibre Ethernet communications for T3C, T4D and CD Breaker Control Modules. 5. Install fibre communication cable. C. Transformer Protection Upgrade 1. Replace 2 units KBCH120 with Alstom P642 model with DNP3 over Fibre Ethernet communications for T3 & T4 "A" Differential Protections. 2. Install 4 units of SEL2812 media converters for existing SEL587 communications direct to SEL3530 (RTAC) for T3 & T4 "B" Differential Protections. 3. Install fibre communication cable. 7. Install control wiring. This is a two-year project. Funding has been approved for completing the first phase in 2019. Additional funding is to be provided in 2020 to complete this project.
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	Repairs are difficult and service is not readily available. Alectra Utilities remains exposed should there be problematic operations. The communications protocol at this station is obsolete and is incompatible with that of the rest of the system. The relays do not support DMP3 and can not communicate with the SCADA system
	Customer Attachment / Load (KVA)	Station capacity is 101 MVA
	Safety	This project will improve the stations protections reducing the risk of mal-operation that could put the public or Alectra Utilities' personnel at risk.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Not Applicable.
	Economic Development	Not Applicable.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do nothing - Repairs are difficult and service is not readily available. Alectra Utilities remains exposed should there be problematic operations. Do nothing - Remove the protection from service when relay fails. This unacceptable as this is a violation of compliance. The communications protocol at this station is obsolete and is incompatible with that of the rest of the system.
	Alternative #1	The recommended alternative is to upgrade Line Distance, Bus Differential and Transformer Differential Protections at Richmond Hill TS#2 according to Alectra Utilities current standards,.
	Alternative #2	Not Applicable.
	Justification for Recommended Alternative	There is insufficient support from Alstom in the event of a failure and parts are no longer available. The new IED will provide valuable fault and event record information for effective post event analysis, especially for transformer faults. The IED will also supply more complete telemetry to System Controllers via the SCADA system.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Schedule for this project must be coordinated with other initiatives.
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable.

	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not applicable.
	Identify any reliability, efficiency, safety or coordination benefits	Modern relays are reliable, efficient and safe. They have more functions allowing for improved protection.



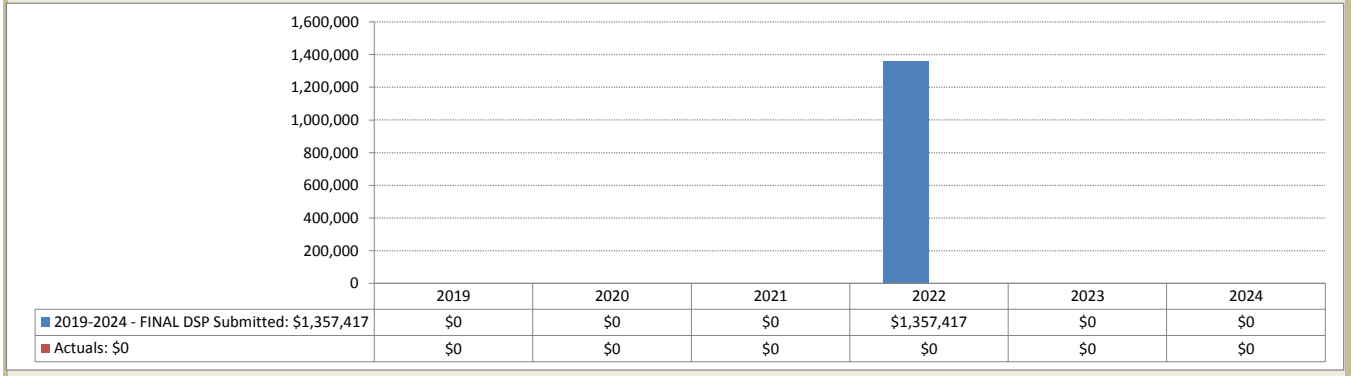
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $452,128	$303,904	$148,224	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	101036	
Project Name	Install a new 4 ccts CNR yard overhead crossing on the south side of Hwy 7	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	on the south side of Hwy 7 crossing CN Yard between Keele St and Jane St in Vaughan
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	This project will create a new 4 ccts CN yard overhead crossing on the south side of Hwy 7. It will allow 4 more new 27.6kV ccts to be extended from Keel St to Jane St to increase supply capacity to Vaughan Metro Center (VMC) and Vaughan Mills. This project will also increase supply reliability to VMC and Vaughan Mills since all supplies to VMC/Vaughan Mills will be on both sides of Hwy 7. Any pole failure on the north side of Hwy 7 will only affect 4 ccts on the north side. The ccts on the south side of Hwy 7 will continue to operate through the new crossing on the south side of Hwy 7.
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	High This project allow VMC to be supplied on both sides of Hwy 7 crossing CN yard. This will mitigate the outage impacts due to increasing effect of adverse weather events. This project will increase supply reliability to VMC and Vaughan Mills since all supplies to VMC/Vaughan Mills will be on both sides of Hwy 7. Any pole failure on the north side of Hwy 7 will only affect 4 ccts on the north side. The ccts on the south side of Hwy 7 will continue to operate through the new crossing on the south side of Hwy 7.
	Customer Attachment / Load (KVA)	Not applicable
	Safety	Not applicable
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	Not applicable
	Economic Development	This project will also increase supply capacity to VMC and Vaughan Mills. It will support residential and commercial developments in these areas.
	Environmental Benefits	Not applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, (i.e., not build project as proposed), but to supply load growth from existing facilities. It will impact Alectra distribution system in two following aspects: Capacity The number of 27.6kV ccts will be limited to 4 due to one crossing on the north side of Hwy 7, .i.e., it will limit supply capacity to VMC and Vaughan Mills. If the crossing fails, it will result in outage to 4 heavily loaded feeders for prolonged time. The total demand is approx. 80 MVA in the summer. There are four 27.6kV feeders on the north side of Hwy 7 crossing CN yard: 20M17/ 20M18/ 20M19/ 20M20. The peaks of these feeders in 2017 were: 20M17 375A 316 customers 20M18 422A 748 customers 20M19 294A 308 customers 20M20 404A 1,039 customers Feeder 20M17/20M18 supply Vaughan Mills. 20M17 also supplies the new VMC subway station that went into service after 2017 summer peak. Both 20M17 and 20M18 are at the capacity now. Feeder 20M20 has reached its capacity of 400A. The peak on 20M19 was 294A, but a few condos are under construction and will be supplied by 20M19 too. 20M19 will reach its capacity of 400A soon too. The VMC development on the west side of Jane St will be supplied by feeder 21M5/21M11 and two new future feeders from Weston Rd to Jane St. The VMC developments on the east side of Jane St are supplied by feeder 20M19/20M20 only, but they will reach the capacity soon. New capacity is required in 2022. Alectra will be at risk of compromising supply to new loads in the VMC area that may have negative impacts on our corporate reputation and mission. The load to be impacted is estimated to be 80MW ultimately. Reliability There are four 27.6kV feeders on the north side of Hwy 7 crossing CN yard: 20M17/20M18/20M19/ 20M20. Any pole failure on the will result in outage to these four feeders that supply VMC and Vaughan Mills. Customers may experience outages under contingency as described above. This will negatively impact SAIDI and SAIFI in the long term.

	Alternative #1	Non- wires Alectra Utilities' load forecast process considers the impact of CDM and distributed generation and has been considered during the needs Alectra Utilities has considered non wire alternative (solar and storage option) and determined that this option is not economical for the capacity that is required. Based on typical capacity of 20 MW per feeder the cost of non-wire alternatives would 15 times that of traditional solution and hence this option has been rejected.
	Alternative #2	Not applicable
	Justification for Recommended Alternative	This project will provide four circuits on the south side of Hwy 7 that will provide an additional 80 MVA supply capacity to VMC development and Vaughan Mills. Without the use of these ccts, staying with the status quo will jeopardize the operational efficiency and reliability of this area. In the short term, this project reduces number of ccts on the crossing on the north side of Hwy 7. As of 2017, there are four 27.6kV ccts on Hwy 7 between CN yard and Jane St. They supply customers in VMC and Vaughan Mills. However, there are two 4 ccts pole line on Hwy 7 east of CN yard crossing. As part of York Region's Hwy 7 widening project, existing pole line on Hwy 7 between Keele St and Jane has been relocated and rebuilt. Two 4 ccts pole line are also installed on Hwy 7 west of CN yard crossing. There are 8 ccts on Hwy 7 on both sides of CN crossing. The total ccts supplying VMC and Vaughan Mills are limited to four due to only one 4 ccts pole line crossing CN yard on the north side of Hwy 7. This implies that total of four more 27.6kV ccts can be extended from Keele St/Hwy 7 to Jane St/Hwy for capacity and reliability in the future if a new 4 ccts pole line crossing CN yard on the south side of Hwy 7. In addition to 20M17/20M18/20M19/20M20, there are four 27.6kV feeders on Hwy 7 east of the CN yard: 20M7/20M8/20M15/20M16. The peaks of these feeders were in 2017: 20M7 300A 20M8 160A 20M15 160A 20M16 260A There are 720A or 36MVA capacity left on these feeders that can be rerouted to supply VMC. More capacity can be freed up on these feeders if needed by feeder reconfiguration. This project will also increase supply reliability to VMC and Vaughan Mills since supplies to VMC/Vaughan Mills will be on both sides of Hwy 7. Any pole failure on the north side of Hwy 7 will only affect 4 ccts on the north side. The ccts on the south side of Hwy 7 will continue to operate through the new crossing on the south side of Hwy 7. The existing supplies to VMC area all cross CN Yard on the north side of Hwy 7. Any pole failure on the north side of Hwy 7 will interrupt 80MVA load and 2,411 commercial/residential customers. Replacement of a failed pole can take up to 8 hours. This project will allow supplies to cross CN yard on the south side of Hwy 7 too. It will increase reliability
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The risk is to get approval from the City of Vaughan, York Region as well CN Rail in time. Capital design will start the design of the project in advance and should get the approvals in place in time.
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable
	Description of Incorporation of Advanced Technology, if applicable	Not applicable
	Identify any reliability, efficiency, safety or coordination benefits	In the short term, this project reduces number of ccts on the crossing on the north side of Hwy 7. The existing supplies to VMC area all cross CN Yard on the north side of Hwy 7. This project will allow supplies to cross CN yard on the south side of Hwy 7 too. It will increase reliability and operation flexibility since pole line failure at the crossing will not affect all the feeders. In the long term, this project will provide 80 MVA for load growth in VMC development and Vaughan Mills.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,357,417	$0	$0	$0	$1,357,417	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	101393	
Project Name	Redundant Fibre Path to Aurora MS#4 Sub-Station	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Aurora MS#4 14025 Bathurst St. Aurora
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	Yes
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	System Control, Comm'ns & Performance
	Alectra Subcategory	Scada & Scada Communications N
4. Evaluation Criteria (OEB)	Project Summary	The scope of this project is to supply and install Fibre optic cable to Aurora MS#4, along a diverse route, from the nearest Rogers FOSC on Yonge St. This would be a new route and provide route diversity. AMS4 ultimately connects to the broader Operations Network via 2 routes. The primary route connects at Cityview and the backup route connects at RHTS2. Unfortunately they both share the same common route on Bathurst. One of these routes would be moved to a different path. Going forward, once the new alternate path is in place, to improve cyber security, increase reliability and greatly simplify network administration, it is recommended to install a SoNET Multiplexer shelf at AMS4. The completion of this project will support the install of the new JMUX node.
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	AMS4 is a major node on the Operations Network, but the fiber optic routes into the AMS4 are not diverse. This major hub is therefore exposed to a single point of failure, and loss of communications to this hub would be very impactful to the Operations department, especially System Control and Metering. The project will support a future proposed project, install of a new JMUX node at aAMS4.
	Customer Attachment / Load (KVA)	It is expected that this station supplies 4000 customers and supplies 5000kVA of load.
	Safety	This project has a safety component as AMS4 contains a voice radio repeater and a communications tower. Loss of this communications node due to a fiber issue would require all communications to field forces in the Aurora area to be changed to cell phone. Staff would not have the instant access to System Control via the Operations Voice Radio System. Staff would also need to do switching operations in Aurora stations if communications out of AMS4 was lost due to fiber failure. Normally these switching operations would be done remotely by a System Controller. Field staff would now need to do perform manual switching manualy, and be exposed to injury from arcs, strains and impact from exploding equipment.
	Cyber-Security, Privacy	Site uses Alectra owned dark fiber so comm is secure
	Coordination, Interoperability	Not Applicable
	Economic Development	Not Applicable
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do Nothing: Continue to exist with this identified lack of diversity for both the routes into AMS4. Lack of diversity equals a single point of failure. This is unacceptable as AMS4 is a major node of the Operations Network. Stakeholders, including System Control, P&C, Station Sustainment, Lines and Metering, rely heavily on the wireless and optical data services provided by equipment installed at this node. Major wireless services emanate out of AMS4, providing information to the stakeholders listed above. The services include: - Operations Voice Radio; - Scada Communication to 8 Aurora Substations over unlicensed radio; - Data from customer meters to the local TGB meter data collector; - meter data from this TGB collector at AMS4 collector to Metering's Regional Network interface; - Scada communications to Reclosers and FIT Generators over 1.8Ghz WiMAX radio. Lose of access to any of these services would greatly impairs Operations ability to operate the distribution grid in the Aurora Service Area.
	Alternative #1	It is recommended to proceed with the implementation of this project, installing fiber on a diverse route into AMS4.
	Alternative #2	Another alternative would entail the installation of a wireless path into AMS4 instead of a diverse fiber optic route. This would require the purchase and installation of microwave equipment, communication towers and associated equipment.
	Justification for Recommended Alternative	The major justification for implementation of this project is to correct the identified single point of failure. Both of PowerStream's Fibre paths to AMS4 are contained in the same physical fibre bundle on Bathurst St. If this fiber was to be damaged, connectivity to AMS4 would be lost. There is no backup route. PowerStream has experienced a total loss of communications to AMS4. In 2011, a dump truck hit a pole on Bathurst, causing a SCADA and Voice (Truck Radio) outage for System Control for approximately 4 hours. Communication outages are a safety concern for both staff and customers. Going forward, the importance of AMS4 as a major hub as an Operations Communications warrants it being migrated to Alectra's ultra secure and supremely reliable SoNET Network.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The major risk would be lack of access to an aerial route for this new fiber path. All steps would be taken to ensure all permits are in place to ensure completion of the project.
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable

	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
	Description of Incorporation of Advanced Technology, if applicable Identify any reliability, efficiency, safety or coordination benefits	This project will deploy fiber optic infrastructure, which is advance technology. The project will increase reliability as it removes an identified single point of failure in the present connection to this major communications node located at AMS4. We have already experienced an outage when the physical plant incurred damage due to a dump truck taking out a pole. Service would have been maintained if the routes were diverse. Communication to this node would have been automatically rerouted to the alternate healthy path in the event of a failure to the primary path. With this diverse alternate path in place, AMS4 can support install of a JMUX shelf and become a participant in Alectra's SoNET Network. Migrating this major communication's to SoNET will improve cyber security, increase reliability and greatly simplify network administration.

	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $494,308	$0	$0	$0	$0	$494,308	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

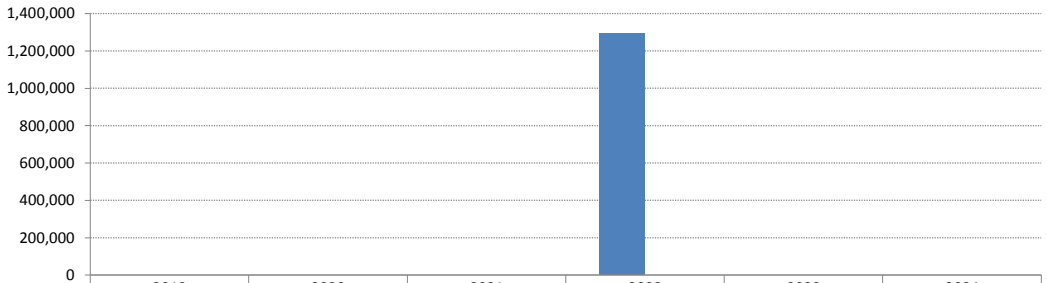
Project Code	101480
Project Name	Build double ccts 27.6kV pole line on 19th Ave between Leslie St and Bayview Ave
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	On 19th Ave between Leslie St and Bayview Ave in Richmond Hill
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	This project is to build 2 ccts pole line on 19th Ave from Leslie St to Bayview Ave to supply new development in Leslie North that is bounded by Elgin Mills Rd, Leslie St, 19th Ave and Bayview Ave).
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	High. Alectra Utilities requires to prepare the distributions system to address the system capacity need driven by greenfield development. The Town of Richmond Hill is supplied by two 230/27.6 KV transformer stations (RH-TS1/RH-TS2) in Richmond Hill and 6-27.6KV feeders from Buttonville transformer station in the City of Markham. The York Region recently issued the growth plans which projects approximately 613,900 new residents and 305,100 new jobs between 2016 and 2041.This growth is distributed throughout the York region. The North Leslie planning area is bounded by 19th Avenue to the North, Hwy 404 to the east, Elgin Mills Road to the south and Bayview Avenue to the west. he Leslie North development may accommodate approximately 6,250 housing units with a population of approximately 19,300 people and employment of approximately 3,200 jobs. See the attachment for more details. Based on 2.5kW per unit and 1.5 kW per job (based on 300 sq.ft per no-retail job and 5W/sq.ft), the total demand would be 20 MW. CDM is considered and load forecast is net of CDM. There is no feeder on 19th Ave so new pole line is required. The development of subdivision in Leslie North has started in 2016. There will be new houses along 19th Ave between Bayview Ave and Leslie St as the subdivision secondary plan, however, there is no pole line now. Without new feeders, the ability to supply new loads will be significantly constrained. The primary driver for this Investment is to support capacity delivery for the new development in the Leslie North Area. The progress of the Leslie North development impact the loading of the feeders. There is no feeder on 19th Ave between Leslie St and Bayview Ave.
	Customer Attachment / Load (KVA)	Not Applicable.
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Not Applicable.
	Economic Development	This project will supply new residential development in Leslie North area.
	Environmental Benefits	Not Applicable.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, (i.e., not build project as proposed), but to supply load growth from existing facilities. It will impact Alectra distribution system in two following aspects: Reliability There is no pole line on 19th Ave between Leslie St and Bayview Ave. There is one feeder on Leslie St between Elgin Mills Ed and 19th Ave, but it is a radial supply. Any pole failure on Leslie St between Elgin Mills Ed and 19th Ave will cause prolonged outages to customers in the Leslie North development area. Capacity There is no pole line on 19th Ave between Leslie St and Bayview Ave. The peak demand for this Leslie North development is estimated to be 20MW when fully built out, but no time line is available at this time. Two 27.6kV feeders are required to supply the new load because the existing feeders supply also other load south of this development too. These customers will be supplied from circuits surrounding the development, but there is no feeder on 19th Ave to supply new loads in the Leslie North development Area. Status Quo will jeopardize Alectra's obligation to supply new customers along 19th Ave. The impact severity and timing will depend on the schedule of the Leslie North development. There are no specific costs with the status quo, there are financial risks that are detailed in the risk section. Alectra will not be able supply customers along 19th Ave. In addition, customers on Leslie St between Elgin Mills Rd and 19th Ave will be on a radial supply. Customers will be at risk of lengthier and more impactive outages. This will negatively impact SAIDI and SAIFI. Alectra will be at risk of compromising supply to new loads in Leslie North areas that may have negative impacts on our corporate reputation and mission. Alectra is obligated to service future growth within its service territory using "good utility practice". Failure to provide adequate levels of service could lead to regulatory sanctions, and customer damage claims. Alectra Utilities is required to ensure its distribution system can support projected load growth while maintaining reliability and quality of service for customers on both a short-term and long-term basis, as required by the DSC. Alectra Utilities must be able to connect new customers in a timely manner
	Alternative #1	Non- wires Alectra Utilities' load forecast process considers the impact of CDM and distributed generation and has been considered during the needs. For this project these options have not been considered as new feeders are needed to connect the customers to grid.
	Alternative #2	Not applicable
	Justification for Recommended Alternative	This project includes following constructions: • build double ccts 27.6kV pole line on 19th Ave between Leslie St and Bayview Ave • connect the new pole line to the existing ccts on Leslie St and Bayview Ave • install LIS switches as per Alectra (PowerStream) design standard. Status quo was not chosen for the following reasons: • Status Quo does not address risks to the reliability of customers in Leslie North and does not meet system needs for supply capacity The recommended alternative (Build double ccts 27.6kV pole line on 19th Ave between Leslie St and Bayview Ave) was chosen for the following reasons: • It improves the reliability situation mentioned in the status quo option • It will increase supply capacity to Leslie North. • It will meet the immediate need for supply capacity. Funding this project will enable Alectra(PowerStream) to meet its regulatory duty to supply the customers in our service area. Additionally it will allow us to operate the system in an efficient and effective manner by providing coordinated protections between source and load and having adequate backup capacity in the event of an outage. They will provide 40 MVA supply capacity for Leslie North. The two ccts on 19th Ave serve will serve as ties between ccts on Leslie St from Buttonville TS and ccts on Bayview Ave from Richmond Hill TS. They will provide 60 MVA contingency capacity and will allow load transfer between transformer stations under contingency such as pole failures, TS failure, and transmission line outage. This project will increase power supply reliability and reduce risk of prolonged outages. The project will provide for incremental feeder tie points between Buttonville TS and Richmond Hill TS. It will improve the operational efficiency and effectiveness of these stations. Execution of this investment will alleviate capacity constraints and as well as ensure the availability of sufficient capacity to efficiently connect customers to Alectra Utilities's distribution system. It will allow Alectra Utilities to maintain supply to customers during contingency events and operation flexibility during maintenance and other capital
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The risk is to get approval from the Town of Richmond Hill in time. The other risk the 19th widening work schedule may impact the pole line construction. Alectra will work with the town to coordinate the schedule.
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable.

Description of Incorporation of Advanced Technology, if applicable	Not Applicable.
Identify any reliability, efficiency, safety or coordination benefits	This project will increase power supply reliability and reduce risk of prolonged outages. The project will provide for incremental feeder tie points between Buttonville TS and Richmond Hill TS. It will improve the operational efficiency and effectiveness of these stations.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,292,645	$0	$0	$0	$1,292,645	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	101487
Project Name	Add one Additional 27.6 kV Cct on Major Mack Dr and 9th Line
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Major Mack Dr from 9th Line to the west in Markham. on 9th Line from Major Mack to the south in Markham.
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	This project is to: -add one 27.6kV cct on Major Mack from CNR to 9th Line, approx 1.3 km. -add one cct on 9th Line from Bur Oak Ave to Major Mack Dr -install LIS' at intersection as per Alectra's standard. This project is to establish another tie between two ccts on Major Mack and 9th Line. The purpose is to form a supply loop and a new tie between Buttonville TS and MTS2.
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	A radial feeder is defined as a circuit or a portion of a circuit that feeds a customer(s) with no normal connection to any other supply. This is typical of long rural lines with isolated load areas. There are no pure radial feeders in Alectra. All of Alectra's feeders have normal open ties with other feeders. Most customers can be supplied from different directions (paths) by changing normal open points. However, in some areas, there is only one path between any customer and the source of supply. There are two ccts 12M1/12M3 on Major Mack Dr east of Hwy 48, but only one cct 12M3 goes all the way to 9th Line. The second cct stops half way and is a radial supply. There are two ccts 24M4/24M5 on 9th Line north of 16th Ave, but only one cct 24M4 goes all the way to Major Mack Dr. The second cct stops half way and is a radial supply. This implies that feeder 24M4/24M5 are backed up by the same feeder 12M3. Additional cct will allow 12M1 to back up feeder 24M5. It will allow customers on 24M4/24M5 to be restored faster in case outage on 24M4/24M5.
	Customer Attachment / Load (KVA)	Not Applicable.
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Not Applicable.
	Economic Development	Not Applicable.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, (i.e., not build project as proposed), but to supply load growth from existing facilities. It will impact Alectra distribution system in two following aspects: Customers on Major Mack Dr between Hwy 48 and 9th Line are on a radial supply. Customers on radial supplies will experience longer outages when components of the radial feeder fail since there are no alternate paths to supply the affected customers. The longer the radial feeder and the more customers, the more severe the impact will be. The status quo option currently does not meet Alectra's "Open Grid Network" philosophy for this area. Existing and future urbanization in the area necessitates the need for additional feeders and grid reconfiguration in this area. There are no specific costs with the status quo, there are financial risks that are detailed in the risk section. Alectra will be at risk of compromising supply reliability to customers in the area that may have negative impacts on our corporate reputation and mission. Alectra is obligated to service future growth within its service territory using "good utility practice".
	Alternative #1	Alectra Utilities has considered solar and storage options and determined that this option is not economical for the capacity that is required. Based on typical loading of 15-20 MW per feeder the cost of non-wire alternatives would significantly higher that of traditional solution.
	Alternative #2	Not Applicable.

	Justification for Recommended Alternative	This project is to establish ties between two ccts on Major Mack and 9th Line. This project will form 27.6kV feeder loops in the area and also reduce the risk of customer outages that might arise as a result of radial feeders in that area. A radial feeder is defined as a circuit or a portion of a circuit that feeds a customer(s) with no normal connection to any other supply. This is typical of long rural lines with isolated load areas. There are no pure radial feeders in Alectra. All of Alectra's feeders have normal open ties with other feeders. Most customers can be supplied from different directions (paths) by changing normal open points. However, in some areas, there is only one path between any customer and the source of supply. There are two ccts 12M1/12M3 on Major Mack Dr east of Hwy 48, but only one cct 12M3 goes all the way to 9th Line. The second cct stops half way and is a radial supply. There are two ccts 24M4/24M5 on 9th Line north of 16th Ave, but only one cct 24M4 goes all the way to Major Mack Dr. The second cct stops half way and is a radial supply. Funding this project will enable Alectra to meet its regulatory duty to supply the customers in our service area. Additionally it will allow us to operate the system in an efficient and effective manner by providing adequate backup capacity in the event of an outage. This project will form 27.6kV feeder loops in Cornell area and also reduce the risk of customer outages that might arise as a result of radial feeders in that area. This project will eliminate radial supply on existing customers and provide better reliability for new customers/developments along Major Mack Dr.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The risk is to get approval from the City of Markham in time. Capital design will start the design of the project in advance and should get the approvals in place in time. Reliability performance of the existing feeders will affect the timing and priority.
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable.
	Identify any reliability, efficiency, safety or coordination benefits	This project will form 27.6kV feeder loops in Cornell area and also reduce the risk of customer outages that might arise as a result of radial feeders in that area. This project will eliminate radial supply on existing customers and provide better reliability for new customers/developments along Major Mack Dr. This project will eliminate radial supplies on Major Mack Dr between Hwy 48 and 9th Line and enhance and improve power supply reliability in Markham East.

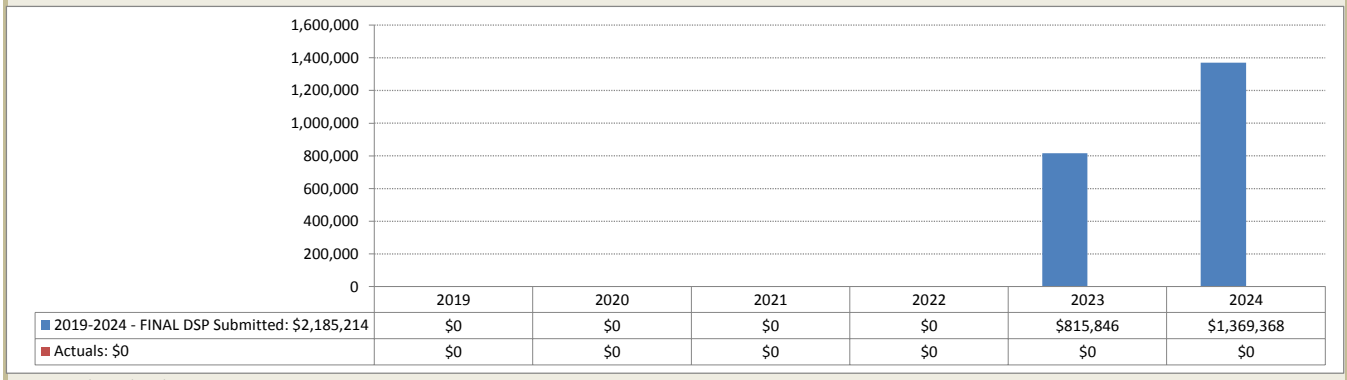
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,324,981	$0	$0	$0	$0	$1,324,981	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	101542	
Project Name	New Barrie 20MVA Substation - Harvie	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream North
	Location	Harvie Rd and Veterans Drive, Barrie
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Stations)
	Alectra Subcategory	Station Capacity Projects
4. Evaluation Criteria (OEB)	Project Summary	The project entails the purchase of a station site in the vicinity of Harvie Road and Veterans Drive in Barrie, and constructing a new 44/13.8kV, 20MVA, 4-feeder municipal substation. The project includes engineering design, purchase of station equipment, approvals, substation construction, equipment installation, and commissioning.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	Growth projections provided by the City of Barrie indicate that 2,120 residential units and approximately 26 MVA of industrial and commercial developments will be completed over the next ten years. Following the completion of these developments, MS305, MS308 and MS303 are projected to exceed ONAN ratings during summer peak in 2020, 2021, and 2023 respectively. Also, MS305 and MS308 will exceed single-stage fan ONAF ratings during summer peak in 2023 and 2027 respectively. Alectra Utilities requires to prepare the distribution system to address the system capacity needs driven by these developments.
	Customer Attachment / Load (KVA)	Total new connected load of 31,300 kVA by 2027.
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Not Applicable.
	Economic Development	Not Applicable.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo will result in MS305, MS308 and MS303 exceeding ONAN ratings during summer peak in 2021 following the completion of 2,120 residential homes and 26 MVA of industrial and commercial developments along Bryne Drive, Big Bay Point Road, and Mapleview over the next 10 years. MS305 and MS308 will exceed single-stage fan ONAF ratings during summer peak in 2023 and 2027 respectively. Note that CDM is considered for all projects and the load forecast is net of CDM. For these reasons the status quo is not being recommended.
	Alternative #1	Non Wires- Alectra Utilities' load forecast process considers the impact of CDM and distribution generation, which is accounted for as part of the load forecast underpinning the Stations Capacity portfolio. Alectra Utilities has also considered other options, such as battery storage, and determined that these options will not meet the load growth and contingency conditions for the station. Wires Alternative 1 consists of constructing three new 13.8kV feeders for integration between MS302 to MS305, MS303 to MS301, and MS308 to MS303. The existing network configuration has only a single feeder integration between each respective substation, thereby limiting the transfer capacity during contingency conditions. Each proposed pole line is described below. MS302 to MS305: A new 13.8kV feeder from MS302 running north along Bayview and then west along Mapleview to reach Veterans for integration with the existing MS305 13.8kV feeders along Mapleview. MS303 to MS301: Double circuit a new 13.8kV circuit with the existing MS303-F3 north along Ferndale to Sunnidale and then east along Sunnidale for integration with the existing MS301 13.8kV feeders. MS308 to MS303: A new 13.8kV feeder from the intersection of Bayview and Big Bay Point Road, west past the Highway 400 crossing to reach Veterans and then north along Veterans to Ferndale at Essa for integration with the existing MS303 13.8kV feeders. It should be noted that the three proposed 13.8kV feeders will increase the number of interconnections between substations and thereby increase the contingency transfer capacity. Performing load transfers between existing stations (including the new 20MVA Painswick MS) will result in approximately 75% loading at MS303 and MS305, with all adjacent stations being loaded at 80% or greater. With additional load from the Park Place and Big Bay Developments the substation loading will increase beyond 80%. Assuming that the load can be distributed between MS308, MS305 and MS302, it is assumed that the ONAN rating at MS302, MS304, and MS307 will be exceeded. Considering the possible addition of another 20MVA from the industrial subdivision zoning in the area, the proposed three 13.8kV feeders and subsequent transfers between substations will not be sufficient to address exceeding the substation ONAN

	Alternative #2	Constructing a new 44-13.8kV, 20MVA, 4-feeder substation in the vicinity of Harvie Road and Veterans Drive will provide up to 33.2 MVA of 13.8 kV capacity (dual-stage fan ONAF/ONAF configuration) to supply the industrial and commercial development along Bryne Drive, Big Bay Point Road, and Mapleview Drive
	Justification for Recommended Alternative	South-west Barrie is currently supplied by five 13.8 kV municipal stations: MS302, MS303, MS305, MS308, and MS307. The first four substations have each a 20 MVA transformer with dual-stage fans with ONAN and ONAF ratings of 26.6 MVA and 33.2 MVA respectively. MS307 is a 10MVA substation with dual-stage fans with ONAN and ONAF ratings of 13.3 MVA and 16.6 MVA respectively. Growth projections provided by the City of Barrie indicate that 2,120 residential units and approximately 26 MVA of industrial and commercial developments will be completed over the next ten years. Following the completion of these developments, MS305, MS308 and MS303 are projected to exceed ONAN ratings during summer peak in 2020, 2021, and 2023 respectively. Also, MS305 and MS308 will exceed single-stage fan ONAF ratings during summer peak in 2023 and 2027 respectively. The ability to transfer load from MS303 to MS301 is limited due to there being only one existing feeder interconnection between both substations. Voltage drop issues would also arise in load transfer scenarios, given the long 7.1 km distance between MS303 to MS301. Voltage drop can cause significant issues for industrial customers, since equipment in a facility can trip due to low voltage resulting in outages and lost productivity. In recent years, load transfers have been carried out from MS305 to MS308; however, any additional transfers to MS308, coupled with the new load from ongoing commercial developments, will contribute to MS308 exceeding its ONAF single-stage fan rating of 26.6 MVA. Constructing a new 44-13.8kV, 20MVA, 4-feeder substation in the vicinity of Harvie Road and Veterans Drive will provide up to 33.2 MVA of 13.8 kV capacity (dual-stage fan ONAF/ONAF configuration) to supply the industrial and commercial development along Bryne Drive, Big Bay Point Road, and Mapleview Drive over the next ten years, as well as capacity for 2,120 new residential homes in South Barrie. Also, the new substation will provide capacity relief to both MS305 and MS308 while providing backup supply to the neighboring substations under contingency conditions, thereby ensuring compliance with the planning criteria for single contingency (N-1) operations.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The greatest risk to completion is securing the required land in the vicinity of Harvie Road and Veterans Drive in Barrie. The area surrounding the proposed site is fast being developed and there is a risk that the property cost will rise and/or the preferred site will not be available which will mean additional line (44kV and 13.8kV) costs will be incurred.
	Comparative Information on Equivalent Historical Projects (if any)	Painswick South MS, a new 44/13.8kV 20MVA, 4-feeder substation in Barrie, was completed and energized at the end of 2015. There was difficulty locating and securing available land for the substation, resulting in the purchase and demolition of two residential homes in order to secure a property. The project highlighted the importance of identifying and purchasing property as early as possible to ensure it is available when a new substation is required.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable.
	Identify any reliability, efficiency, safety or coordination benefits	The new substation will provide reliability benefits by providing the required capacity for the proposed future developments in the area and providing the required back-up capability during contingency conditions.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $2,185,214	$0	$0	$0	$0	$815,846	$1,369,368
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	101569
Project Name	New Alliston 10MVA Substation - Industrial Parkway
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North
	Location	Dufferin St and Industrial Pkwy area, Alliston.
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Stations)
	Alectra Subcategory	Station Capacity Projects
4. Evaluation Criteria (OEB)	Project Summary	The project entails the purchase of a station site in the vicinity of Dufferin St and Industrial Pkwy in Alliston, and constructing a new 10MVA, 44/13.8 kV, dual-stage fan, 4-feeder municipal substation. The project includes engineering design, purchase of station equipment, approvals, substation construction, equipment installation, and commissioning.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	Growth projections obtained from the Town of New Tecumseth indicate that a 56-hectare industrial and commercial development (Westerly ICI) is planned to be completed within six years in the vicinity of Dufferin Street and Industrial Parkway. Another 30 hectares industrial and commercial development (Easterly ICI) is proposed to be developed over four years in the vicinity of Theatre Road and Industrial Parkway. A total of 2,680 residential homes are to be completed in the Alliston area over from 2019-2023. Upon completion of the developments, MS331-T2 will exceed its 10 MVA ONAN nameplate rating in 2020, and its 13.3 MVA ONAF maximum rating in 2023. In addition, Alliston is projected to experience a total of 37.6 MVA in 13.8 kV station load. This load would exceed the system's contingency capacity of 26.6 MVA upon loss of one large 13.8 kV substation transformer. Alectra Utilities requires to prepare the distribution system to address the system capacity needs driven by these developments.
	Customer Attachment / Load (KVA)	Total new connected load of 9,300 kVA by 2027.
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Not Applicable.
	Economic Development	Not Applicable.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo will not provide the required 13.8kV supply capacity for the proposed industrial/commercial subdivisions and residential developments. Note that CDM is considered for all projects and the load forecast is net of CDM. In addition, the status quo does not provide the necessary 13.8kV contingency capacity in Alliston upon loss of MS322-T1 or MS322-T2 following the completion of the residential and industrial/commercial subdivisions after 2020. For these reasons, the status quo is not being recommended.
	Alternative #1	Non Wires Alternative Alectra Utilities' load forecast process considers the impact of CDM and distribution generation, which is accounted for as part of the load forecast underpinning the Stations Capacity portfolio. Alectra Utilities has also considered other options, such as battery storage, and determined that these options will not meet the load growth and contingency conditions for the stations to be upgraded during this DSP period Wire Alternative. Alternative 1 consists of expanding 8th Avenue MS330 from 10MVA to 20MVA and adding two additional 13.8kV feeders. The alternative was rejected because the existing station is of the 1980 vintage; the building is too small to accommodate the expansion. The station was originally designed for 5kV. Replacement of existing major equipment is required including the oil containment. The existing transformer pad will not support the larger transformer. The building is too small to accommodate the additional 2 feeders, HV breaker and LV switchgear. Also, Alternative 1 does not address station back-up under contingency conditions i.e. the "Triad" Model. The Triad model ensures that there are three neighboring stations and upon loss of one station transformer the load of that station can be transferred to the adjacent two stations.
	Alternative #2	Alternative 2 consists of purchasing a station site in the vicinity of Dufferin St. and Industrial Pkwy. in Alliston suitable for constructing a new 44-13.8 kV, 2x10MVA, 4 feeder Municipal Substation for capacity relief of MS331 (14th Line) and MS330 (8th Ave) and to supply a proposed Industrial Subdivision. This alternative provides the benefit of redundancy at the substation with dual transformers and the ability to accommodate contingency transfers greater than 10MVA from adjacent substations. However, a 2x10MVA configuration results in a $2,860,000 cost premium over a single 10MVA substation design.

	Justification for Recommended Alternative	The Town of Alliston is currently supplied by two 13.8 kV stations: MS330 and MS331. MS330 has a 10 MVA single-stage fan transformer rated to 10 MVA Oil Natural Air Natural (ONAN) and 13.3 MVA Oil Natural Air Forced (ONAF) supplying north-west Alliston. MS331 has two 10 MVA transformers each supplying separate parts of Alliston: MS331-T1 feeders supply the east-end of Alliston, and MS331-T2 feeders supply west-end of Alliston. These two transformers have single-stage fans and are rated to 10 MVA ONAN and 13.3 MVA ONAF. Information obtained from the Town of New Tecumseth indicates two major industrial/commercial developments and several residential developments are planned in the Alliston region. Growth projections obtained from the Town of New Tecumseth indicate that a 56-hectare industrial and commercial development (Westerly ICI) is planned to be completed within six years in the vicinity of Dufferin Street and Industrial Parkway. The Westerly ICI lands have been marketed internationally as investment ready under Ontario's Certified Site Program with proximity to major highways, Honda Canada, and the Greater Toronto Area. Another 30 hectares industrial and commercial development (Easterly ICI) is proposed to be developed over four years in the vicinity of Theatre Road and Industrial Parkway. The Easterly ICI development has draft plan approval from the Town of New Tecumseth for an industrial plan of subdivision (File No. NT-T-1301) with approval for a period of two years until July 13, 2020. The draft plan proposes 12 blocks for industrial purposes and 3 blocks for commercial use. A total of 2,680 residential homes are to be completed in the Alliston area from 2019-2023. Some developments have completed construction of Phase 1, with the remainder of Phases to be completed over the next few years. The forecast growth will over-load one of the existing feeders (MS331-T2). Upon completion of the residential developments, MS331-T2 will exceed its 10 MVA ONAN nameplate rating in 2020, and its 13.3 MVA ONAF maximum rating in 2023. In the existing feeder configuration, the 13.8 kV component of the proposed Westerly ICI and Easterly ICI would be supplied by MS331-T2, further exceeding the substation 13.3 MVA ONAF rating. In addition to these concerns, the completion of the proposed developments will result in Alliston not having adequate contingency capacity in the event of loss of either transformer at MS331, meaning that customer could not be transferred to another supply in the event of an outage. If the distribution system were to fail in such a situation, service could be interrupted to a large number of customers for an extended period. The forecast customer growth in Alliston will also prevent Alectra Utilities from being able to shift load between feeders and restore power during outages. From an overall system perspective, the historical loading across all 13.8 kV substations in Alliston peaks at 23.4 MVA, which is within the total capacity for Alliston's 13.8 kV system, which is 39.9 MVA. However, the contingency capacity of the Alliston system with loss of the largest transformer is 26.6 MVA. If the customer load exceeds this level, Alectra Utilities may not be able to continue operating the system within nominal limits when an asset fails. When the new developments are completed, Alliston is projected to experience a total of
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The greatest risk to completion is securing the required land in the vicinity of Dufferin Street and Industrial Parkway in Alliston. The area surrounding the proposed site is part of the Westerly ICI development and there is a risk that the property cost will rise and/or the preferred site will not be available which will mean additional line (44kV and 13.8kV) costs will be incurred.
	Comparative Information on Equivalent Historical Projects (if any)	Painswick South MS, a new 44/13.8kV 20MVA, 4-feeder substation in Barrie was energized in 2015. There was difficulty locating and securing available land for the substation, resulting in the purchase and demolition of two residential homes in order to secure a property. The project highlighted the importance of identifying and purchasing property as early as possible to ensure it is available when a new substation is required.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable.
	Identify any reliability, efficiency, safety or coordination benefits	The new substation will offer reliability benefits by providing the required capacity for the proposed industrial/commercial developments, as well as the new residential developments in Alliston. In addition, the substation will provide the required back-up capability during contingency conditions through the triad configuration.

	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,902,496	$0	$0	$0	$0	$840,232	$1,062,264
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

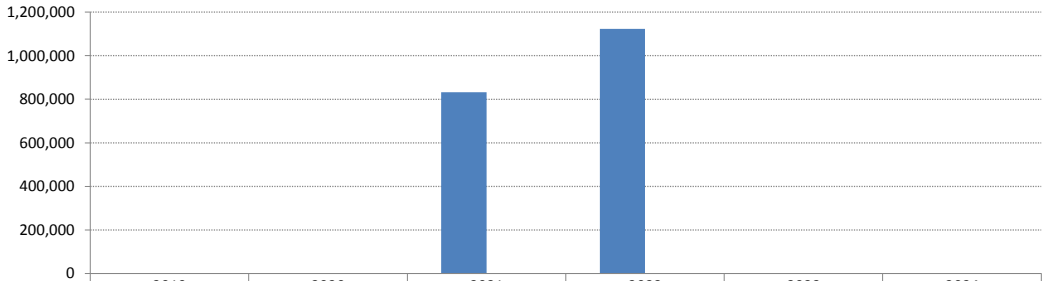
Project Code	102128
Project Name	Aurora MS6 Expansion
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Aurora MS6
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	This project includes following constructions: 1.add one main breaker for T2 2. add two 13.8kV breakers in Aurora MS6 3. construct two 13.8kV feeders from the breakers to the riser poles 4. Install switches or switchgears as per Power-Stream's design standard. 5. reconfigure existing feeders to integrate new feeders into the system After the project is completed, MS6 will be the same configuration as Aurora MS5 . The project takes two years to complete.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	Alectra Utilities requires to prepare the distributions system to address the system capacity need driven by intensification and redevelopment. The 2C Planning Area (as per York Regional Planning Official plan) is located at the northeast quadrant of the Town of Aurora. The 2C lands are bounded by the Town of Newmarket on the north, Highway 404 on the east, just north of Wellington Street on the south and Marsh Creek on the west. The 2C Planning Area consists of approximately 445 hectares (1,080 acres) and represents the last Greenfield development opportunity within the Town of Aurora. Lands in the 2C Secondary Plan Area are intended to accommodate approximately 8,000 residents in approx. 3,000 units and between 5,200 and 6,400 employment opportunities over the next 20 years. Based on 2.5kW per unit and 1.5 kW per job, approx. 15 MW is expected from these developments. CDM is considered for all projects and load forecast is net of CDM. The residential units will be on the west side of Leslie St and will be supplied by 13.8kV feeders. The commercial development will be on the east side of Leslie St and will supplied by 27.6kV feeders from Aurora MS7 & MS8. The development in 2C need one additional 13.8kV cct. MS#6 has two 10/13/16 MVA 44kV/13.8kV transformers, but there are only two 13.8kV feeders. The transformer capacity is not fully utilized. The peak on MS6 has exceeded 10 MVA and additional capacity is required to supply 2C land. Feeder 6F1 had a peak of 205 Amps in 2016 and 24 MVA transformer connected. 6F1 is 10km long feeder and customers on the feeder complained about low voltage during summer peak. New 13.8kV feeders are required to off load 6F2. The construction in 2C land has started and many residential units will be connected in the years to come. The existing 13.8kV feeders don't have sufficient capacity to supply the new load. Customers will be at risk of lengthier and more impactive outages. This will negatively impact SAIDI and SAIFI. Alectra will be at risk of compromising supply to new loads in Aurora that may have negative impacts on our corporate reputation and mission.
	Customer Attachment / Load (KVA)	Not applicable The new feeders can supply additional 15MW.
	Safety	Not applicable
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	Not applicable
	Economic Development	This provide 10 MVA distribution capacity to Aurora. . It will provide capacity for new residential and non-residential development in Aurora.
	Environmental Benefits	Not applicable

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo would be to do nothing and overload existing transformer stations and feeders beyond their normal ratings. 2C land is currently supplied by a 13.8kV feeder 5F2. It had a peak of 269A in 2018 and does not have sufficient capacity to supply future growth in the 2C lands. New feeder capacity is required to supply the additional load. The peak on MS5 was 17MW or 19MVA. It does not have sufficient capacity for 2C land. MS6 had a peak of 11MW or 12MVA in 2018 and it does not have enough capacity for 2C land either. The construction in 2C land has started and many residential units will be connected in the years to come. The existing 13.8kV feeders don't have sufficient capacity to supply the new load. There are no specific costs with the status quo, there are financial risks that are detailed in the risk section. Running equipment beyond its rating could lead to failure and possibly cause injury to public or employees. Running equipment beyond it designed rating also reduces the life expectancy of that equipment. The existing transformer stations and feeders will experience over loading as the load grows. This will restrict the operational flexibility of transferring load between feeders and stations in case of problems on the distribution system. From a regulatory point of view we are obligated to serve the load. We run the increased risks of longer service disruptions given the status quo. If adequate backup facilities are not available during contingency conditions there is a strong probability that not all of the load could be picked up. Knowingly running equipment beyond established guidelines does not represent good utility practice.13.8kV feeder may experience overloading and customers may experience low voltage problems. Alectra Utilities is required to ensure its distribution system can support projected load growth while maintaining reliability and quality of service for customers on both a short-term and long-term basis, as required by the DSC. Alectra Utilities must be able to connect new customers in a timely manner. The existing feeders are already loaded and nearing their capacity limits, taking no action will result in feeders becoming overloaded and exceeding their carrying capacity. Once feeders are at full utilization, load shedding will need to be executed during the summer peak period or during contingency conditions to mitigate the risk of failure from overloaded equipment. Supplying customers through highly loaded feeders may impact power quality.
	Alternative #1	Non- wires Alectra Utilities' load forecast process considers the impact of CDM and distributed generation and has been considered during the needs . Alectra Utilities has considered non wire alternative (solar and storage option) and determined that this option is not economical for the capacity that is required. Based on typical capacity of 15MW per feeder the cost of non-wire alternatives would 15 times that of traditional solution and hence this option has been rejected.
	Alternative #2	Not applicable
	Justification for Recommended Alternative	MS#6 has two 10/13/16 MVA 44kV/13.8kV transformers, but there are only two 13.8kV feeders. The transformer capacity is not fully utilized. The peak on MS6 has exceeded 10 MVA and additional capacity is required. Feeder 6F1 had a peak of 205 Amps in 2016 and 24 MVA transformer connected. New 13.8kV feeders are required to off load 6F2. Over 600 new homes are being forecasted in Aurora every year. That is approx. 1.5MW new load each year. The development in 2C needs one additional 13.8kV cct. Alternative 1 (Status Quo) does not address risks to the reliability of customers in Aurora area and does not meet system needs for supply capacity The recommended alternative will provide 16 MVA capacity to the distribution system addresses long term growth (10 years) requirements for Aurora. The recommended alternative is consistent with Alectra approved planning guidelines for transformers and feeders. Funding this project will enable Alectra to meet its regulatory duty to supply the customers in our service area. Additionally, it will allow Alectra to operate the system in an efficient, effective and flexible manner by providing additional supply capacity and having adequate backup capacity in the event of an outage. It shows Good Utility Practice in terms of asset utilization and load security. It will enable Alectra to meet transformer station and feeder loading guide lines. This project will add two 13.8kV feeders and 16.6MVA capacity to supply 2C land. It will increase reliability. This project will increase power supply reliability and reduce risk of prolonged outages. The completion of this project will allow for Aurora MS5 and MS6 to adequately supply new developments in 2C land areas. The project will provide for incremental feeder tie points between MS5 and MS6 and improve the operational efficiency and effectiveness of these stations. Execution of this investment will alleviate capacity constraints and as well as ensure the availability of sufficient capacity to efficiently connect customers to Alectra Utilities's distribution system. It will allow Alectra Utilities to
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The risk to get approvals from York Region and Town of Aurora in time. This project is scheduled for design in 2021 and construction in 2022. This will allow sufficient time to complete the project.
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable

Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable
Description of Incorporation of Advanced Technology, if applicable	Not applicable
Identify any reliability, efficiency, safety or coordination benefits	The project will provide for incremental feeder tie points between MS5 and MS6 and improve the operational efficiency and effectiveness of these stations.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,955,737	$0	$0	$832,601	$1,123,136	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

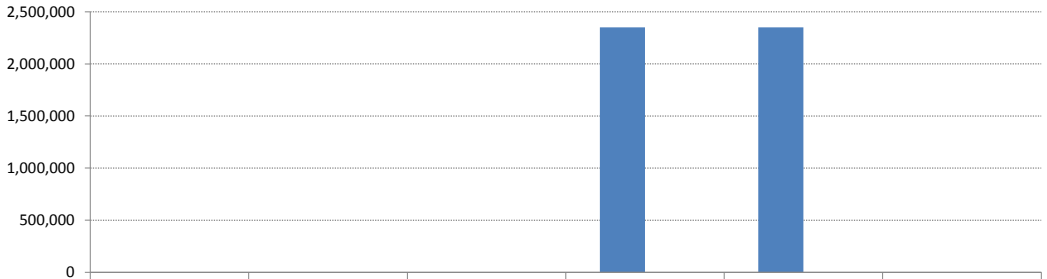
Project Code	102263
Project Name	Work Force Management / Mobile Dispatch
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Undefined
	Location	Alectra Operations Centres
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	Yes
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Information Technology Systems
	Alectra Subcategory	IT Operational
4. Evaluation Criteria (OEB)	Project Summary	The WFM Project will include the following functionality: •Computerised tool to schedule jobs and allocate resources, with the ability to automate some functions; •Electronic dispatch of jobs to field crews; •Real-time tracking of jobs while in progress; •Tracking of crew schedules and performance; •Electronic recording and transmission of field data; •Automation of processes such as timekeeping; and •Route optimization. The WFM solution will primarily bring benefit for shorter-duration field work, but there will also be benefit to having computerized resource allocation and crew management tools for larger capital projects. This is part of a multi-year plan involving AM/Mobile/WFM/AA&PO Solution. Alectra does not have an enterprise workforce or work flow management solution. In the legacy utilities, specific project information and work instructions were housed in a variety of ways. Work process flows and project cost information were also managed in different systems. At Alectra, JDE will be the enterprise system for financials and project costs, CC&B the customer information enterprise system. and P6 (Primavera) the enterprise system for allocating and tracking the progress of Capital projects. However, day-to-day crew management is still very much a manual process. Much of the work lands on the Field/Trades Supervisor's desk and they manually sort through and decide which projects go on which day, and which personnel would be assigned to what crew. Project updates are entered manually into P6, but there is no real-time insight into crew activities or job progress. This is particularly challenging for short-duration capital, maintenance, and reactive work. There is little communication or information available while a job is executing and resource information is limited and difficult to put together to get insight and control around much of the work that is occurring. Productivity is lost through unnecessary extra field trips, scheduling errors and less than optimal resource allocation. With respect to mobile dispatch and reporting, Alectra has made an initial investment in Fieldworker, a mobile workforce solution focused on metering work. While Fieldworker is a valuable application for specific types of work, it does not provide real-time insight into job progress nor the crew management capability that an enterprise WFM solution would provide. Across Alectra Operations, other mobile applications have been or are being implemented - e.g. Mobile GIS; Mobile DigSmart; Mobile Responder. These implementations are through the use of tough books or laptops. However, these solutions require that the field user access separate applications to utilize these products. A WFM solution would provide a single integrated platform for the field user to access all required applications. Most of the workforce receives their work instructions through paper. Work instructions are entered into JDE and /or filed in FileNexus and have to be printed out. The paper is taken to the field for staff to review. Additional information on projects may or may note be available depending upon what was printed. WFM will allow for the electronic dispatch of
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	This project is ranked as high priority because the volume and variety of capital and maintenance activity at Alectra has reached levels where a computerised tool is required to assist resource managers with resource allocation, job scheduling, and dispatch. At present, these activities and associated workflow processes are primarily manual, labour-intensive, and paper-based. The implementation of a computerised tool will facilitate process automation, streamlining, and improvement. The new tool will allow jobs to be scheduled (or rescheduled) and dispatched more efficiently. The WFM system will also provide insight into how work is carried out into the field and provide data on crew performance, thereby allowing analysis into how productivity can be improved.
	Customer Attachment / Load (KVA)	Not applicable
	Safety	This project will not have an adverse impact on personnel or public safety. Safety will be considered throughout the project, and particularly for the Mobile aspects of the project. For example, field computers will be mounted in vehicles in a manner that is not detrimental to employee safety or wellness. In addition, technical options are being explored to prevent a driver from using the field computer while the vehicle is in motion.
	Cyber-Security, Privacy	The WFM system will be a critical system that interfaces with other enterprise tools such as P6, JDE, OMS, and CIS. Issues of cyber-security and privacy are therefore of critical importance. The Project Team will work closely with IS and the successful vendor to ensure that these issues are addressed.
	Coordination, Interoperability	Not Applicable.
	Economic Development	Not Applicable.
	Environmental Benefits	Environmental benefits are anticipated, in the form of reduced carbon dioxide emissions from fleet vehicles due to route optimisation. Specific benefits will be quantified in 2014 as part of the Planning phase.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	From Impact of Deferral/"Do Nothing" Option: Continue to rely on existing manual, labour-intensive workflow, resource allocation, and scheduling processes and forego the opportunity to realize efficiencies and improve productivity. Continue to use the systems and processes which exist today to schedule, coordinate, dispatch, record and manage projects and resources. Data on how field crews carry out work would continue to be not readily available. Maintaining the status quo is not considered acceptable because PowerStream would forego the opportunity to realise efficiencies and improve productivity.
	Alternative #1	Alternative 1 - Incremental Changes to Existing Systems - This alternative would involve incremental changes to existing systems and the use of "home grown" programming to meet the needs. Examples of possible changes: a) continue to build on the "home grown" AEx tool to include the capture of inspection reporting information in the field b) continue to build upon FileNexus, JDE and Access databases for the workflow management c) continue to use the old CIS for the workflow management of customer work d) continue to use Excel spreadsheet for the scheduling of large capital work e) build Excel spreadsheets for the scheduling of maintenance and small capital work f) build a "home grown" mobile time reporting program
	Alternative #2	Alternative 2- New Work Force Management, Dispatch and Reporting Tool - Implement a new system to support Alectra's needs related to Mobile Work Force and Work Flow Management. The solution would support scheduling of all crew work, enable resource planning for the work, and allow tracking of jobs, and pertinent information, from start to finish with individuals flagged when they need to take action. The solution would also enable mobile dispatch of work instructions and allow crews to report on all needed information for a job using mobile tools. 2019 will be a planning year. The plan would be to hire a consultant to assist with a detailed needs analysis and creation of a multi-year project plan. One staff member would be assigned to the project for a major part of their time in 2019, with additional resources required in 2020-2024 for the Implementation phase. The initial implementation will focus on short term customer connection work, with the rollout to maintenance, large capital, and other work in the corporation to follow. Recommended alternative is the New Work Force Management, Dispatch and Reporting Tool.
	Justification for Recommended Alternative	From Justification: In 2011 PowerStream developed an IT Strategy. It was updated in 2012 and in 2013. The strategy identified four solutions to be considered for implementation over 2014 & 2015. These solutions were Asset Management; Mobile Workforce; Workforce Management; and Asset Analytics and Project Optimization. There are three main drivers for changing the status quo. First - the current systems and processes in place are combined systems and practices from predecessor utilities. They have served the predecessor utilities well. As smaller utilities using programs such as Excel, Microsoft Project, Access Database, paper, etc. to manage assets and work, it was easier as the volume of data and work was more manageable and the number of people involved in the process needing access to the data were fewer. With increased staff, assets, projects, and geography those tools are no longer viable to be used. Second - the regulatory environment and customers demand that utilities continue to gain efficiencies in the execution of the work. Specific targets are set by the regulator for improved efficiencies. Improved workforce management and processes/systems for data capture and analytics is an area where efficiencies can be gained through the implementation of new systems and processes. Third - the regulatory environment is placing increased demands for solid analytics in defending appropriate spend levels. In order to provide sophisticated analytics, new tools and processes are required to ensure current and historical data is fully available, and to aid in the efficient and effective completion of the analysis. In 2013 PowerStream undertook to perform a high level needs analysis of these four solutions and subsequently developed a high level implementation plan. As a result of this work it was identified that there is a need to purchase new systems software and implement new processes for Workforce Management, Work Flow Management, Mobile Dispatch and Mobile Reporting. This work is of priority as the current systems in these areas are largely paper based. There is some use systems of P6, JDE, FileNexus, Excel and Access Databases for Workflow Management. The systems are not integrated and information can be entered in multiple systems. It is believed that efficiencies can be gained in a multiple of ways through the implementation of new technology. These include: reduced input of information multiple times, reduced number of process steps and wait times in the execution of work with one source for project information; increased efficiency in crew scheduling with optimized drive times, and optimized schedules filling in the small gaps of time with appropriate work. These pieces can be defined as: Workforce Management A technology solution that enables resource managers to allocate, schedule & assign work to resources. The solution would include the ability to report on crew/individual performance in the completion of the work. Workflow Management A technology solution that provides an easy way to track a project through various stages, milestones & triggers. The solution would allow capture of all necessary project information & allow the sending of automatic emails upon specific trigger events Mobile WFM The ability to interface with the Work Management System to automate dispatch of jobs. The solution includes the ability to view work instructions electronically & report on job completion, asset information & timesheets in the field at time of job completion
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	At present, Alectra does not have a computerised WFM system, so this is a new tool to be implemented. The new system will impact several Departments, particularly Lines, Metering, Engineering, and Customer Service. The system will have to integrate with other enterprise systems, such as P6, CC&B, JDE and OMS. Change management will be required for employees to adapt to the new tool. IS resources will be required to support the implementation. Alectra has adopted a systematic and prudent approach to this project. The WFM tool will be phased in over several years, with implementation commencing in 2020. Planning activities are being undertaken in 2019. A cross-functional Project Team, comprising key stakeholders from across the company, has been assembled and a Project Governance model is in place. A consultant will be engaged to assist the Project Team with the identification and analysis of needs, opportunities for improvement, and benefits. The consultant will be a subject matter expert in the WFM field, and will also assist the team to understand the relative strengths and weaknesses of various solutions available on the market, as well as lessons learned from similar WFM implementations. A detailed project plan will be prepared with clearly defined project phases, goals, and timelines. Existing business processes are being documented in detail and opportunities for streamlining and automation will be explored. A change management plan will be prepared and executed to ensure that employees are engaged in the change process and adopt the new tool. Mobile technology (that is, field computing devices and accessories) is a critical component of this project, as it enables real-time, digital communication with field resources. The implementation of Mobile technology in the field is part of the WFM project, and key leaders of the Mobile initiative are also part of the WFM Project Team. This ensures that there is alignment of goals and activities of the two initiatives. IS resources are also part of the Project Team, which will ensure that IS resources are available to support the WFM project and also that critical issues such as security are addressed.

	Comparative Information on Equivalent Historical Projects (if any)	Legacy Alectra utilities successfully managed the implementation of several significant computerised systems, including SCADA, Outage Management System, GIS, P6, and the C55 Optimiser system. Alectra is currently standardizing on the JDE and CC&B applications as corporate enterprise systems.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	This project is expected to yield net benefits in terms of productivity and efficiency. These benefits will be quantified as part of the 2019 Planning phase. Expected benefits include: - reduced time spent on allocating resources and scheduling jobs; - productivity gains in the execution of field work; - reduced fuel costs due to route optimization; - improved scheduling and tracking of short-duration work.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $4,700,000	$0	$0	$0	$2,350,000	$2,350,000	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

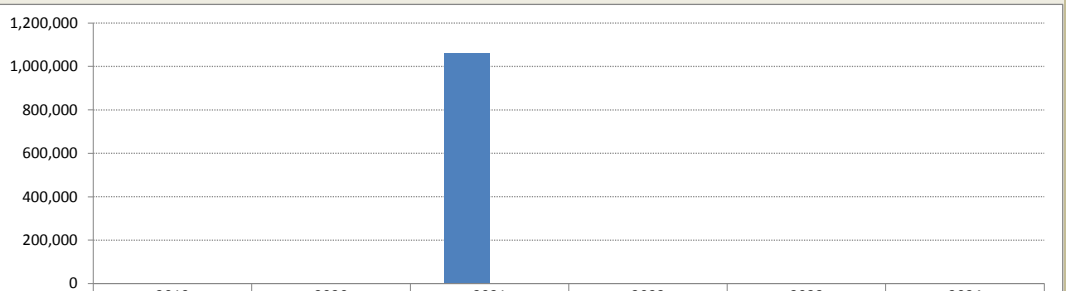
OEB Multi-Project Report

Project Code	102387
Project Name	Install 44kV & 13.8kV Bryne Drive
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North
	Location	Bryne Dr south of switch SC13487 to pole P6231 south of Harvie Road.
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	Lines expansion project along Bryne Drive from P6231 to Harvie Road with 44kV & 13.8kV circuits (approx. 700m) including new N/O 44kV automated switch to sectionalize 44kV feeder south of Harvie Road, and new pole line along Bryne Drive from Harvie Road to SC13487 (approx. 700m) with 13.8kV circuit and additional pole height for future treetop 44kV. The City of Barrie is scheduled for road works along the existing Bryne south section in 2019 and Bryne north section in 2020; any relocation of existing plant will be under road authority. The City of Barrie will be constructing the new road along Bryne Drive in 2021.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	The City of Barrie has identified 64 acres north of Harvie Road along Bryne Drive for development of industrial/commercial/residential. Another 34 acres south of Harvie Road along Bryne Drive has been identified for industrial/commercial development. The developable areas will result in 4MVA of new load north of Harvie Road and 2.2MVA of load south of Harvie Road. There is currently no existing 44kV or 13.8kV supply along Bryne Drive between P6231 and SC13487. The City of Barrie is scheduled for road works along the existing Bryne south section in 2019 and Bryne north section in 2020; any relocation of existing plant will be under road authority. The City of Barrie will be constructing the new road along Bryne Drive in 2021. As a result Alectra Utilities requires to prepare the distributions system to address the system capacity needs driven by these new developments and support economic development.
	Customer Attachment / Load (KVA)	Total new connected load of 6,200 kVA by 2025 along Bryne Drive
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Not Applicable.
	Economic Development	Not Applicable.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo will not supply the 64 acres of proposed development north of Harvie Road or the 34 acres of proposed development south of Harvie Road along Bryne Drive; there is currently no existing 44kV or 13.8kV supply along Bryne Drive between P6231 and SC13487. The City of Barrie is scheduled for road works along the existing Bryne south section in 2019 and Bryne north section in 2020; any relocation of existing plant will be under road authority. The City of Barrie will be constructing the new road along Bryne Drive in 2021.
	Alternative #1	Alectra Utilities' load forecast process considers the impact of CDM and distributed generation, which is accounted for as part of the load forecast underpinning the lines capacity projects. For this expansion projects these options have not been considered as new feeders are needed to connect the customers to grid.
	Alternative #2	Not Applicable.
	Justification for Recommended Alternative	The City of Barrie has identified 64 acres north of Harvie Road along Bryne Drive for development of industrial/commercial/residential. Another 34 acres south of Harvie Road along Bryne Drive has been identified for industrial/commercial development. The developable areas will result in 4MVA of new load north of Harvie Road and 2.2MVA of load south of Harvie Road. There is currently no existing 44kV or 13.8kV supply along Bryne Drive between P6231 and SC13487. The City of Barrie is scheduled for road works along the existing Bryne south section in 2019 and Bryne north section in 2020; any relocation of existing plant will be under road authority. The City of Barrie will be constructing the new road along Bryne Drive in 2021. Constructing a new pole line along Bryne Drive from P6231 to Harvie Road with 44kV & 13.8kV circuits (approx. 700m) including new N/O 44kV automated switch to sectionalize 44kV feeder south of Harvie Road, and new pole line along Bryne Drive from Harvie Road to SC13487 (approx. 700m) with 13.8kV circuit and additional pole height for future treetop 44kV will provide circuits for supply to the proposed Bryne developments. In addition, the new circuits will provide interconnection with existing 13.8kV and 44kV circuits along Harvie Road, Mapleview Drive and Essa Road to accommodate load transfers and contingency transfers.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The greatest risk to completion is securing the required approvals from the city in the allotted timeframe. The ramping up of the proposed commercial developments in the area will also impact the timing of the project.
	Comparative Information on Equivalent Historical Projects (if any)	Some past projects for new circuits have taken 6-8 months to obtain the necessary approvals before proceeding with construction.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0

7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable.
	Identify any reliability, efficiency, safety or coordination benefits	The new pole line and circuits will provide a reliability benefit through interconnection to existing 13.8kV and 44kV circuits that will allow for additional transfer options during contingency conditions.



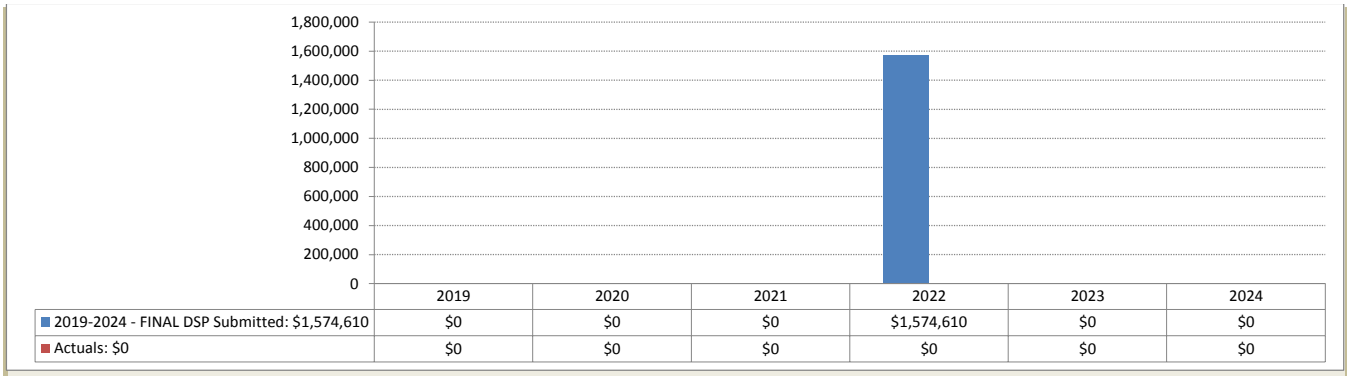
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,061,652	$0	$0	$1,061,652	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	102547	
Project Name	Two Ccts on Birchmount Rd from ROW to 14th Ave	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	On Birchmount Rd from ROW to 14th Ave in Markham - 0.8 km
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	The primary driver for this investment is to increase supply reliability to the 14th Ave and Warden Ave area. This project is to build 2 ccts pole line on Birchmount Rd from the Right of Way (ROW) to 14th Ave. This will extend 2 feeders 26M17 and 26M18 to 14th Ave to tie with feeder 22M7/22M8 for reliability.
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	High. The primary driver for this investment is to increase supply reliability to the 14th Ave and Warden Ave area and Mitigate the outage impacts due to increasing effect of adverse weather events. A few data center projects are underway and the peak demand is expected to increase by 20MVA.The existing feeders will not have sufficient capacity for the new load and new feeders are required. One data center at 371 Gough Rd has been in service in 2014. The initial load is 2 MW and the ultimate load will be 7 MW eventually. Another data center at 4175-14th Ave has been in service in 2015. The initial load will be 2MW and the ultimate load will be 10 MW by 2020. In addition there are many sensitive larger user along 14th Ave that have two supplies to their facilities; however, they are fed from the same pole line on the south side of 14th Ave. The customers will lose both supplies in case of pole failures on 14th Ave and the auto transfer scheme that they have installed on the secondary side of their transformers will not spare them from power outages. A new pole line has been built on the north side of 14th Ave from Warden Ave to Kennedy Rd. However, three feeders from MTS3 (26M13, 26M15, and 26M16) supplies customers on 14th Ave from Warden Ave, if a pole fails on Warden Ave between Hwy 407 and 14th Ave , it will take these three feeders out of service and cause significant outages to customers in the area. If a pole fails near intersection of Warden Ave and 14th Ave , it will take these three feeders (22M7, 22M8 and 26M16) out of service and cause significant outages to data center customers along 14th Ave.
	Customer Attachment / Load (KVA)	Not Applicable.
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Not Applicable.
	Economic Development	Not Applicable.
	Environmental Benefits	Not Applicable.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, (i.e., not build project as proposed), but to supply load growth from existing facilities. It will impact Alectra distribution system in two following aspects: Reliability There is a two ccts pole line on the south side of 14th Ave between Warden Ave and Kennedy. There is also another two ccts on the north side of 14th Ave between Warden Ave and the railway track. These two pole lines allow three feeders (22M8/26M16 on the south side, 22M7/22M8 on the north side) to supply customers on 14th Ave between Warden Ave and Kennedy Rd. A number of customers with high reliability needs on both sides of 14th Ave between Warden Ave and Kennedy Rd are currently supplied by the existing three feeders on 14th Ave. If a pole fails on Warden Ave between the right of way (ROW) and 14th Ave, it will take all three feeders out of service and cause significant outages to customers in the area. This impacts power supply reliability and related customer satisfaction. There have been sever pole line failure incidents in the past that on Warden Ave and caused significant outages to customers in the area. There are no specific costs with the status quo, there are financial risks that are detailed in the risk section. Ccustomers on 14th Ave between Warden Ave and Kennedy Rd will be impact if any pole failure near Warden Ave and 14th Ave. There will be more complaints about reliability in the future. Customers will be at risk of lengthier and more impactive outages. This will negatively impact SAIDI and SAIFI. Alectra Utilities will be at risk of compromising supply reliability to customers along 14th Ave that may have negative impacts on our corporate reputation and mission.
	Alternative #1	Alectra has considered the solar and storage option and based requirement of 15-20MW to be backed the cost will be multiples of times based on wires solution hence this option has been rejected.
	Alternative #2	Not Applicable.
	Justification for Recommended Alternative	Status Quo does not address risks to the reliability of customers in 14th Ave and Warden Ave. The recommended alternative was chosen for the following reasons: • To increase supply reliability to the area. This project will create two supply paths for customers on 14th Ave between Warden and Kennedy. There are a few big customers along 14th Ave that have two supplies to their facilities; however, they are from the same pole line on Warden Ave/14th Ave. The customers will lose both supplies in case of pole failures near Warden Ave/14th Ave intersection and the auto transfer scheme on the secondary side of their transformers will not spare them from power outages. This project will enable customers to have alternate supply from Birchmount Rd so that pole failure on Warden Ave will not cause outages to these customers since the customers have auto transfer scheme on the secondary side of their transformers. • To increase supply capacity to the area. This project is going to reroute two feeders (26M17/26M18) into 14th Ave area between Warden Ave and Kennedy Rd via Birchmount Rd. This could increase 30 MVA capacity .
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The risk is to get approval from the City of Markham in time. Capital design will start the design of the project in advance and should get the approvals in place the prior year. Customers load ramping up schedule will impact the timing and priority. Customers at both data centers are putting significant additional electrical load into service in the near future that will require additional load capacity for that area.
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable.
	Identify any reliability, efficiency, safety or coordination benefits	This project will also provide supply reliability to new customers and existing customers on 14th Ave. This project will also provide an alternate supply path for the existing customers. Supply to customers will be maintained in case of pole failures on the existing path.



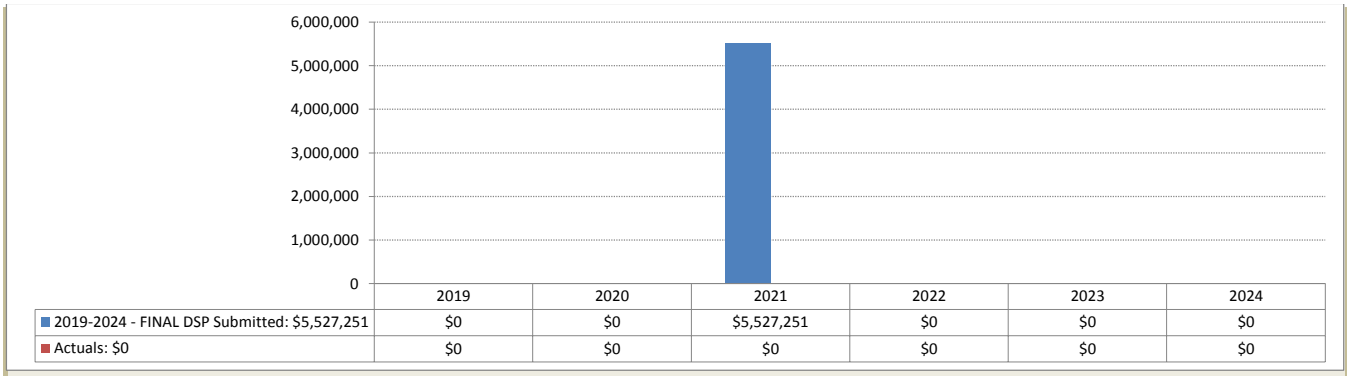
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,574,610	$0	$0	$0	$1,574,610	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	103633	
Project Name	Install Two 27.6kV Ccts on 16th Ave from Hwy 404 to Woodbine Ave	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	On 16th Ave from Hwy 404 to Woodbine Ave in Markham
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	This project is to reroute two 27.6kV feeders from Markham to supply new load in Richmond Hill. This project has been designed under WO#311308, but deferred since 2014 due to delay in the closure of Buttonville Airport and York Region's 16th Ave widening project. This project is to install two additional 27.6kV ccts on 16th Ave from Hwy 404 to Woodbine Ave by rebuilding the existing pole line into a 4 ccts pole line or installing a new 2 ccts pole line on 16th Ave where permitted, or underground, or combination. It will be determined in the design stage and coordinated with the road design. Cadillac Fairview, along with Armadale Co. Limited and Torontoair Ltd. announced on Friday, April 27, 2018 that they would continue operations at the Buttonville airport until at least the spring of 2023 and possibly longer. The design of this project will be based on the Buttonville airport continues to operate.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	High Alectra Utilities requires to prepare the distributions system to address the system capacity need driven by green field expansion, intensification and redevelopment. This project is to reroute two 27.6kV feeders along 16th Ave from Woodbine Ave in Markham to Leslie St Richmond Hill to supply new load in Richmond Hill. This project has been approved in 2014 capital budget, and the first part (Leslie St to Hwy 404) has been built in 2014. The second part (Hwy 404 to Woodbine Ave) has been deferred many times due to issue with Buttonville Airport closure schedule and MTO's Hwy 404 widening schedule. A large data center compound has being developed in Leslie St/Elgin Mills Rd area in Richmond Hill 2016. One building with forecasted peak demand of 16MW has been built in 2016. Another building with forecasted peak demand of 16MW will be built in 2019. The estimated demand for the data center compound is expected to be 60MW when the data center compound is fully developed and utilized. The existing feeders on Leslie St don't have sufficient capacity to supply this new load and new feeder capacity is required. CDM is considered and load forecast is net of CDM. The massive 175-acre long-planned Buttonville Airport development could be in jeopardy. The $4-billion project which would have created 15,000 to 24,000 jobs and housed 6,000 to 7,000 residents would have been home to such amenities as a cinema, office and retail space and possibly even a 60-storey tower. Cadillac Fairview, the chief developer of the Buttonville Airport property, and the Region of York have been locked in disputes at the Ontario Municipal Board for the last five years over various issues and could not agree on several issues. Cadillac Fairview, along with Armadale Co. Limited and Torontoair Ltd. announced on Friday, April 27, 2018 that they would continue operations at the Buttonville airport until at least the spring of 2023 and possibly longer. York Region is proceeding with 16th Ave widening project based on Buttonville airport will continue to operate.
	Customer Attachment / Load (KVA)	Not Applicable. The two 27.6kV feeders can supply up to 40MVA capacity.
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Not Applicable.
	Economic Development	This project will project 40 MVA capacity for development along Leslie St in Richmond Hill, including data centers in Via Renzo area.
	Environmental Benefits	Not Applicable.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, (i.e., not build project as proposed), but to supply load growth from existing facilities. It will impact Alectra's distribution system capacity. The customers on Leslie St north of 16th Ave in Richmond Hill are supplied by feeder 12M5, 12M7, and 12M12. The peak in 2017 was 388A on 12M5, 320A on 12M7 and 203A on 12M12. There is only 290A or 14 MVA capacity left on these feeders for future development. A large data center compound has being developed in Leslie St/Elgin Mills Rd area in Richmond Hill 2016. One building with forecasted peak demand of 16MW has been built in 2016. Another building with forecasted peak demand of 16MW will be built in 2018. The estimated demand for the data center compound is expected to be 60MW when the data center compound is fully developed and utilized. The existing feeders on Leslie St don't have sufficient capacity to supply this new load and new feeder capacity is required. This project is needed to provide 40 MVA capacity from Buttonville TS to the Richmond Hill area. It will also increase supply reliability. This is the least cost alternative. The "do nothing" alternative is not viable as it does nothing to provide the required load capacity. Alectra Utilities is required to ensure its distribution system can support projected load growth while maintaining reliability and quality of service for customers on both a short-term and long-term basis, as required by the DSC. Alectra Utilities must be able to connect new customers in a timely manner. The feeders are already loaded and nearing their capacity limits, taking no action will result in feeders becoming overloaded and exceeding their carrying capacity. Once feeders are at full utilization, load shedding will need to be executed during the summer peak period or during contingency conditions to mitigate the risk of failure from overloaded equipment. Supplying customers through highly loaded feeders may impact power quality.
	Alternative #1	Battery energy storage and solar generation in lieu of conventional supply was studied by Alectra for capacity needs in Richmond Hill and Markham. The cost of Battery energy storage and solar generation is much higher (15 times) than conventional supply. Hence this option has been rejected.
	Alternative #2	Not applicable
	Justification for Recommended Alternative	The objective of this project is to re-route two 27.6kV feeders from Markham to Richmond Hill as part of MTS4 feeder integration plan. This project is to provide additional 40 MVA capacity to Richmond Hill. The major future developments in Richmond Hill will be the Beaver Creek Business Park, Headford Business Park, Barker Business Park and Leslie North. Data Center According to Town of Richmond Hill's "Vacant Employment Land Inventory", there are approx. 209 hectares of vacant employment land in these three business parks that are bounded by Hwy 404/Leslie St/Elgin Mills Rd/16th Ave. One data center has been built in the vacant land, the peak demand is expect to reach 30 MW in 2020, and 50MW ultimately as per the data center owner. The total estimated new load is approx. 60MW, so two to three new feeders are required for the proposed development. Leslie North The North Leslie planning area is bounded by 19th Avenue to the North, Hwy 404 to the east, Elgin Mills Road to the south and Bayview Avenue to the west. There are 2 -27.6kV circuits on Bayview Ave and one radial feeder on Leslie St. The Leslie North development is projected to accommodate approximately 6,250 housing units with a population of approximately 19,300 people and employment of approximately 3,200 jobs. Based on 2.5kW per unit and 1.5 kW per job (based on 300 sq.ft per no-retail job and 5W/sq.ft), the total demand would be 20 MW. In total, four new feeders are required to supply these developments in Richmond Hill. Customers on Leslie St north of 16th Ave in Richmond Hill are supplied by feeder 12M5, 12M7, and 12M12. The peak in 2017 was 388A on 12M5, 320A on 12M7 and 203A on 12M12. There is only 290A or 14 MVA capacity left on these feeders for future development. Richmond Hill is supplied by Richmond Hill TS1, TS2 and Buttonville TS. Richmond Hill TS1 and TS2 have been loaded to their summer LTRs in 2016, but the peak demand was lower 40MW below the LTRs due to cooler than normal summer weather and abnormal feeder configuration as results of YRT's Yonge St widening project. On the other hand, in 2017, Buttonville TS has 40MW capacity available to supply future load in the area in Richmond Hill and Markham. Execution of this investment will alleviate capacity constraints and as well as ensure the availability of sufficient capacity to efficiently connect customers to Alectra Utilities's distribution system. It will allow Alectra Utilities to maintain supply to customers during contingency events and operation flexibility during maintenance and other capital work. This option will help Alectra Utilities maintain service quality and reliability standards for the existing customers
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The risk is to get approval from the City of Markham, York Region, Transport Canada as well MTO in time.
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable.
	Identify any reliability, efficiency, safety or coordination benefits	This project will provide 40 MVA capacity from Buttonville TS to the Richmond Hill area. It will also increase supply reliability. This project will also provide alternate supply and reliability for customers in Leslie/Hwy 7 area that are mainly supplied by feeders from Richmond Hill TS1/TS2. It will increase load transfer capability between Buttonville TS and Richmond Hill TS1/TS2.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $5,527,251	$0	$0	$5,527,251	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150043
Project Name	Rear Lot Renewal Project - East of Queen St. to Eastern Ave./North of Greenway St.
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North
	Location	Tottenham - East of Queen St. to Eastern Ave./North of Greenway St.
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Rear Lot Conversion
	Alectra Subcategory	Rear Lot Conversion
4. Evaluation Criteria (OEB)	Project Summary	Convert the East of Queen Street to Eastern Avenue – North of Greenway Street (Tottenham) area from rear lot overhead supply to front lot underground supply (primary and secondary). This will reduce number of outages and power restoration time. The existing rear lot location East of Queen Street to Eastern Avenue – North of Greenway Street (Tottenham) will be 38 and 39 years old in 2019 and 2020 respectively. The asset is end of life and requires remediation. In addition, the poles in this rear lot location were inspected in 2012 and 2013, where a majority of the poles were found to be in poor condition. These assets pose a safety risk for the public and for Alectra Utilities crews, are more prone to failure than other overhead distribution assets, and otherwise do not align with current standards, policies and practices.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	The priority of this project is high. This project is to decrease the outage impacts due to deteriorating distribution system assets and mitigate the outage impacts due to increasing effect of adverse weather events. Reasons for Priority: The electrical system is deteriorating and poses many operations, safety, and customer service concerns that must be addressed. If not addressed, the system will deteriorate further and failures and safety hazards will increase. In December 2013, an ice storm came in across Ontario including Alectra (East) service territory. During the storm, many trees, including trees in rear lot areas, fell onto power lines and created prolonged power outages to customers. Power restoration in rear lot areas was very difficult due to accessibility. The December 2013 ice storm caused 29,831,573 CMI within the rear lot grids, which accounted for 16.68% of the total system CMI due to the ice storm. The existing rear lot location East of Queen Street to Eastern Avenue – North of Greenway Street (Tottenham) will be 38 and 39 years old in 2019 and 2020 respectively. The asset is end of life and requires remediation. In addition, the poles in this rear lot location were inspected in 2012 and 2013, where a majority of the poles were found to be in poor condition. These assets pose a safety risk for the public and for Alectra Utilities crews, are more prone to failure than other overhead distribution assets, and otherwise do not align with current standards, policies and practices.
	Customer Attachment / Load (KVA)	Total connected load of 576 kVA.
	Safety	Safety risk associated with close proximity to power line in the backyard: Although the Electrical Safety Code and easement terms specify minimum clearance between customer facilities and power line, there are cases that customers do not follow the safety rules and install facilities too close to power line. Examples are shed, storage, playground, trampoline, swimming pool, patio deck, landscape, house extension, etc. This encroachment creates a safety hazard for both customers and crews. Safety risk associated with reduced clearance due to encroachment of power line: Over time, growth of vegetation and obstruction due to customer facilities may jeopardize the minimum clearance requirements and restrict crew mobility. Occasionally dogs may also be a safety hazard to the crews.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Not Applicable
	Economic Development	Not Applicable
	Environmental Benefits	Because overhead transformers are installed on the pole in rear lot area, a pole falling down may also cause the transformers to fall down, resulting in transformer tank rupturing, and oil being spilled onto the ground.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Under this option, no proactive investments would be executed to replace either existing rear lot infrastructure and these assets would only be intervened upon in reactive scenarios, when the assets have reached their end-of-life. Under this approach, customers would be exposed to prolonged reliability impacts, due to the accessibility issues associated with rear lot infrastructure, as well as the complex restoration procedures that would be required for a four-feeder outage event. As standardized equipment (e.g. bucket trucks) cannot be used to service rear lot plant, wood poles, transformers and overhead switches would have to be replaced manually, with field crews accessing private customer properties in order to execute the work. Customers and field crews would continue to be exposed to elevated safety risks, due to the minimal proximity between customer plant and the rear lot overhead lines, as well as the non-standard and non-ergonomic work procedures that field crews would have to continue to execute to sufficiently maintain, inspect and service the plant. Finally, as assets are replaced reactively, new assets would need to be installed according to the rear lot configuration. By its design, rear lot can only be converted if the entire line is replaced at once as part of an overall project. Therefore, the legacy design will continue to be maintained under this scenario. This will include the continued operation of the legacy voltage system, along with continuing the associated inefficiencies, such as line losses.
	Alternative #1	Rear Lot Overhead Option: Under this Option, the existing rear lot plant is replaced with new overhead plant in the rear lot. When the replacement project is implemented, the following design parameters should be considered: •Install critical components such as fuse, switch, and transformer as close to the accessible street as possible This Option is not acceptable because it does not resolve the major operations and customer reliability concerns related to the distribution assets located at rear lot at this location. Partial Underground Option This scenario involves the replacement of existing rear lot infrastructure with a new hybrid solution, where primary voltage infrastructure, including transformers, switches and lines would be installed as per an underground configuration within the front right-of-way, following standard Alectra Utilities installation practices. Under this approach, secondary infrastructure, including wood poles and secondary conductor, would remain in the rear lot in overhead configuration. This approach would not fully address the reliability and safety concerns associated with rear lot distribution, as secondary connections will remain in the rear lot. However, future outage impacts will be reduced and contained to only those customers connected to the associated transformer. Lower voltage classes will also be converted up to the standardized 27.6kV voltage standard as per this investment option. Under this option, reliability and safety issues would continue to persist due some infrastructure remaining overhead. The cost of partial underground renewal is higher than the renewal of the rear lot overhead and further more does not result in mitigating the risks associated with the existing system. This partial underground approach has been adopted where feasible.
	Alternative #2	Replace with Full Underground Infrastructure This investment scenario considers the full replacement of existing rear lot infrastructure – including primary and secondary plant – with new front lot underground infrastructure. All existing primary and secondary distribution assets within the rear lot corridor will be removed and replaced with new underground primary and secondary infrastructure that is installed within the front lot corridor as per current standard design practices. Underground secondary cables will run from the front lot underground transformers to the individual meter bases in order to supply the customers. Under this approach, existing under-classed legacy wood poles that support four feeders will be replaced with higher-class poles that are better suited to withstand major weather events. Through this investment scenario, these high impact assets will be better secured and weather-hardened against future outage events. This approach would complete mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure. This approach also introduces efficiencies for the utility, as tree trimming activities can be eliminated and line losses associated with the legacy voltage classes can be eliminated.
	Justification for Recommended Alternative	It is recommended to convert the East of Queen Street to Eastern Avenue – North of Greenway Street (Tottenham) area from rear lot overhead supply to front lot underground supply (primary and secondary). Under this Option, the existing rear lot plant is removed and new underground plant is installed in front lot. This approach would complete mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure. This approach also introduces efficiencies for the utility, as tree trimming activities can be eliminated and line losses associated with the legacy voltage classes can be eliminated. For these reasons, Alectra Utilities selected this approach.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Fluctuation in cost and staff resource (internal and external) to complete high annual volume of work. Risk Management: Alectra has retained external contractor working at different work sites throughout the year under a multi-year EPC (Engineering Procurement Construction) Master Service Agreement. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track.
	Comparative Information on Equivalent Historical Projects (if any) Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	Alectra has completed and is completing similar rear lot remediation project since 2013. Alectra has experience on executing several rear lot remediation project. 0

7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	The scope involves converting the area east of Queen Street to Eastern Avenue – North of Greenway from rear lot overhead supply to front lot underground supply (primary and secondary). There are a total of 139 customers affected by the existing rear lot supply. Rear lot infrastructure is functionally obsolete for the following key reasons: •The rear lot configuration is generally unsafe to the public due to the large trees growing near energized power lines. In tandem with such an unsafe configuration, there are also line clearing hazards and related additional costs to do this work. •Alectra Utilities is unable to use labour saving tools and devices such as bucket trucks to efficiently maintain and repair the distribution system due to assets located in customer backyards. •Rear lot wood poles are generally congested, due to multiple service attachments and communication drops, which generally make it impossible to sufficiently climb poles. Crews must, therefore, use ladders to access these poles. •Alectra Utilities is limited in utilizing ladders to access the overhead system due to Ministry of Labour restrictions for congested areas. •Due to the presence of legacy porcelain top tie insulators, rear lot lines must be fully isolated before any maintenance or repair work on the overhead system can commence. •Porcelain insulators are far more susceptible to contamination and flashover when compared to present-day standard polymer insulators. •Rear lot infrastructure typically contains undersized #4 aluminum conductor steel-reinforced cable and aluminum conductor, along with #4 and #6 copper conductor, which are undersized and generally have a greater probability of annealing due to their reduced carrying capacity. These conductors must be fully isolated before any work can commence.
	Condition of Asset vs. Typical Life Cycle and Performance Record	It is extremely difficult to gain access to the backyard to maintain, repair, and restore power. As a result there are prolonged outages to customers. This is especially more difficult in the event of ice storm. Many of the Rear Lot Supply distribution systems were built in 1950s, 1960s, and 1970s (40-68 years old in 2016). The rear lot equipment is older than typical useful life and the asset condition is deteriorating. According to the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board", typical useful life of overhead transformers and wood poles are 40 and 45 years respectively. Many of the installations are not in compliance to today's standards. The existing rear lot location East of Queen Street to Eastern Avenue – North of Greenway Street (Tottenham) will be 38 and 39 years old in 2019 and 2020 respectively. The asset is end of life and requires remediation. In addition, the poles in this rear lot location were inspected in 2012 and 2013, where a majority of the poles were found to be in poor condition.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	139
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Number of failures and duration based on historical outage data for specific north-east corner of Mill/Queen Street north of Greenaway Street and south of Eastern Avenue rear lot area: May 2015; 2 hour outage (Incident # 730294) September 2015; 12 hour outage (Incident # 735524) March 2016; 3 hour outage (Incident # 741955) March 2016; 29 hour outage (Incident # 742187) November 2016; 2.4 hour outage (Incident # 749684) Based on three year average (2015-2017) assume 1.7 outages at 9.7 hours for north-east corner of Mill/Queen Street rear lot area.
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Rear lot supply failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage). Rear lot system also poses safety hazards to the customers because live electrical components are in proximity of customer's backyard and proper clearance may be violated due to customer's installations (examples: trees, garden, swimming pool, storage shed, deck, house extension).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Not Applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	In case of not implementing the project the OM&A cost will continue to occur due to tree trimming activities as well as increase in responding to outages since the assets are deteriorated and prone to failure.
	Reliability and Safety Factors	This project is part of the long-term rear lot supply remediation program. The project will help avoid potential rear lot failures. In addition, this project also eliminates safety hazards associated with ageing and deteriorating rear lot system. This approach would complete mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure.
	Analysis for "Like for Like" Renewal Project	The selected option is not a like for like replacement. This investment scenario considers the full replacement of existing rear lot infrastructure – including primary and secondary plant – with new front lot underground infrastructure.

	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $2,552,356	$0	$2,552,356	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

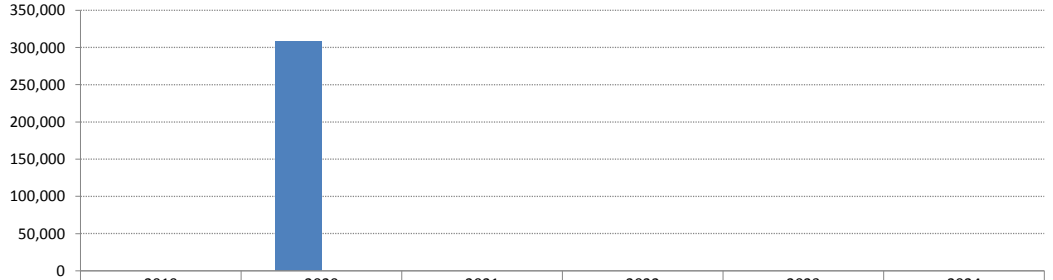
Currency scale is in literal

OEB Multi-Project Report

Project Code	150044	
Project Name	Rear Lot Renewal Project - Blake/Kempenfelt	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream North
	Location	Barrie: Blake/Kempenfelt
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Rear Lot Conversion
	Alectra Subcategory	Rear Lot Conversion
4. Evaluation Criteria (OEB)	Project Summary	Convert Blake/Kempenfelt rear lot overhead supply to front lot underground supply (primary and secondary) to address the operations and customer service concerns associated with rear lot supply. This project is part of the long-term Rear Lot Remediation Program. On a prioritized basis, each year a number of rear lot locations are selected for remediation to address operations concern and to maintain system reliability and customer service. It is estimated that it will take approximately 38 years to complete the Rear Lot Remediation Program.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	The priority of this project is high. Reasons for Priority: Alectra has many pockets of customers being supplied by rear lot construction. The electrical system is ageing and deteriorating and poses many operations, safety, and customer service concerns that must be addressed. If not addressed, the system will deteriorate further and failures and safety hazards will increase to a level that is not manageable and not tolerable by the customers. In December 2013, an ice storm came in across southern Ontario. During the storm, many trees, including trees in rear lot areas, fell onto power lines and created prolonged power outages to customers. Power restoration in rear lot areas was very difficult due to accessibility. The December 2013 ice storm caused 29,831,573 CMI within the rear lot grids of former PowerStream, which accounted for 16.68% of the total system CMI due to the ice storm.
	Customer Attachment / Load (KVA)	Total connected load of 150 kVA.
	Safety	Safety risk associated with close proximity to power line in the backyard: Although the Electrical Safety Code and easement terms specify minimum clearance between customer facilities and power line, there are cases that customers do not follow the safety rules and install facilities too close to power line. Examples are shed, storage, playground, trampoline, swimming pool, patio deck, landscape, house extension, etc. This encroachment creates a safety hazard for both customers and crews. Safety risk associated with reduced clearance due to encroachment of power line: Over time, growth of vegetation and obstruction due to customer facilities may jeopardize the minimum clearance requirements and restrict crew mobility. Occasionally dogs may also be a safety hazard to the crews.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Not Applicable
	Economic Development	Not Applicable
	Environmental Benefits	In the case that there are transformers on the pole in rear lot area, a pole falling down may also cause the transformers to fall down, resulting in transformer tank rupturing, and oil being spilled onto the ground.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Under this option, no proactive investments would be executed to replace either existing rear lot infrastructure and these assets would only be intervened upon in reactive scenarios, when the assets have reached their end-of-life. Under this approach, customers would be exposed to prolonged reliability impacts, due to the accessibility issues associated with rear lot infrastructure, as well as the complex restoration procedures that would be required for a four-feeder outage event. As standardized equipment (e.g. bucket trucks) cannot be used to service rear lot plant, wood poles, transformers and overhead switches would have to be replaced manually, with field crews accessing private customer properties in order to execute the work. Customers and field crews would continue to be exposed to elevated safety risks, due to the minimal proximity between customer plant and the rear lot overhead lines, as well as the non-standard and non-ergonomic work procedures that field crews would have to continue to execute to sufficiently maintain, inspect and service the plant. Finally, as assets are replaced reactively, new assets would need to be installed according to the rear lot configuration. By its design, rear lot can only be converted if the entire line is replaced at once as part of an overall project. Therefore, the legacy design will continue to be maintained under this scenario. This will include the continued operation of the legacy voltage system, along with continuing the associated inefficiencies, such as line losses. .
	Alternative #1	Remediate the existing rear lot plant with other design options . The other design options considered are described below. Rear Lot Overhead Option: Under this Option, the existing rear lot plant is replaced with new overhead plant in the rear lot. When the replacement project is implemented, the following design parameters should be considered: •Install critical components such as fuse, switch, and transformer as close to the accessible street as possible This Option is not acceptable because it does not resolve the major operations and customer reliability concerns related to the distribution assets located at rear lot at this location. Partial Underground Option This scenario involves the replacement of existing rear lot infrastructure with a new hybrid solution, where primary voltage infrastructure, including transformers, switches and lines would be installed as per an underground configuration within the front right-of-way, following standard Alectra Utilities installation practices. Under this approach, secondary infrastructure, including wood poles and secondary conductor, would remain in the rear lot in overhead configuration. This approach would not fully address the reliability and safety concerns associated with rear lot distribution, as secondary connections will remain in the rear lot. However, future outage impacts will be reduced and contained to only those customers connected to the associated transformer. Lower voltage classes will also be converted up to the standardized 27.6kV voltage standard as per this investment option. Under this option, reliability and safety issues would continue to persist due some infrastructure remaining overhead. The cost of partial underground renewal is higher than the renewal of the rear lot overhead and further more does not result in mitigating the risks associated with the existing system. This partial underground approach has been adopted where feasible.
	Alternative #2	Replace with Full Underground Infrastructure This investment scenario considers the full replacement of existing rear lot infrastructure – including primary and secondary plant – with new front lot underground infrastructure. All existing primary and secondary distribution assets within the rear lot corridor will be removed and replaced with new underground primary and secondary infrastructure that is installed within the front lot corridor as per current standard design practices. Underground secondary cables will run from the front lot underground transformers to the individual meter bases in order to supply the customers. Under this approach, existing under-classed legacy wood poles will be replaced with higher-class poles that are better suited to withstand major weather events. Through this investment scenario, these high impact assets will be better secured and weather-hardened against future outage events. This approach would completely mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure. This approach also introduces efficiencies for the utility, as tree trimming activities can be eliminated.
	Justification for Recommended Alternative	The conversion of rear lot overhead supply system to front lot underground supply to address the operations and customer service concerns associated with rear lot supply. This approach would completely mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure. This approach also introduces efficiencies for the utility, as tree trimming activities can be eliminated.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Fluctuation in cost and staff resource (internal and external) to complete high annual volume of work. Risk Management: Alectra has retained external contractor working at different work sites throughout the year under a multi-year EPC (Engineering Procurement Construction) Master Service Agreement. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track.
	Comparative Information on Equivalent Historical Projects (if any) Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	Former PowerStream completed similar rear lot remediation project in 2013, 2014, 2015 and 2016; thereby gaining experience on executing rear lot remediation projects. 0

7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	The issues and concerns with rear lot supply are summarized below. Concerns to Customers 1. Long outage restoration time due to difficult accessibility for Alectra crews: • In comparison to front lot customers, rear lot customers have to wait longer for the crews to restore power during an outage. The crews have to gain access to the back yard to identify, locate, isolate, and repair/replace equipment. In heavily vegetated areas, the crews must also clear or trim the vegetation before they can access the equipment. • If the replacement of major equipment (e.g. pole, transformer) is necessary, the outage time will extend because the crews need specialized equipment (e.g. large crane) to reach over customer houses to the rear lot. 2. More frequent outages due to vegetation, animal contact, and lack of access for Alectra crews: • When a rear lot supply was first constructed, the area was likely clear of obstruction. Over time, however, trees/ bushes have grown near the electrical equipment, and may make contact with the power line. The growth of vegetation also increases the risk of animals (e.g. squirrels) coming into contact with electrical equipment. 3. Safety risk associated with close proximity to power line in the backyard: • Although the Electrical Safety Code and easement terms specify minimum clearance between customer facilities and power line, there are many cases that customers do not follow the safety rules and install facilities too close to power line. Examples are shed, storage, playground, trampoline, swimming pool, patio deck, landscape, house extension, etc. This encroachment creates a safety hazard for both customers and crews. Concerns to Alectra: 1. Decreased system reliability: • Higher outage frequency and longer outage duration will negatively impact system reliability. 2. Difficult accessibility for crew and equipment: • Due to obstructions such as trees and customer construction, crews encounter difficulty to gain access, bring in equipment, and create a safe working space in the rear lot. As a result, it is difficult to inspect, maintain, repair and replace equipment. Under emergencies, it is difficult to identify/isolate faulted components and perform switching. Accessibility for service vehicles is often impractical. In some cases, large cranes may be needed to reach over the rear lot from the street. In addition, system security is also at risk because the pole line is out of sight. This increases the risk of equipment being neglected and left to deteriorate. 3. Safety risk associated with reduced clearance due to encroachment of power line:
	Condition of Asset vs. Typical Life Cycle and Performance Record	It is extremely difficult to gain access to the backyard to maintain, repair, and restore power. As a result there are prolonged outages to customers. This is especially more difficult in the event of ice storm. Many of the Rear Lot Supply distribution systems were built in 1950s, 1960s, and 1970s (40-68 years old in 2016). The rear lot equipment is older than typical useful life and the asset condition is deteriorating. According to the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board", typical useful life of overhead transformers and wood poles are 40 and 45 years respectively. Many of the installations are not in compliance to today's standards.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	69
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Number of failures and duration based on historical outage data for specific Kempenfelt Drive/Blake Street rear lot area: May 2016; 3 hour outage (Incident # 743285) March 2017; 1.4 hour outage (Incident # 752797) Based on three year average (2015-2017) assume 0.66 outages at 2.2 hours for Kempenfelt Drive/Blake Street rear lot area. Note that 417-F3 supply feeder had a three year average (2015-2017) FAIFI of 1.32 and FAIDI of 6.3.
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Rear lot supply failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage). Rear lot system also poses safety hazards to the customers because live electrical components are in proximity of customer's backyard and proper clearance may be violated due to customer's installations (examples: trees, garden, swimming pool, storage shed, deck, house extension).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Not Applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	• O&M Cost for 1 failure = $50,000 per failure
	Reliability and Safety Factors	This project is part of the long-term rear lot supply remediation program. The project will help avoid potential rear lot failures. In addition, this project also eliminates safety hazards associated with ageing and deteriorating rear lot system.
	Analysis for "Like for Like" Renewal Project	Under this program the existing rear lot overhead supply system will be remediated to bring the system in compliance to current supply configuration.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $307,787	$0	$307,787	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150047
Project Name	Rear Lot Renewal Project - Royal Orchard - North
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

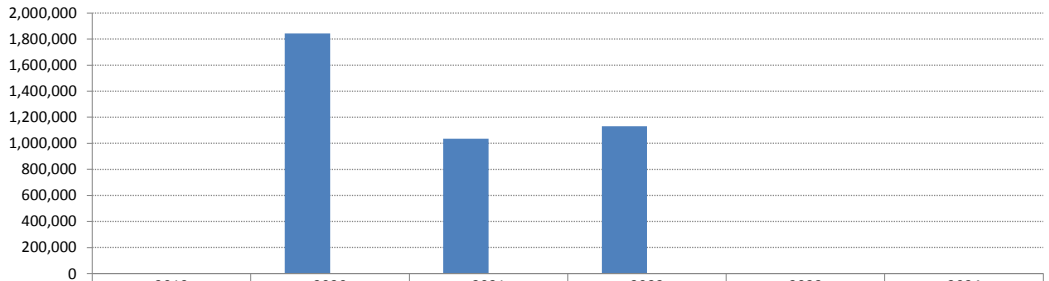
Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Markham: Royal Orchard - North
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Rear Lot Conversion
	Alectra Subcategory	Rear Lot Conversion
4. Evaluation Criteria (OEB)	Project Summary	Convert the Royal Orchard – North (Markham) area from rear lot overhead supply to front lot underground supply (primary and secondary). This will reduce number of outages and power restoration time. The project is proposed to be completed over three years in 2019, 2020, and 2021. The existing rear lot location Royal Orchard – North (Markham) will be 52, 53, and 54 years old in 2019, 2020, and 2021 respectively. The asset is deteriorated and requires remediation. In addition, the poles in this rear lot location were inspected and majority of the poles are in poor or very poor condition. These assets pose a safety risk for the public and for Alectra Utilities crews, are more prone to failure than other overhead distribution assets, and otherwise do not align with current standards, policies and practices.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	The priority of this project is high. This project is to decrease the outage impacts due to deteriorating distribution system assets and mitigate the outage impacts due to increasing effect of adverse weather events. Reasons for Priority: The electrical system is deteriorating and poses many operations, safety, and customer service concerns that must be addressed. If not addressed, the system will deteriorate further and failures and safety hazards will increase. In December 2013, an ice storm came in across Ontario including Alectra (East) service territory. During the storm, many trees, including trees in rear lot areas, fell onto power lines and created prolonged power outages to customers. Power restoration in rear lot areas was very difficult due to accessibility. The December 2013 ice storm caused 29,831,573 CMI within the rear lot grids, which accounted for 16.68% of the total system CMI due to the ice storm. The existing rear lot location Royal Orchard – North (Markham) will be 52, 53, and 54 years old in 2019, 2020, and 2021 respectively. The asset is end of life and requires remediation. In addition, the poles in this rear lot location were inspected in 2013 where a majority of the poles are in poor or very poor condition. The average SAIDI (2015-2017) for this location was 243.60 min and SAIFI was 3.21 while the system SAIDI 85.8 min and SAIFI is 1.44 which represents a 2.8 fold difference in SAIDI and 2.2 fold difference in SAIFI. These assets pose a safety risk for the public and for Alectra Utilities crews, are more prone to failure than other overhead distribution assets, and otherwise do not align with current standards, policies and practices.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Safety risk associated with close proximity to power line in the backyard: Although the Electrical Safety Code and easement terms specify minimum clearance between customer facilities and power line, there are cases that customers do not follow the safety rules and install facilities too close to power line. Examples are shed, storage, playground, trampoline, swimming pool, patio deck, landscape, house extension, etc. This encroachment creates a safety hazard for both customers and crews. Safety risk associated with reduced clearance due to encroachment of power line: Over time, growth of vegetation and obstruction due to customer facilities may jeopardize the minimum clearance requirements and restrict crew mobility. Occasionally dogs may also be a safety hazard to the crews.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Not Applicable
	Economic Development	Not Applicable

	Environmental Benefits	Because overhead transformers are installed on the pole in rear lot area, a pole falling down may also cause the transformers to fall down, resulting in transformer tank rupturing, and oil being spilled onto the ground.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Under this option, no proactive investments would be executed to replace either existing rear lot infrastructure and these assets would only be intervened upon in reactive scenarios, when the assets have reached their end-of-life. Under this approach, customers would be exposed to prolonged reliability impacts, due to the accessibility issues associated with rear lot infrastructure, as well as the complex restoration procedures that would be required for a four-feeder outage event. As standardized equipment (e.g. bucket trucks) cannot be used to service rear lot plant, wood poles, transformers and overhead switches would have to be replaced manually, with field crews accessing private customer properties in order to execute the work. Customers and field crews would continue to be exposed to elevated safety risks, due to the minimal proximity between customer plant and the rear lot overhead lines, as well as the non-standard and non-ergonomic work procedures that field crews would have to continue to execute to sufficiently maintain, inspect and service the plant. Finally, as assets are replaced reactively, new assets would need to be installed according to the rear lot configuration. By its design, rear lot can only be converted if the entire line is replaced at once as part of an overall project. Therefore, the legacy design will continue to be maintained under this scenario. This will include the continued operation of the legacy voltage system, along with continuing the associated inefficiencies, such as line losses.
	Alternative #1	Remediate the existing rear lot plant with other design options . The other design options considered are described below. Rear Lot Overhead Option: Under this Option, the existing rear lot plant is replaced with new overhead plant in the rear lot. When the replacement project is implemented, the following design parameters should be considered: • Convert from 8.32 kV to 27.6 kV • Install critical components such as fuse, switch, and transformer as close to the accessible street as possible This Option is not acceptable because it does not resolve the major operations and customer reliability concerns related to the distribution assets located at rear lot at this location. In addition, this portion is part of the Royal Orchard Rear Lot area which is divided into smaller portions named Royal Orchard – East, Royal Orchard – North, Royal Orchard – South, and Royal Orchard – Baythorn. The Royal Orchard – East portion has already been remediated with Front Lot Underground in 2015 and 2016. The Royal Orchard – Baythorn portion was remediated with Front Lot Underground in 2017. Replace with Partial Underground Infrastructure This scenario involves the replacement of existing rear lot infrastructure with a new hybrid solution, where primary voltage infrastructure, including transformers, switches and lines would be installed as per an underground configuration within the front right-of-way, following standard Alectra Utilities installation practices. Under this approach, secondary infrastructure, including wood poles and secondary conductor, would remain in the rear lot in overhead configuration. This approach would not fully address the reliability and safety concerns associated with rear lot distribution, as secondary connections will remain in the rear lot. However, future outage impacts will be reduced and contained to only those customers connected to the associated transformer. Lower voltage classes will also be converted up to the standardized 27.6kV voltage standard as per this investment option. Under this option, reliability and safety issues would continue to persist due some infrastructure remaining overhead. The cost of partial underground renewal is higher than the renewal of the rear lot overhead and further more does not result in mitigating the risks associated with the existing system. This partial underground approach has been adopted where feasible.
	Alternative #2	Replace with Full Underground Infrastructure This investment scenario considers the full replacement of existing rear lot infrastructure – including primary and secondary plant – with new front lot underground infrastructure. All existing primary and secondary distribution assets within the rear lot corridor will be removed and replaced with new underground primary and secondary infrastructure that is installed within the front lot corridor as per current standard design practices. Underground secondary cables will run from the front lot underground transformers to the individual meter bases in order to supply the customers. Under this approach, existing under-classed legacy wood poles that support four feeders will be replaced with higher-class poles that are better suited to withstand major weather events. Through this investment scenario, these high impact assets will be better secured and weather-hardened against future outage events. This approach would complete mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure. This approach also introduces efficiencies for the utility, as tree trimming activities can be eliminated and line losses associated with the legacy voltage classes can be eliminated.

	Justification for Recommended Alternative	It is recommended to convert the Royal Orchard – North (Markham) area from rear lot overhead supply to front lot underground supply (primary and secondary). Under this Option, the existing rear lot plant is removed and new underground plant is installed in front lot. This approach would complete mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure. This approach also introduces efficiencies for the utility, as tree trimming activities can be eliminated and line losses associated with the legacy voltage classes can be eliminated. For these reasons, Alectra Utilities selected this approach. In addition, this portion is part of the Royal Orchard Rear Lot area which is divided into smaller portions named Royal Orchard – East, Royal Orchard – North, Royal Orchard – South, and Royal Orchard – Baythorn. The Royal Orchard – East portion has already been remediated with Front Lot Underground in 2015 and 2016. The Royal Orchard – Baythorn portion was remediated with Front Lot Underground in 2017.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Fluctuation in cost and staff resource (internal and external) to complete high annual volume of work. Risk Management: Alectra has retained external contractor working at different work sites throughout the year under a multi-year EPC (Engineering Procurement Construction) Master Service Agreement. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track.
	Comparative Information on Equivalent Historical Projects (if any)	Alectra has completed and is completing similar rear lot remediation project since 2013. Alectra has experience on executing several rear lot remediation project.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	The scope involves converting the Royal Orchard – North (Markham) area from rear lot overhead supply to front lot underground supply (primary and secondary). There are a total of 164 customers affected by the existing rear lot supply. Rear lot infrastructure is functionally obsolete for the following key reasons: •The rear lot configuration is generally unsafe to the public due to the large trees growing near energized power lines. In tandem with such an unsafe configuration, there are also line clearing hazards and related additional costs to do this work. •Alectra Utilities is unable to use labour saving tools and devices such as bucket trucks to efficiently maintain and repair the distribution system due to assets located in customer backyards. •Rear lot wood poles are generally congested, due to multiple service attachments and communication drops, which generally make it impossible to sufficiently climb poles. Crews must, therefore, use ladders to access these poles. •Alectra Utilities is limited in utilizing ladders to access the overhead system due to Ministry of Labour restrictions for congested areas. •Due to the presence of legacy porcelain top tie insulators, rear lot lines must be fully isolated before any maintenance or repair work on the overhead system can commence. •Porcelain insulators are far more susceptible to contamination and flashover when compared to present-day standard polymer insulators. •Rear lot infrastructure typically contains undersized #4 aluminum conductor steel-reinforced cable and aluminum conductor, along with #4 and #6 copper conductor, which are undersized and generally have a greater probability of annealing due to their reduced carrying capacity. These conductors must be fully isolated before any work can commence.
	Condition of Asset vs. Typical Life Cycle and Performance Record	It is extremely difficult to gain access to the backyard to maintain, repair, and restore power. As a result there are prolonged outages to customers. This is especially more difficult in the event of ice storm. Many of the Rear Lot Supply distribution systems were built in 1950s, 1960s, and 1970s (40-68 years old in 2016). The rear lot equipment is older than typical useful life and the asset condition is deteriorating. According to the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board", typical useful life of overhead transformers and wood poles are 40 and 45 years respectively. Many of the installations are not in compliance to today's standards. The existing rear lot location Royal Orchard – North (Markham) will be 52, 53, and 54 years old in 2019, 2020, and 2021 respectively. The asset is end of life and requires remediation. In addition, the poles in this rear lot location were inspected in 2013 where a majority of the poles are in poor or very poor condition.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	528
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Assuming frequency of Failure: 2 failures per year Assuming additional customers affected by outages in rear lot area: 100 • Estimated number of customers affected by 1 failure: 164 customers inside rear lot area + 100 customers outside rear lot area. Total = 164 + 100 = 264 customers. Assuming 264 residential and 0 commercial • Estimated number of customers affected by 2 failures: 264 x 2 = 528 customers • Frequency of interruption: 2 failures per year • Duration of interruption: for 164 customers inside rear lot area duration is 5 hours; for 100 customers outside rear lot area duration is 1 hour. Weighted average is 3.5 hours per customer per interruption. • Customers affected per failure: 264 residential + 0 commercial = 264 customers • CMI per 1 failure: 264 x 3.5 hour x 60 min = 55,440 CMI • CMI per 2 failures: 55,440 x 2 = 110,880 CMI

Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Rear lot supply failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage). Rear lot system also poses safety hazards to the customers because live electrical components are in proximity of customer's backyard and proper clearance may be violated due to customer's installations (examples: trees, garden, swimming pool, storage shed, deck, house extension).
Value of Customer Impact	High
Factors Affecting Project Timing, if any	Not Applicable
Consequences for O&M System Costs Including Implications of Not Implementing	In case of not implementing the project the OM&A cost will continue to occur due to tree trimming activities as well as increase in responding to outages since the assets are deteriorated and prone to failure.
Reliability and Safety Factors	This project is part of the long-term rear lot supply remediation program. The project will help avoid a total of 2 potential rear lot failures and 110,880 potential CMI. In addition, this project also eliminates safety hazards associated with ageing and deteriorating rear lot system. This approach would complete mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure.
Analysis for "Like for Like" Renewal Project	The selected option is not a like for like replacement. This investment scenario considers the full replacement of existing rear lot infrastructure – including primary and secondary plant – with new front lot underground infrastructure.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $4,009,063	$0	$1,843,336	$1,035,043	$1,130,684	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

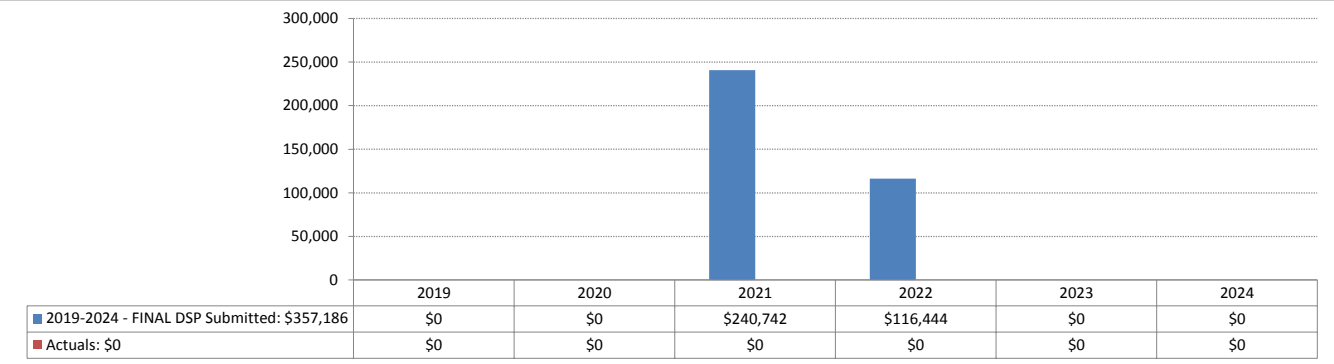
OEB Multi-Project Report

Project Code	150070
Project Name	Markham TS#1 Bus Differential & Overcurrent Protections Upgrades
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Markham TS#1 (J.V. Fry TS) in Markham
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	System Control, Comm'ns & Performance
	Alectra Subcategory	Station Reliability Projects
4. Evaluation Criteria (OEB)	Project Summary	Replace GEC electromechanical and solid state "B" and "Y" Bus Differential and Overcurrent Protection relays as well as T1B, T2Y and "BY" Breaker Control Modules at Markham TS#1. More detailed scope of work follows. A. Bus Differential & Overcurrent Protections Upgrade includes: 1. Removal of existing B&Y Bus Differential & Overcurrent electromechanical and solid state Relay Modules 2. Installation of 1 unit ABB REB-670 for B-Bus “A” Protections 3. Installation of 1 unit ABB REB-670 for Y-Bus “A” Protections 4. Installation of 1 unit SEL487B for B-Bus “B” Protections 5. Installation of 1 unit SEL487B for Y-Bus “B” Protections 6. Installation of fiber communications &control wiring B. T1B, T2Y, & BY Breaker Control Module Replacement includes: 1. Removal of existing solid state relays for these modules 2. Installation of 3 units SEL451, one for each module 3. Installation of fiber communications & control wiring
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	The existing Bus Protections are not reliable and are obsolete. The proposed Bus Protections Upgrade will improve station bus protection, improve reliability and add fault recording capability.
	Customer Attachment / Load (KVA)	Not applicable.
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Use the existing Bus Differential and Overcurrent Protections that are not reliable and are obsolete. Repairs are difficult and service is not readily available. We remain exposed should there be problematic operations. Remove the protection from service when relay fails. This is unacceptable as this is a violation of compliance.
	Alternative #1	The recommended alternative is to replace existing GEC electromechanical and solid state Bus Protections with modern equipment having fault recording capabilities.
	Alternative #2	Not applicable.
	Justification for Recommended Alternative	The new IEDs will provide improved fault and event record information for effective post event analysis, especially for transformer faults. The IED will also supply more complete telemetry to System Controllers via the SCADA system. The existing Bus Differential and Overcurrent Protections are not reliable and are obsolete. The proposed Bus Protections Upgrade will improve station bus protection, increase reliability and provide fault recording capability.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not applicable.

Identify any reliability, efficiency, safety or coordination benefits	Not applicable.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $357,186	$0	$0	$240,742	$116,444	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

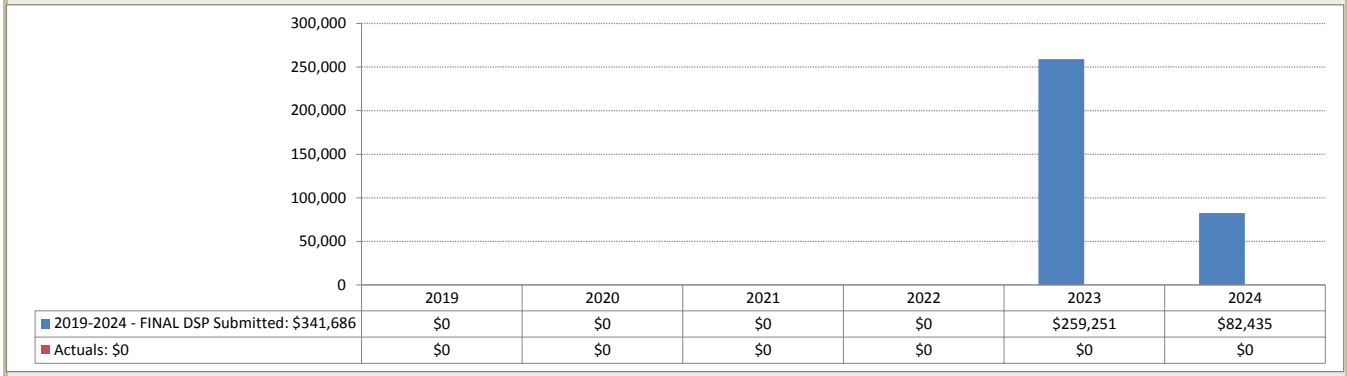
OEB Multi-Project Report

Project Code	150071
Project Name	Markham TS#2 Bus Differential & Overcurrent Protections Upgrades
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Markham TS#2 (A.M. Walker TS) in Markham
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	System Control, Comm'ns & Performance
	Alectra Subcategory	Station Reliability Projects
4. Evaluation Criteria (OEB)	Project Summary	Replace ""J" and "Q" Bus Differential and Overcurrent Protection relays as well as T1J, T2Q and "JQ" Breaker Control Modules at Markham TS#2. More detailed scope of work follows. A. Bus Differential & Overcurrent Protection Upgrade includes: 1. Removal of existing J&Q Bus Differential & Overcurrent Electromechanical and solid state Relay Modules 2. Installation of 1 unit ABB REB-670 for J-Bus “A” Protections 3. Installation of 1 unit ABB REB-670 for Q-Bus “A” Protections 4. Installation of 1 unit SEL487B for J-Bus “B” Protections 5. Installation of 1 unit SEL487B for Q-Bus “B” Protections 6. Installation of fiber communications &control wiring B. T1J, T2Q, & JQ Breaker Control Module Replacement includes: 1. Removal of existing solid state relays for these modules 2. Installation of 3 units SEL451, one for each module 3. Installation of fiber communications & control wiring
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	The existing Bus Differential Protections not reliable and are obsolete. The proposed Bus Protections Upgrade will improve station bus protection, improve reliability and add fault recording capability.
	Customer Attachment / Load (KVA)	Not applicable.
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Use the existing Bus Differential and Overcurrent Protections that are not reliable and are obsolete. Repairs are difficult and service is not readily available. We remain exposed should there be problematic operations. Remove the protection from service when relay fails. This is unacceptable as this is a violation of compliance.
	Alternative #1	The recommended alternative is to replace existing electromechanical and solid state GEC Bus Protections at Markham TS#2 with modern equipment having fault recording capabilities.
	Alternative #2	Not applicable.
	Justification for Recommended Alternative	The new IEDs will provide improved fault and event record information for effective post event analysis, especially for transformer faults. The IED will also supply more complete telemetry to System Controllers via the SCADA system. The existing Bus Differential and Overcurrent Protections are not reliable and are obsolete. The proposed Bus Protections Upgrade will improve station bus protection, increase reliability and provide fault recording capability.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not applicable.

Identify any reliability, efficiency, safety or coordination benefits	Not applicable.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $341,686	$0	$0	$0	$0	$259,251	$82,435
Actuals: $0	$0	$0	$0	$0	$0	$0

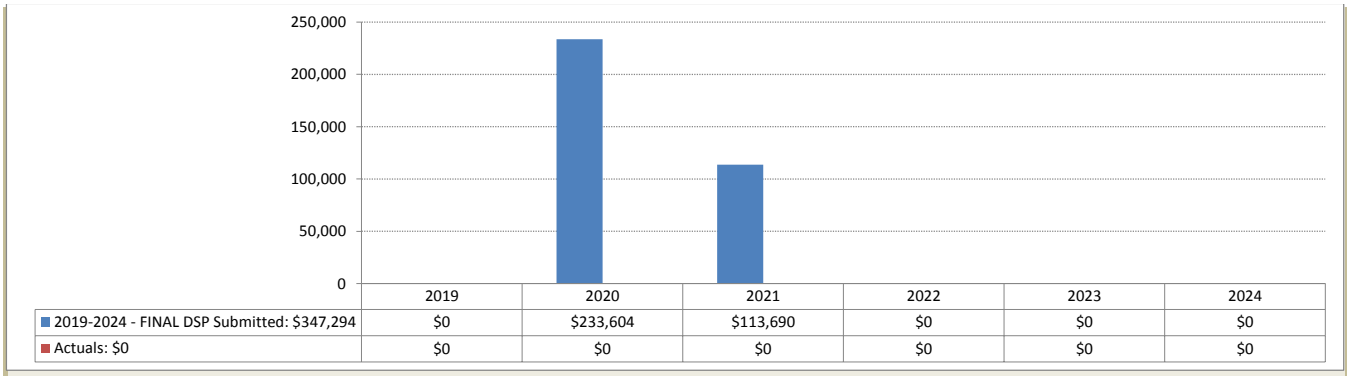
Currency scale is in literal

OEB Multi-Project Report

Project Code	150072
Project Name	Markham TS#3 Bus Differential & Overcurrent Protections Upgrades
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Markham TS#3 (D.H. Cockburn TS) in Markham
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	System Control, Comm'ns & Performance
	Alectra Subcategory	Station Reliability Projects
4. Evaluation Criteria (OEB)	Project Summary	Replace electromechanical and solid GEC "E" and "Z" Bus Differential and Overcurrent Protection relays as well as "EZ", T1E and T1Z breaker control modules at Markham TS#3. More detailed scope of work follows. A. Bus Differential & Overcurrent Protections Upgrade includes: 1. Removal of existing E&Z Bus Differential & Overcurrent electromagnetic and solid state Relay Modules 2. Modifying panel to accommodate new relays 3. Installation of 1 unit ABB REB-670 for E-Bus “A” Protections 4. Installation of 1 unit ABB REB-670 for Z-Bus “A” Protections 5. Installation of 1 unit SEL487B for E-Bus “B” Protections 6. Installation of 1 unit SEL487B for Z-Bus “B” Protections 6. Installation of fiber communications &control wiring B. T1E, T2Z, & EZ Breaker Control Module Replacement includes: 1. Removal of existing Solid-State relays for these modules 2. Installation of 3 units SEL451, one for each module 3. Installation of fiber communications & control wiring
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	The existing Bus Differential and Overcurrent Protections are not reliable and are obsolete. The proposed Bus Protections Upgrade will improve station bus protection and increase reliability.
	Customer Attachment / Load (KVA)	Not applicable.
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Use the existing Bus Differential and Overcurrent electromechanical and solid state Protections that are not reliable and are obsolete. Repairs are difficult and service is not readily available. We remain exposed should there be problematic operations. Remove the protection from service when relay fails. This is unacceptable as this is a violation of compliance.
	Alternative #1	The recommended alternative is to replace existing electromechanical and solid state Bus Protections at Markham TS#3 with modern equipment having fault recording capabilities.
	Alternative #2	Not applicable.
	Justification for Recommended Alternative	The new IEDs will provide improved fault and event record information for effective post event analysis, especially for transformer faults. The IED will also supply more complete telemetry to System Controllers via the SCADA system. The existing Bus Protections are obsolete and are not reliable. The new Bus Protections will improve bus protection, improve reliability and add fault recording capability.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not applicable.
	Identify any reliability, efficiency, safety or coordination benefits	Not applicable.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $347,294	$0	$233,604	$113,690	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

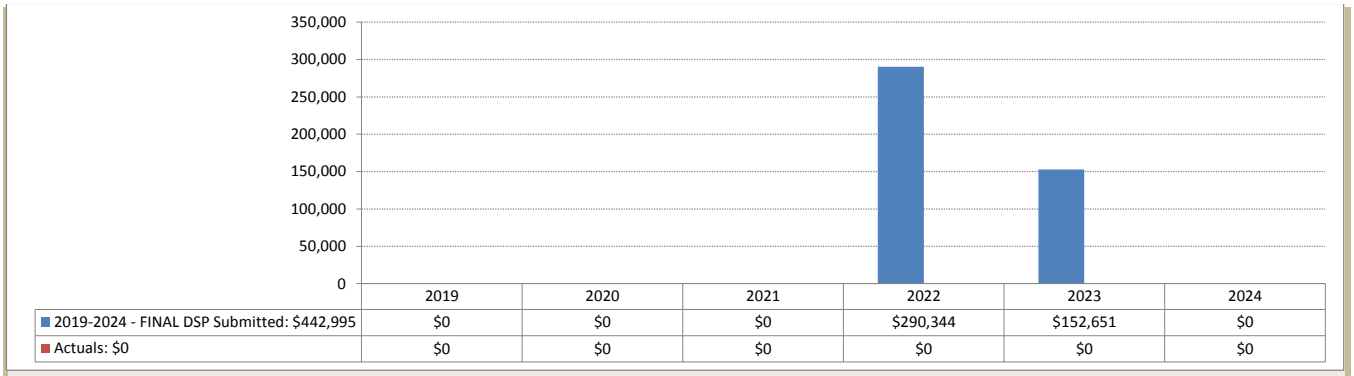
Currency scale is in literal

OEB Multi-Project Report

Project Code	150073
Project Name	Vaughan TS#1 Bus Differential & Overcurrent Protections Upgrades
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Vaughan TS#1 (Greenwood TS) in the City of Vaughan
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	System Control, Comm'ns & Performance
	Alectra Subcategory	Station Reliability Projects
4. Evaluation Criteria (OEB)	Project Summary	Replace Westinghouse electromechanical "A" and "B" Bus Differential and Overcurrent Protection relays as well as T1A, T2A, T1B, T2B and "AB" Breaker Control Modules at Vaughan TS#1. More detailed scope of work follows. A. Bus Differential & Overcurrent Protections Upgrade includes: 1. Removal of existing A&B Bus Differential & Overcurrent Electromechanical Relay Modules 2. Installation of 1 unit ABB REB-670 for A-Bus "A" Protections 3. Installation of 1 unit ABB REB-670 for B-Bus "A" Protections 4. Installation of 1 unit SEL487B for A-Bus "B" Protections 5. Installation of 1 unit SEL487B for B-Bus "B" Protections 6. Installation of fiber communications &control wiring B. T1A, T1B, T2A, T2B & AB Breaker Control Module Replacement includes: 1. Removal of existing solid state relays for these modules 2. Installation of 5 units SEL451, one for each module 3. Installation of fiber communications & control wiring
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	The existing Bus Differential and Overcurrent Protections are not reliable and are obsolete. The proposed Bus Protections Upgrade will improve station bus protection, improve reliability and add fault recording capability.
	Customer Attachment / Load (KVA)	Not applicable.
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Use the existing Bus Differential and Overcurrent Protections that are not reliable and are obsolete. Repairs are difficult and service is not readily available. We remain exposed should there be problematic operations. Remove the protection from service when a relay fails. This is unacceptable as this is a violation of compliance.
	Alternative #1	The recommended alternative is to replace existing electromechanical Bus Protections at Vaughan TS#1 with modern equipment having fault recording capabilities.
	Alternative #2	Not applicable.
	Justification for Recommended Alternative	The new IEDs will provide improved fault and event record information for effective post event analysis, especially for transformer faults. The IED will also supply more complete telemetry to System Controllers via the SCADA system. The existing Bus Protections are obsolete and are not reliable. The new Bus Protections will improve bus protection, improve reliability and add fault recording capability.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not applicable.
	Identify any reliability, efficiency, safety or coordination benefits	Not applicable.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $442,995	$0	$0	$0	$290,344	$152,651	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

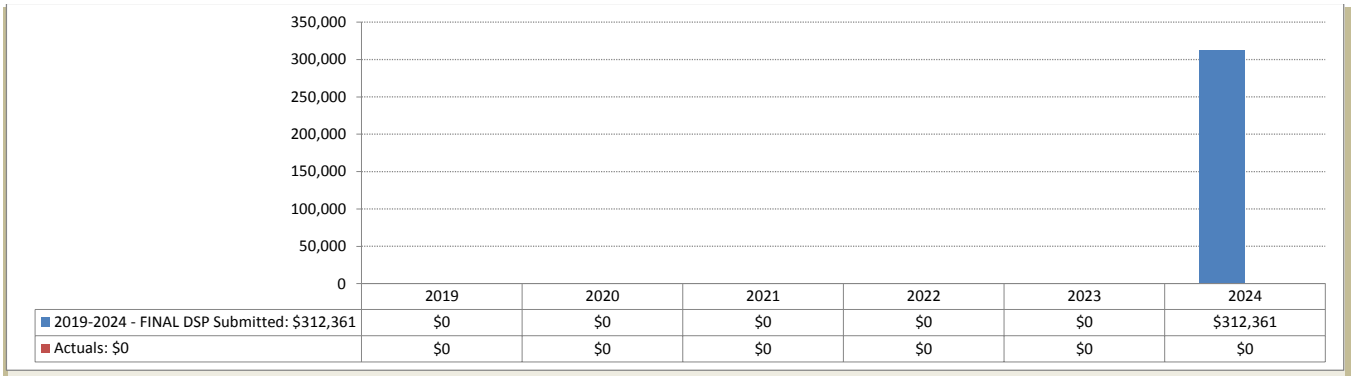
Currency scale is in literal

OEB Multi-Project Report

Project Code	150074
Project Name	Vaughan TS#2 Bus Differential and Overcurrent Protections Upgrade
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Vaughan TS#2 (Torstar TS) in the City of Vaughan
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	System Control, Comm'ns & Performance
	Alectra Subcategory	Station Reliability Projects
4. Evaluation Criteria (OEB)	Project Summary	Replace electromechanical ABB "A" and "B" Bus Differential and Overcurrent Protection relays as well as T1A, T2A, T1B, T2B and "AB" Breaker Control Modules at Vaughan TS#2. More detailed scope follows. A. Bus Differential & Overcurrent Protections Upgrade includes: 1. Removal of existing A&B Bus Differential & Overcurrent Electromechanical Relay Modules 2. Installation of 1 unit ABB REB-670 for A-Bus "A" Protections 3. Installation of 1 unit ABB REB-670 for B-Bus "A" protections 4. Installation of 1 unit SEL487B for A-Bus "B" Protections 5. Installation of 1 unit SEL487B for B-Bus "B" Protections 6. Installation of fiber communications &control wiring B. T1A, T1B, T2A, T2B & AB Breaker Control Module Replacement includes: 1. Removal of existing solid state relays for these modules 2. Installation of 5 units SEL451, one for each module 3. Installation of fiber communications & control wiring
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	The existing Bus Differential and Overcurrent Protections are not reliable and are obsolete. The proposed Bus Protections Upgrade will improve station bus protection, improve reliability and add fault recording capability.
	Customer Attachment / Load (KVA)	Not applicable.
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Use the existing Bus Differential and Overcurrent Protections that are not reliable and are obsolete. Repairs are difficult and service is not readily available. We remain exposed should there be problematic operations. Remove the protection from service when relay fails. This is unacceptable as this is a violation of compliance.
	Alternative #1	The recommended alternative is to replace existing electromechanical Bus Protections at Vaughan TS#2 with modern equipment having fault recording capabilities.
	Alternative #2	Not applicable.
	Justification for Recommended Alternative	The new IEDs will provide improved fault and event record information for effective post event analysis, especially for transformer faults. The IED will also supply more complete telemetry to System Controllers via the SCADA system. The existing Bus Protections are obsolete and are not reliable. The new Bus Protections will improve bus protection, improve reliability and add fault recording capability.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not applicable.
	Identify any reliability, efficiency, safety or coordination benefits	Not applicable.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $312,361	$0	$0	$0	$0	$0	$312,361
Actuals: $0	$0	$0	$0	$0	$0	$0

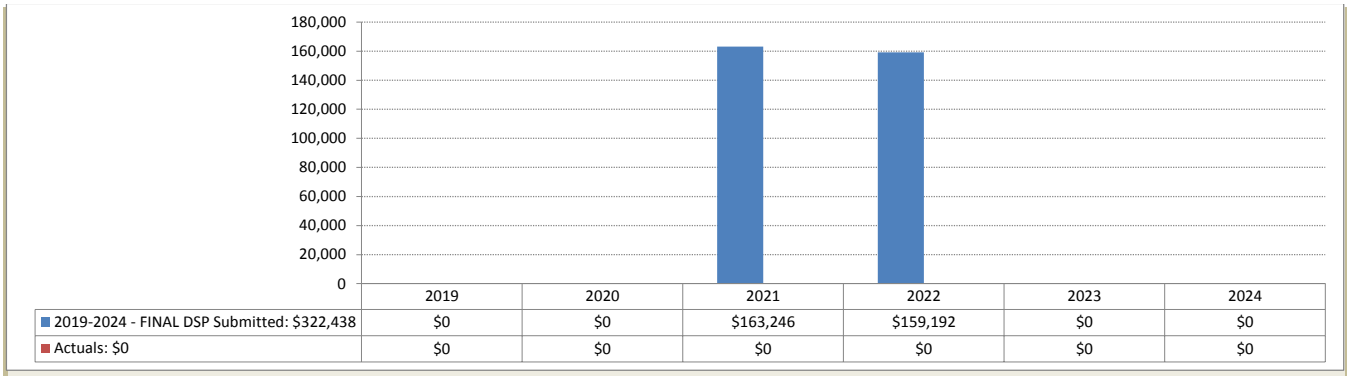
Currency scale is in literal

OEB Multi-Project Report

Project Code	150079
Project Name	Markham TS#1 T1/T2 "B" Overcurrent Protections and HMI Upgrade
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Markham TS#1 (J.V. Fry TS) in Markham
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	System Control, Comm'ns & Performance
	Alectra Subcategory	Station Reliability Projects
4. Evaluation Criteria (OEB)	Project Summary	Replace T1/T2 Transformer Overcurrent Protections relays at Markham TS#1 with new relays having fault recording capabilities. More detailed scope of work follows. A. Adding one (1) RSG2100 LAN Switch & one (1) SEL3355 HMI 1. Installation of fibre communications cables 2. Existing relay fibre connections will be reorganized B. Decommissioning of existing T1 & T2 "B" Overcurrent solid state protection relays C. Transformer "B" Overcurrent Protections Upgrade includes: 1. Installation of 2 units ABB RET-670 for Transformer "B" Protections 2. Installation of fibre communications cable & control wiring
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	Existing state Transformer "B" Overcurrent Protections are not reliable and are obsolete. This work is required because repairs are difficult and service is not readily available for the 1985 vintage solid state relays.
	Customer Attachment / Load (KVA)	Not applicable.
	Safety	Relays are required to isolate equipment in the case of a fault and replacement of vintage relays is required to ensure safe operation.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Continue to use the existing Transformer "B" Overcurrent Protections that are not reliable and are obsolete. Repairs are difficult and service is not readily available for the 1985 vintage solid state relays.
	Alternative #1	The recommended alternative is to take a leading role in the industry through the innovation of upgrading to advanced Transformer "B" Differential Protections at Markham TS#1.
	Alternative #2	Not applicable.
	Justification for Recommended Alternative	The new IED will provide valuable fault and event record information for effective post event analysis, especially for transformer faults. The IED will also supply more complete telemetry to System Controllers via the SCADA system. The existing solid state Transformer "B" Overcurrent Protections are not reliable and are obsolete.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not applicable.
	Identify any reliability, efficiency, safety or coordination benefits	Not applicable.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $322,438	$0	$0	$163,246	$159,192	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

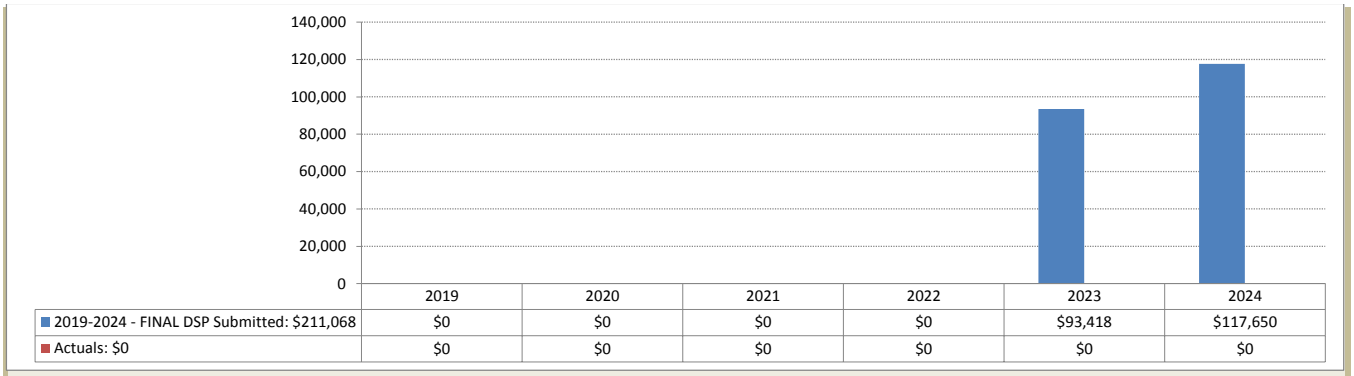
Currency scale is in literal

OEB Multi-Project Report

Project Code	150084
Project Name	Markham TS#2 T1/T2 "B" Differential Protections Upgrade
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Markham TS#2 (A.M. Walker TS) in Markham
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	System Control, Comm'ns & Performance
	Alectra Subcategory	Station Reliability Projects
4. Evaluation Criteria (OEB)	Project Summary	Replace T1/T2 GEC solid state Transformer "B" Differential Protection relays at Markham TS#2 with new relays having fault recording capabilities. More detailed scope of work follows. A. Removal of existing T1 & T2 "B" Differential solid state protection relays B. Transformer "B" Differential Protection Upgrade includes: 1. Installation of 2 units ABB RET-670 for transformer "B" Protections 2. Installation of fibre communications cable & control wiring
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	Existing Transformer "B" Differential Protections that are not reliable and are obsolete. Repairs are difficult and service is not readily available for the 1988 vintage solid state relays.
	Customer Attachment / Load (KVA)	Not applicable.
	Safety	Relays are required to isolate equipment in the case of a fault and replacement of vintage relays is required to ensure safe operation.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Continue to use the existing Transformer "B" Differential Protections that are not reliable and are obsolete. Repairs are difficult and service is not readily available for the 1988 vintage solid state relays.
	Alternative #1	The recommended alternative is to take a leading role in the industry through the innovation of upgrading to advanced Transformer "B" Differential Protections at Markham TS#2.
	Alternative #2	Not applicable.
	Justification for Recommended Alternative	The new IED will provide valuable fault and event record information for effective post event analysis, especially for transformer faults. The IED will also supply more complete telemetry to System Controllers via the SCADA system. The existing T1/T2 Transformer "B" Differential Protections are not reliable and are obsolete.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not applicable.
	Identify any reliability, efficiency, safety or coordination benefits	Not applicable.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $211,068	$0	$0	$0	$0	$93,418	$117,650
Actuals: $0	$0	$0	$0	$0	$0	$0

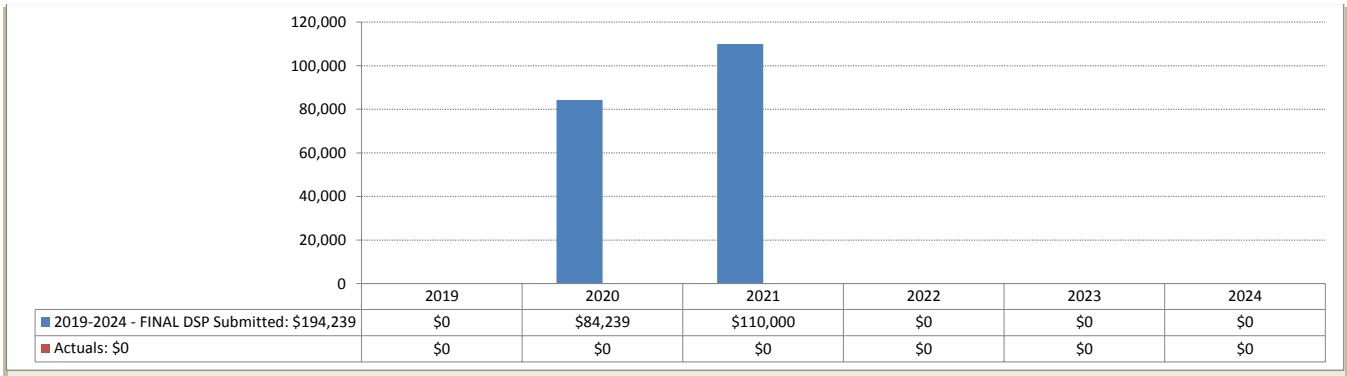
Currency scale is in literal

OEB Multi-Project Report

Project Code	150089
Project Name	Markham TS#3 T1/T2 "B" Differential Protections Upgrade
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Markham TS#3 (D.H. Cockburn TS) in Markham
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	System Control, Comm'ns & Performance
	Alectra Subcategory	Station Reliability Projects
4. Evaluation Criteria (OEB)	Project Summary	Replace T1/T2 GEC solid state Transformer "B" Differential Protection relays at Markham TS#3 with new relays having fault recording capabilities. More detailed scope of work follows. •Removal of existing T1 & T2 "B" differential solid state protection relays •Modify panel to accommodate the new relays •Installation of 2 units ABB RET-670 for transformer "B" protections •Installation of fibre communications cable & control wiring
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	Existing state transformer "B" differential protection is not reliable and is obsolete. This work is required because repairs are difficult and service is not readily available for the 1994 vintage solid state relays.
	Customer Attachment / Load (KVA)	Not applicable.
	Safety	Relays are required to isolate equipment in the case of a fault and replacement of vintage relays is required to ensure safe operation.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Continue to use the existing Transformer "B" Differential Protections that are not reliable and are obsolete. Repairs are difficult and service is not readily available for the 1994 vintage solid state relays.
	Alternative #1	The recommended alternative is to take a leading role in the industry through the innovation of upgrading to advanced Transformer "B" Differential Protections at Markham TS#3.
	Alternative #2	Not applicable.
	Justification for Recommended Alternative	The new IED will provide valuable fault and event record information for effective post event analysis, especially for transformer faults. The IED will also supply more complete telemetry to System Controllers via the SCADA system. Existing T1/T2 Transformer "B" Differential Protections are obsolete and are not reliable.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not applicable.
	Identify any reliability, efficiency, safety or coordination benefits	Not applicable.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $194,239	$0	$84,239	$110,000	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

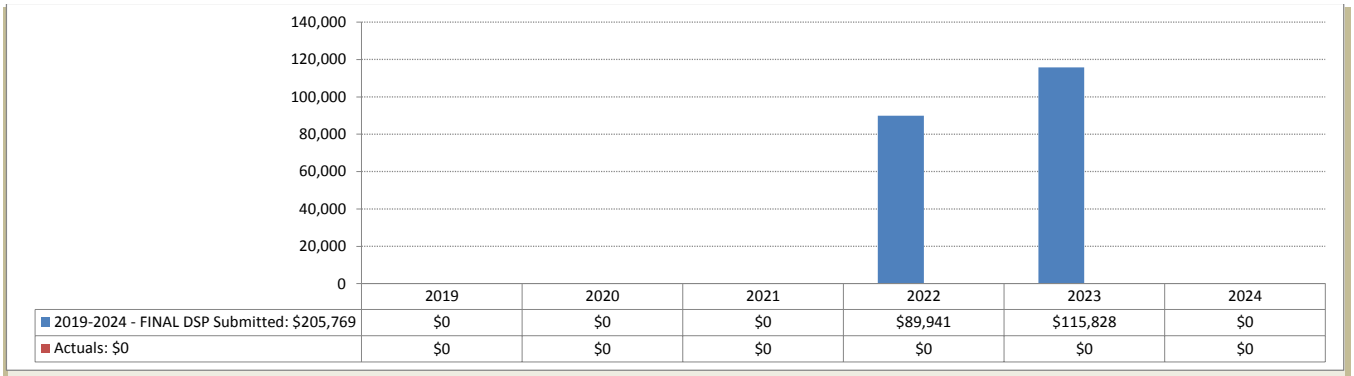
Currency scale is in literal

OEB Multi-Project Report

Project Code	150095
Project Name	Vaughan TS#1 T1/T2 "B" Differential Protections Upgrade
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Vaughan TS#1 (Greenwood TS) in the City of Vaughan
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	System Control, Comm'ns & Performance
	Alectra Subcategory	Station Reliability Projects
4. Evaluation Criteria (OEB)	Project Summary	Upgrade T1/T2 ASEA solid state Transformer "B" Differential Protection relays at Vaughan TS#1 with new relays having fault recording capabilities. More detailed scope of work follows. A. Decommissioning of existing T1 & T2 "B" Differential Solid State Protection Relays B. Transformer "B" Differential Protections Upgrade includes: 1. Installation of 2 units ABB RET-670 for Transformer "B" Protections 2. Installation of fibre communications cable & control wiring
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	Existing Transformer "B" Differential Protections are not reliable and are obsolete. This work is required because repairs are difficult and service is not readily available for the 1989 vintage solid state relays.
	Customer Attachment / Load (KVA)	Not applicable.
	Safety	Relays are required to isolate equipment in the case of a fault and replacement of vintage relays is required to ensure safe operation.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Continue to use the existing Transformer "B" Differential Protections that are not reliable and are obsolete. Repairs are difficult and service is not readily available for the 1989 vintage solid state relays.
	Alternative #1	The recommended alternative is to take a leading role in the industry through the innovation of upgrading to advanced Transformer "B" Differential Protections at Vaughan TS#1.
	Alternative #2	Not applicable.
	Justification for Recommended Alternative	The new IED will provide valuable fault and event record information for effective post event analysis, especially for transformer faults. The IED will also supply more complete telemetry to System Controllers via the SCADA system. The existing T1/T2 solid state Transformer Differential Protections are not reliable and are obsolete.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not applicable.
	Identify any reliability, efficiency, safety or coordination benefits	Not applicable.

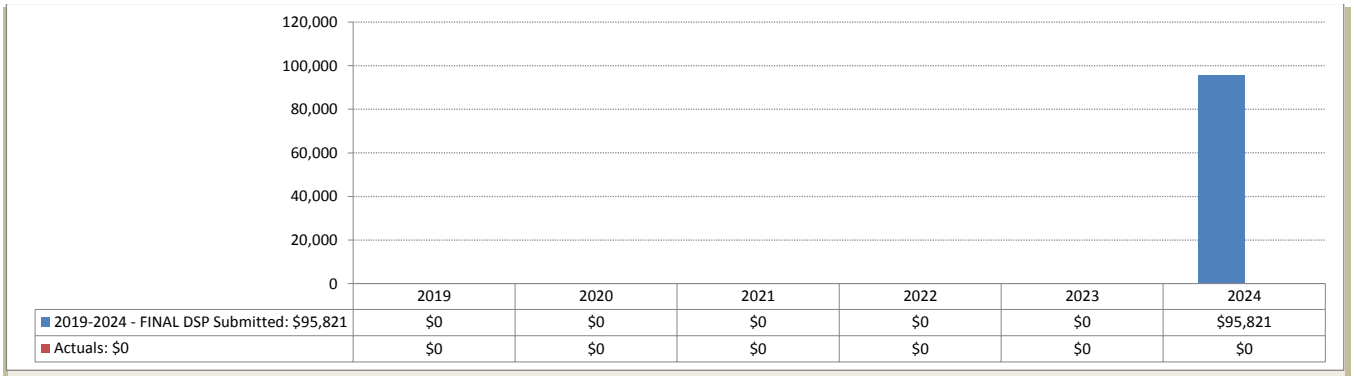


	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $205,769	$0	$0	$0	$89,941	$115,828	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150096	
Project Name	Vaughan TS#2 T1/T2 "B" Differential Protections Upgrade	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Vaughan TS#2 (Torstar TS) in the City of Vaughan
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	System Control, Comm'ns & Performance
	Alectra Subcategory	Station Reliability Projects
4. Evaluation Criteria (OEB)	Project Summary	Replace T1/T2 ABB solid state Transformer "B" Differential Protections relays at Vaughan TS#2 with new relays having fault recording capabilities. More detailed scope of work follows. A. Decommissioning of existing T1 & T2 "B" Differential Solid State Protection Relays B. Transformer "B" Differential Protections Upgrade includes: 1. Installation of 2 units ABB RET-670 for Transformer "B" Protections 2. Installation of fibre communications cable & control wiring
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	Existing Transformer "B" Differential Protections that are not reliable and are obsolete. This work is required because repairs are difficult and service is not readily available for the 1991 vintage solid state relays.
	Customer Attachment / Load (KVA)	Not applicable.
	Safety	Relays are required to isolate equipment in the case of a fault and replacement of vintage relays is required to ensure safe operation.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Continue to use the existing Transformer "B" Differential Protections that are not reliable and are obsolete. Repairs are difficult and service is not readily available for the 1991 vintage relays.
	Alternative #1	The recommended alternative is to take a leading role in the industry through the innovation of upgrading to advanced Transformer "B" Differential Protections at Vaughan TS#2.
	Alternative #2	Not applicable.
	Justification for Recommended Alternative	The new IED will provide valuable fault and event record information for effective post event analysis, especially for transformer faults. The IED will also supply more complete telemetry to System Controllers via the SCADA system. The existing T/T2 Transformer "B" Differential Protections not reliable and are obsolete.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not applicable.
	Identify any reliability, efficiency, safety or coordination benefits	Not applicable.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $95,821	$0	$0	$0	$0	$0	$95,821
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

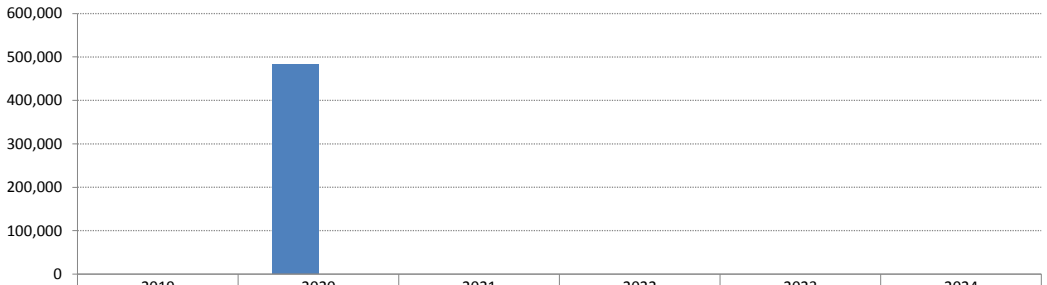
OEB Multi-Project Report

Project Code	150097
Project Name	Line Protections and HMI Upgrade - KDU-10 Replacement - Markham TS#2
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Markham TS#2 (A.M. Walker TS) in Markham
	Units	2
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Substation Renewal
	Alectra Subcategory	Scada & Scada Communications R
4. Evaluation Criteria (OEB)	Project Summary	Replacement of legacy KDU-10 line protection (open corner delta & distance) relay with modern PowerStream standard IED (SEL-421). Replacement of KDU relays at Markham TS#1 was completed in 2015. Also included is HMI Upgrade. More detailed scope of work follows. A. Adding one (1) RSG2100 LAN Switch & one (1) SEL3355 HMI •Addition of one (1) RSG2100 LAN switch & one (1) SEL3355 HMI. •Installation of fiber communications cables. B. L1 & L2 Line Backup Protection Relay Replacement Upgrade includes: •Removal of existing electromechanical L1 & L2 KDU Distance Protection Relays. •Arranging for panel modifications to accommodate the new relays. •Installation of 2 units SEL421 for C35P & C36P line backup protection •Design and implement a three phase high voltage source scheme for the line protection to monitor the presence of HV voltage and provide 3Vo protection. •Installation of fiber communications & control wiring/cabling.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Lines protections have been assigned higher priority than most other protections upgrades. The existing electromechanical 1988 vintage relays do not have fault recording or diagnostic capabilities. They are difficult to repair and service is not readily available. The new IED will provide extensive fault and event record information for effective post event analysis, especially for transformer faults. The IED will also supply more complete telemetry to System Controllers via the Scada system. The new relay will allow for more sophisticated protection schemes implementing 3Io and 3Vo supervision and preventing maloperation due to a blown input fuses. This scheme is required as a backup to transfer trip schemes and requirement for connection to the 230 KV grid.
	Customer Attachment / Load (KVA)	Not applicable.
	Safety	Relays are required to isolate equipment in the case of a fault and replacement of vintage relays is required to ensure safe operation.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do nothing - Remain exposed to problematic operations. Do nothing - remove the protection from service when relay fails. This unacceptable as this is a violation of compliance.
	Alternative #1	The recommended alternative is to replace the KDU-10 line distance protection relays with Alectra's standard SEL-421 relays. Three new bushing potential Devices are required to provide three phase voltage measurement.
	Alternative #2	Not applicable.
	Justification for Recommended Alternative	The new IED will provide extensive fault and event record information for effective post event analysis, especially for transformer faults. The IED will also supply more complete telemetry to System Controllers via the Scada system. The new relay will allow for more sophisticated protection schemes implementing 3Io and 3Vo supervision and preventing maloperation due to a blown input fuses. This scheme is required as a backup to transfer trip schemes and requirement for connection to the 230 KV grid.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Coordinating outages with Hydro One and other Alectra maintenance activities.
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Not applicable.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Not applicable.

Number of Customers in Each Customer Class Potentially Affected by Asset Failure	0
Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Not applicable
Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Not applicable
Value of Customer Impact	Low
Factors Affecting Project Timing, if any	Not applicable.
Consequences for O&M System Costs Including Implications of Not Implementing	Not applicable.
Reliability and Safety Factors	New relays are expected to provide improved reliability.
Analysis for "Like for Like" Renewal Project	Not applicable.

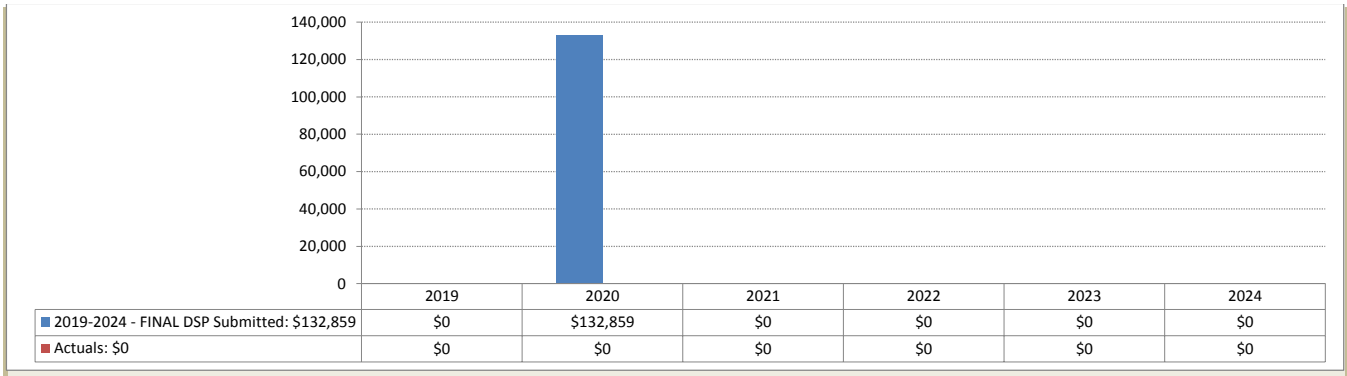


	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $483,666	$0	$483,666	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150125	
Project Name	Aurora MS6 (AMS6) Transformer and Bus Protection Upgrade	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Aurora MS6 (AMS6)
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	System Control, Comm'ns & Performance
	Alectra Subcategory	Station Reliability Projects
4. Evaluation Criteria (OEB)	Project Summary	Replace transformer and bus differential and overcurrent protection relays and communication processor at Aurora MS6 with new relays with fault recording capabilities. 1. Decommission old transformer relays. (DPU and KBCH) 2. Modify switchgear control cabinet to accommodate new relays. 3. Install 2 SEL-787 for differential protection. 3. Install 2 SEL-351-7 for overcurrent protection. 4. Install control wiring.
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	Existing differential and overcurrent (transformer and bus) protection is obsolete and not reliable. On the MS Relay Inventory ACA health index, the AMS6 transformer and bus relays have a poor condition rating.
	Customer Attachment / Load (KVA)	N/A
	Safety	This project will improve reliability of feeders reducing the risk of maloperation that could put the public at risk.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do nothing - Repairs are difficult and service is not readily available. We remain exposed should there be problematic operations.
	Alternative #1	Upgrade the bus and transformer and bus overcurrent and differential protections with new relays with fault recording capabilities.
	Alternative #2	Not applicable.
	Justification for Recommended Alternative	The new IED will provide valuable fault and event record information for effective post event analysis, especially for transformer faults. The IED will also supply more complete telemetry to System Controllers via the Scada system. Existing transformer and bus differential and overcurrent protection is obsolete and not reliable.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Schedule for this project must be coordinated with other initiatives.
	Comparative Information on Equivalent Historical Projects (if any)	The ABB DPU relays have been replaced at PowerStream's VTS1, VTS2, and RHTS1 transformer stations.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not applicable.
	Identify any reliability, efficiency, safety or coordination benefits	Modern relays are reliable, efficient and safe. They have more functions allowing for improved protection.



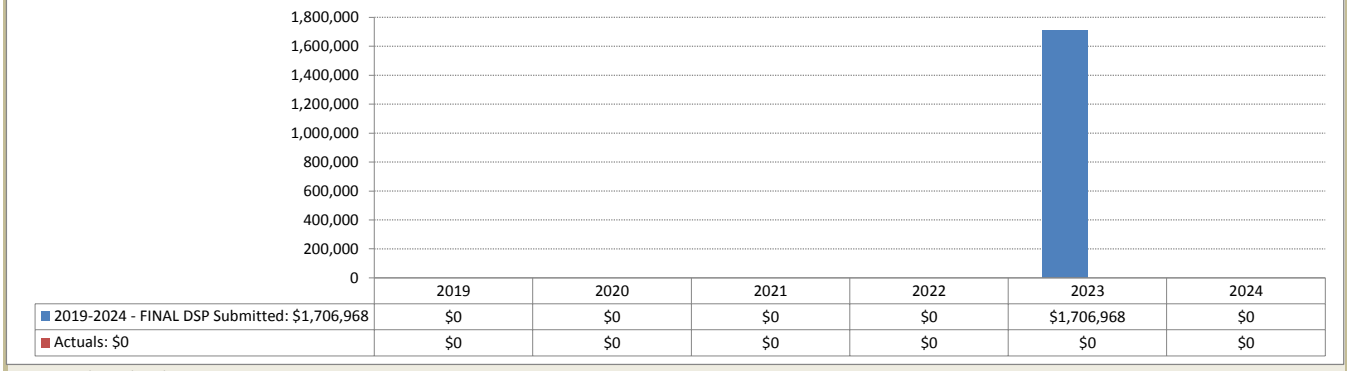
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $132,859	$0	$132,859	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code		150138
Project Name		Cable Replacement Project – (BA23-BA24) - Cook St and Steel St, Barrie
Major Category		System Renewal
Scenario		2019-2024 - FINAL DSP Submitted
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream North
	Location	(Barrie) - Cook St and Steel St
	Units	2399
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation –Replacement
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will replace failing direct-buried Cross-Linked Polyethylene (XLPE) cables and cable accesories with new cable in conduit and will mitigate outage frequencies to customers.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under reactive capital. This would lead to an unacceptable level of outages and customer satisfaction.
	Alternative #1	Cable Injection: Cable Injection was considered, but was rejected because the cable is very old (47 years old) and is at end-of-life stage. In addition, the cable is rated at 5 kV and therefore not suitable when the area is converted from 4.16 kV systems to 13.8 kV systems. If the cable is injected now, the injected cables will require replacement in a few years when the area is converted to 13.8 kV.
	Alternative #2	Perform the replacement in this area.

	Justification for Recommended Alternative	This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures,Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable replacement as the method for remediation (injection is not technically feasible for the segments within this project).
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has multi-year Master Service Agreement with external contractors. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Similar cable replacement projects over the past 3 years (2016, 2017, and 2018) were $389/m. This project is forecasted to be $712/m. The difference is based on the assumption that this project is more complicated (more obstruction, short clearance from other utilities) than the projects already completed in prior years.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	In Alectra East, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). If not rehabilitated, this cable will get older and will fail more often to the level that is not tolerable by customers.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this area is 45 years old (installed in 1971), which exceeds the Kinectrics Report ""Asset Amortization Study for the Ontario Energy Board"" results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	184
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	For 1000 m of cable (applicable to the selected cable remediation candidates): Frequency of Failure is: 0.25 failures per 1000 m of cable per year For 2399 m of cable in the whole area: Frequency of Failure is: 0.25 x 2399 /1000 = 0.6 failure(s) According to Alectra East Control Room data, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). Annually on average there were 128 Cable and Splice failures affecting 39,280 customers and 5,520,782 CMI Impact of 1 failure: 39,280/128 = 307 customers affected and 5,520,782/128 = 43,131 CMI Impact of 0.6 failures: 307 x 0.6 = 184 customers affected and 43,131 x 0.6 = 25879 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Local approvals and weather.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable
	Reliability and Safety Factors	This project is part of the long-term cable rehabilitation program. The project will help avoid a total of 0.6 potential cable failures and 25879 potential CMI.
	Analysis for "Like for Like" Renewal Project	When direct buried cable is replaced, the new cable installed according to new Standards. Which call for the cable to be put in conduit. The conduit provides additional mechanical protection for the cable. In addition it will also facilitate for future cable replacement (faulted cable can be pulled out and new cable be pulled in, no digging is required).



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,706,968	$0	$0	$0	$0	$1,706,968	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

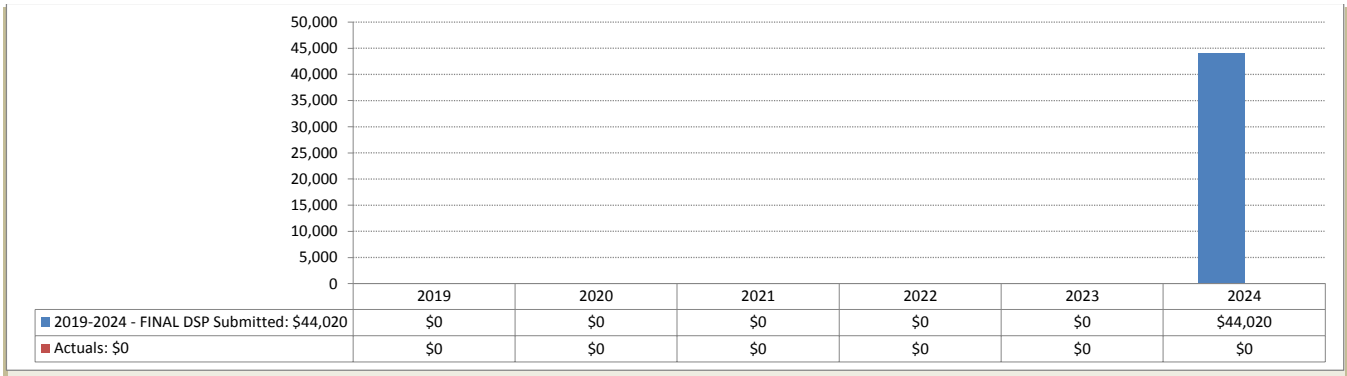
Currency scale is in literal

OEB Multi-Project Report

Project Code	150235
Project Name	Greenwood Expansion Station Service Supply Backup
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Greenwood Transformer Station, 8000 Dufferin Street, Vaughan.
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	System Control, Comm'ns & Performance
	Alectra Subcategory	Station Reliability Projects
4. Evaluation Criteria (OEB)	Project Summary	Add a station service transformer that will be dedicated to Greenwood TS Expansion (VTS1E), thereby providing improved security of supply. The first year is for engineering and installation will take place in the second year.
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	Currently the station service is supplied from two 225 KVA transformers on the old side of Greenwood TS (VTS1), one connected to each 27.6 kV bus. If there were a major failure on a Bus at VTS1, there would be only one station service transformer supplying the two DESNs and thereby no redundancy for station service supply. Also, a catastrophic failure to VTS1 would result in complete loss of station service supply and removal of both VTS1 and VTS1E from service or require running a generator for an extended period. Note that Lazenby TS, which has two DESNs, does have four station service transformers.
	Customer Attachment / Load (KVA)	Not applicable
	Safety	Not applicable
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	Not applicable
	Economic Development	Not applicable
	Environmental Benefits	Not applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	If there were a major failure on a Bus at VTS1, there would be only one station service transformer supplying the two DESNs and thereby no redundancy for station service supply. Also, a catastrophic failure to VTS1 would result in complete loss of station service supply and removal of both VTS1 and VTS1E from service or require running a generator for an extended period.
	Alternative #1	Add a station service transformer that will be dedicated to Greenwood TS Expansion (VTS1E), thereby providing improved security of supply.
	Alternative #2	Not applicable
	Justification for Recommended Alternative	Station Design recommends adding a new station service transformer that will be dedicated to Greenwood TS Expansion (VTS1E). This will prevent the scenario of one station service transformer supplying the two DESNs with no redundancy for station service supply. Furthermore, should a catastrophic failure to VTS1 occur, the station service supply for VTS1E will not be lost.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	It is expected to be difficult to estimate the installation work .
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable
	Description of Incorporation of Advanced Technology, if applicable	Not applicable
	Identify any reliability, efficiency, safety or coordination benefits	Adding a new station service transformer that will be dedicated to Greenwood TS Expansion (VTS1E) will prevent the scenario of one station service transformer supplying the two DESNs with no redundancy for station service supply. Furthermore, should a catastrophic failure to VTS1 occur, the station service supply for VTS1E will not be lost.



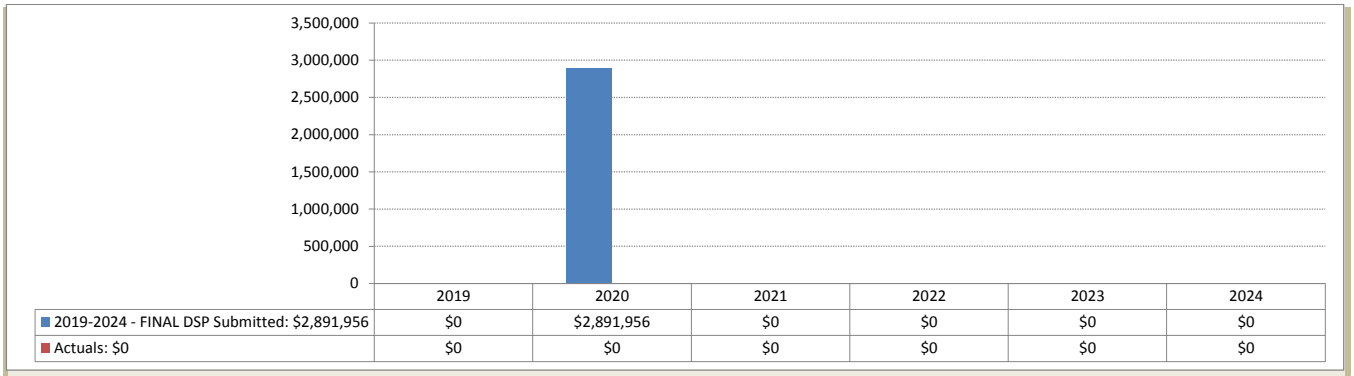
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $44,020	$0	$0	$0	$0	$0	$44,020
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code		150254
Project Name		Cable Replacement Project - (A02) - Steeplechase Ave, Aurora
Major Category		System Renewal
Scenario		2019-2024 - FINAL DSP Submitted
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	(A02) - Steeplechase Ave (Aurora)
	Units	7560
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation –Replacement
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will replace failing direct-buried Cross-Linked Polyethylene (XLPE) cables and cable accesories with new cable in conduit and will mitigate outage frequencies to customers.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under reactive capital. This would lead to an unacceptable level of outages and customer satisfaction.
	Alternative #1	Perform the replacement in this area.
	Alternative #2	Injection of the cables - these cable segemnts are not technically viable for injection.

	Justification for Recommended Alternative	This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures,Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable replacement as the method for remediation (injection is not technically feasible for the segments within this project).
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has multi-year Master Service Agreement with external contractors. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Similar cable replacement projects over the past 3 years (2016, 2017, and 2018) were $389/m. This project is forecasted to be $383/m.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	In Alectra East, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). If not rehabilitated, this cable will get older and will fail more often to the level that is not tolerable by customers.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this area is 45 years old (installed in 1974), which exceeds the Kinectrics Report ''Asset Amortization Study for the Ontario Energy Board'' results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	583
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	For 1000 m of cable (applicable to the selected cable remediation candidates): Frequency of Failure is: 0.25 failures per 1000 m of cable per year For 7560 m of cable in the whole area: Frequency of Failure is: 0.25 x 7560 /1000 = 1.9 failure(s) According to Alectra East Control Room data, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). Annually on average there were 128 Cable and Splice failures affecting 39,280 customers and 5,520,782 CMI Impact of 1 failure: 39,280/128 = 307 customers affected and 5,520,782/128 = 43,131 CMI Impact of 1.9 failures: 307 x 1.9 = 583 customers affected and 43,131 x 1.9 = 81949 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Local approvals and weather.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable
	Reliability and Safety Factors	This project is part of the long-term cable rehabilitation program. The project will help avoid a total of 1.9 potential cable failures and 81949 potential CMI.
	Analysis for "Like for Like" Renewal Project	When direct buried cable is replaced, the new cable installed according to new Standards. Which call for the cable to be put in conduit. The conduit provides additional mechanical protection for the cable. In addition it will also facilitate for future cable replacement (faulted cable can be pulled out and new cable be pulled in, no digging is required).



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $2,891,956	$0	$2,891,956	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

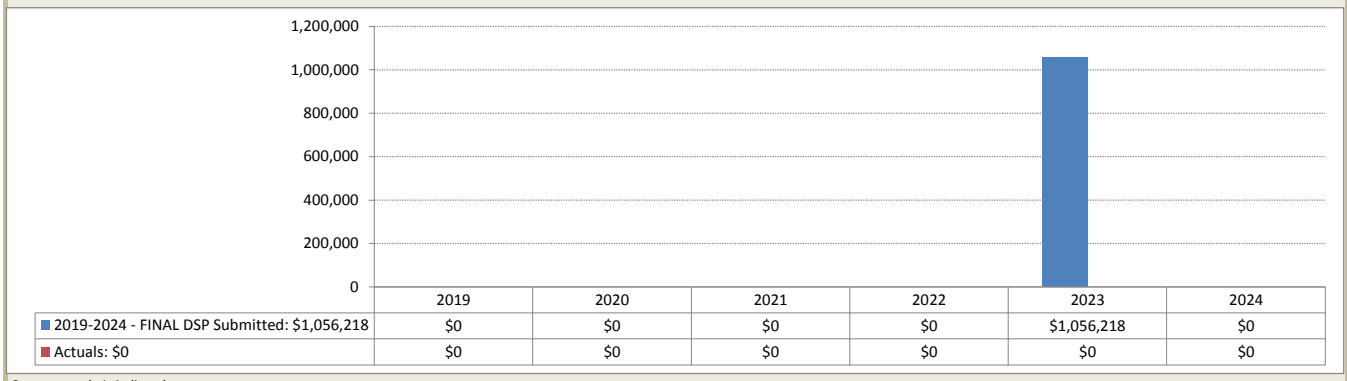
OEB Multi-Project Report

Project Code	150255	
Project Name	Cable Replacement Project - (B23) - Cundles Rd and Janine St, Barrie	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream North
	Location	(Barrie) - Cundles Rd and Janine St
	Units	1389
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation –Replacement
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will replace failing direct-buried Cross-Linked Polyethylene (XLPE) cables and cable accesories with new cable in conduit and will mitigate outage frequencies to customers.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under reactive capital. This would lead to an unacceptable level of outages and customer satisfaction.
	Alternative #1	Cable Injection: Cable Injection was considered, but was rejected because the cable is very old (44 years old) and is at end-of-life stage. In addition, the cable is rated at 5 kV and therefore not suitable when the area is converted from 4.16 kV systems to 13.8 kV systems. If the cable is injected now, the injected cables will require replacement in a few years when the area is converted to 13.8 kV.

	Alternative #2	Perform the replacement in this area.
	Justification for Recommended Alternative	This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures,Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable replacement as the method for remediation (injection is not technically feasible for the segments within this project).
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has multi-year Master Service Agreement with external contractors. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Similar cable replacement projects over the past 3 years (2016, 2017, and 2018) were $389/m. This project is forecasted to be $760/m. The difference is based on the assumption that this project is more complicated (more obstruction, short clearance from other utilities) than the projects already completed in prior years.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	In Alectra East, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). If not rehabilitated, this cable will get older and will fail more often to the level that is not tolerable by customers.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this area is 45 years old (installed in 1974), which exceeds the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board" results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	92
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	For 1000 m of cable (applicable to the selected cable remediation candidates): Frequency of Failure is: 0.25 failures per 1000 m of cable per year For 1389 m of cable in the whole area: Frequency of Failure is: 0.25 x 1389 /1000 = 0.3 failure(s) According to Alectra East Control Room data, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). Annually on average there were 128 Cable and Splice failures affecting 39,280 customers and 5,520,782 CMI Impact of 1 failure: 39,280/128 = 307 customers affected and 5,520,782/128 = 43,131 CMI Impact of 0.3 failures: 307 x 0.3 = 92 customers affected and 43,131 x 0.3 = 12939 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Local approvals and weather.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable
	Reliability and Safety Factors	This project is part of the long-term cable rehabilitation program. The project will help avoid a total of 0.3 potential cable failures and 12939 potential CMI.

Analysis for "Like for Like" Renewal Project

When direct buried cable is replaced, the new cable installed according to new Standards. Which call for the cable to be put in conduit. The conduit provides additional mechanical protection for the cable. In addition it will also facilitate for future cable replacement (faulted cable can be pulled out and new cable be pulled in, no digging is required).



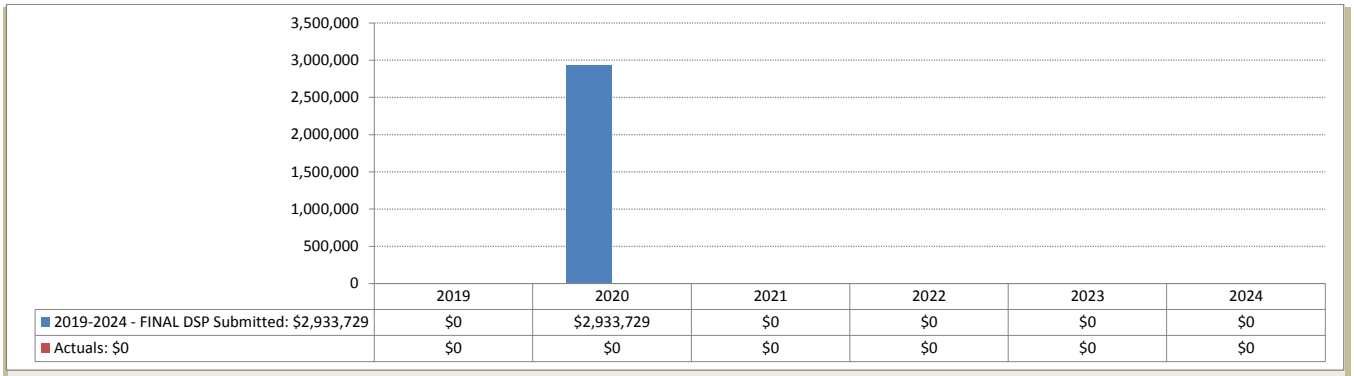
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,056,218	$0	$0	$0	$0	$1,056,218	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150257	
Project Name	Cable Replacement Project - (V15) - Jardin Dr, Vaughan	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	(V15) - Jardin Dr (Vaughan)
	Units	7456
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation –Replacement
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will replace failing direct-buried Cross-Linked Polyethylene (XLPE) cables and cable accesories with new cable in conduit and will mitigate outage frequencies to customers.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under reactive capital. This would lead to an unacceptable level of outages and customer satisfaction.
	Alternative #1	Perform the replacement in this area.
	Alternative #2	Injection of the cables - these cable segemnts are not technically viable for injection.

	Justification for Recommended Alternative	This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures,Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable replacement as the method for remediation (injection is not technically feasible for the segments within this project).
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has multi-year Master Service Agreement with external contractors. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Similar cable replacement projects over the past 3 years (2016, 2017, and 2018) were $389/m. This project is forecasted to be $389/m.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	In Alectra East, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). If not rehabilitated, this cable will get older and will fail more often to the level that is not tolerable by customers.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this area is 37 years old (installed in 1982), which exceeds the Kinectrics Report ''Asset Amortization Study for the Ontario Energy Board'' results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	583
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	For 1000 m of cable (applicable to the selected cable remediation candidates): Frequency of Failure is: 0.25 failures per 1000 m of cable per year For 7546 m of cable in the whole area: Frequency of Failure is: 0.25 x 7546 /1000 = 1.9 failure(s) According to Alectra East Control Room data, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). Annually on average there were 128 Cable and Splice failures affecting 39,280 customers and 5,520,782 CMI Impact of 1 failure: 39,280/128 = 307 customers affected and 5,520,782/128 = 43,131 CMI Impact of 1.9 failures: 307 x 1.9 = 583 customers affected and 43,131 x 1.9 = 81949 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Local approvals and weather.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable
	Reliability and Safety Factors	This project is part of the long-term cable rehabilitation program. The project will help avoid a total of 1.9 potential cable failures and 81949 potential CMI.
	Analysis for "Like for Like" Renewal Project	When direct buried cable is replaced, the new cable installed according to new Standards. Which call for the cable to be put in conduit. The conduit provides additional mechanical protection for the cable. In addition it will also facilitate for future cable replacement (faulted cable can be pulled out and new cable be pulled in, no digging is required).



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $2,933,729	$0	$2,933,729	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

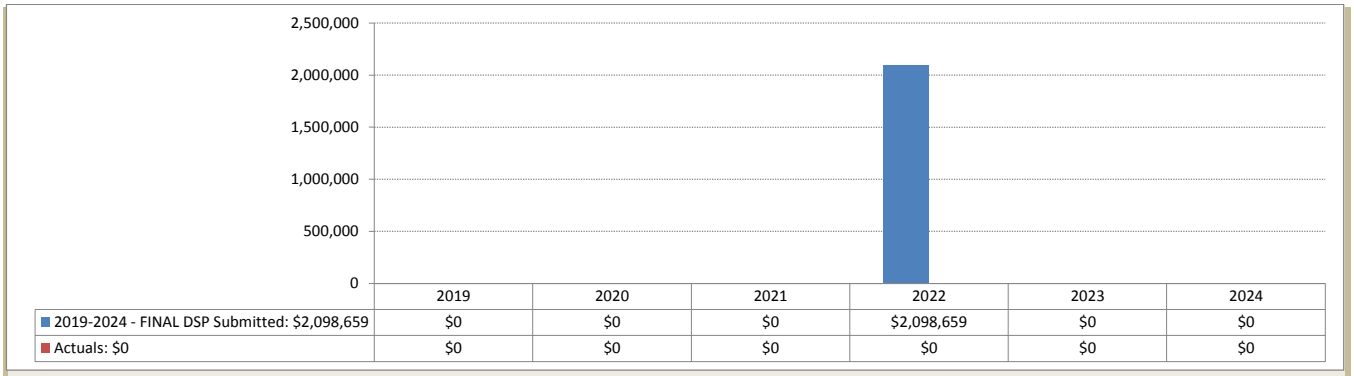
OEB Multi-Project Report

Project Code	150262
Project Name	Cable Replacement Project - (M33) - 16th Avenue and Village Parkway, Markham
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	(M33) - 16th Avenue and Village Parkway (Markham)
	Units	3781
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation –Replacement
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will replace failing direct-buried Cross-Linked Polyethylene (XLPE) cables and cable accesories with new cable in conduit and will mitigate outage frequencies to customers.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under reactive capital. This would lead to an unacceptable level of outages and customer satisfaction.
	Alternative #1	Perform the replacement in this area.
	Alternative #2	Injection of the cables - these cable segemnts are not technically viable for injection.

	Justification for Recommended Alternative	This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures,Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable replacement as the method for remediation (injection is not technically feasible for the segments within this project).
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has multi-year Master Service Agreement with external contractors. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Similar cable replacement projects over the past 3 years (2016, 2017, and 2018) were $389/m. This project is forecasted to be $555/m. The difference is based on the assumption that this project is more complicated (more obstruction, short clearance from other utilities) than the projects already completed in prior years.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	In Alectra East, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). If not rehabilitated, this cable will get older and will fail more often to the level that is not tolerable by customers.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this area is 42 years old (installed in 1977), which exceeds the Kinectrics Report ''Asset Amortization Study for the Ontario Energy Board'' results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	276
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	For 1000 m of cable (applicable to the selected cable remediation candidates): Frequency of Failure is: 0.25 failures per 1000 m of cable per year For 3781 m of cable in the whole area: Frequency of Failure is: 0.25 x 3781 /1000 = 0.9 failure(s) According to Alectra East Control Room data, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). Annually on average there were 128 Cable and Splice failures affecting 39,280 customers and 5,520,782 CMI Impact of 1 failure: 39,280/128 = 307 customers affected and 5,520,782/128 = 43,131 CMI Impact of 0.9 failures: 307 x 0.9 = 276 customers affected and 43,131 x 0.9 = 38818 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Local approvals and weather.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable
	Reliability and Safety Factors	This project is part of the long-term cable rehabilitation program. The project will help avoid a total of 0.9 potential cable failures and 38818 potential CMI.
	Analysis for "Like for Like" Renewal Project	When direct buried cable is replaced, the new cable installed according to new Standards. Which call for the cable to be put in conduit. The conduit provides additional mechanical protection for the cable. In addition it will also facilitate for future cable replacement (faulted cable can be pulled out and new cable be pulled in, no digging is required).



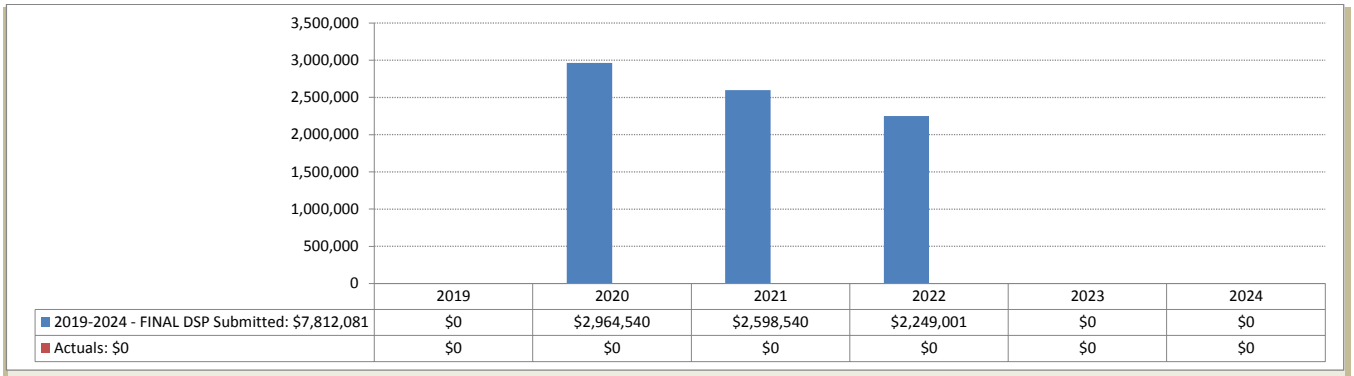
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $2,098,659	$0	$0	$0	$2,098,659	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150317	
Project Name	Voltage Conversion - Deerhurst MS, Hamilton	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Hamilton
	Location	Hamilton, Stoney Creek area
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Overhead Asset Renewal
	Alectra Subcategory	Voltage Conversion
4. Evaluation Criteria (OEB)	Project Summary	This project is addressing the renewal of assets served by Deerhurst MS in Stoney Creek. Currently the station supplies customers at a primary voltage of 8kV from an outdoor municipal substation. As part of the renewal of feeder assets, the equipment will be replaced with similar equipment rated for 27.6kV. This will allow the municipal substation assets to be bypassed, thereby avoiding the cost to refurbish station assets in the future. This station is one of 3 in Stoney Creek that inter-tie to each other forming a 'triad', and therefore construction work must occur simultaneously at each of the station service territories to ensure reliable supply during the conversion.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	This project mainly addresses aging assets at the station and on the feeders by performing a renewal of the assets and converting the voltage to a higher class, thereby avoiding any future costs in upgrading the municipal substation and associated equipment. The asset condition assessment indicates that the reclosers are in Poor condition. The priority assets determining the voltage conversion are the substation assets as failure of a critical component, such as the switchgear bus, can cause a major outage for an extensive timeframe impacting a large number of customers. Furthermore due to system design and construction in the 1950's, feeder redundancy is minimal and loss of a station would result in stranded load and increased cost as generators would be required The legacy substation equipment is •No longer supported by the manufacturer; •Parts are difficult to come by or must be custom made; •Difficult or costly to maintain; •Functional and Operational Obsolesces; (e.g. safety restrictions on operation circuit breakers) •Unable to meet current safety standards (e.g., switchgears that are not arc resistance); •Unable to meet current performance standards Feeder Assets Since there is large population of feeder assets, the condition of feeder assets is diverse. While the overall condition shows the average, as diverse populations masking the impact of deteriorated assets. If the Voltage Conversion projects were not to proceed, significant renewal investments would still be required to renew these deteriorated assets as part of the Overhead Renewal investment.
	Customer Attachment / Load (KVA)	7657 kVA and 1525 customers.
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	New construction built to current standards, coordination with joint-use tenants, coordination with the municipality.
	Economic Development	Not applicable.
	Environmental Benefits	Lower line losses due to conversion to higher voltage class.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Under the status quo option, Alectra Utilities would only replace these legacy assets should they fail reactively. Under this scenario, there would be no opportunity to convert these assets to the standardized voltage levels, as assets would have to be replaced in a like-for-like manner. Replacing assets reactively tends to lead to the highest per-unit cost, and greatest impact to customer outage times. Furthermore, the reliability and safety risks associated with this infrastructure would continue to persist. Alectra Utilities would also be required to continue to maintain, and possibly replace or upgrade the legacy substations that supply these lower voltage levels, as the breaker assets have reached functional obsolescence and there are no parts available.

	Alternative #1	Like-for-like replacement of existing assets with new assets at the same voltage ratings. Under the like-for-like replacement option, existing 8.32 kV infrastructure would be replaced with 8.32 kV infrastructure respectively. This approach is very similar to the status quo option, with the exception that customer outages can be avoided by replacing assets before they fail. By planning ahead to perform the replacements, the added benefit of like-for-like over the status quo is lower per-unit costs given that multiple assets can be addressed at a time. However, by keeping these system voltages intact, the functional obsolescence issues associated with these assets will continue to persist and eventually significant substation investments will be required. Should a future outage occur, it will likely be longer and create a larger customer impact, due to the lack of contingency options available at these voltage levels.
	Alternative #2	Full conversion of the lines to new 27.6 kV primary system voltages This alternative proposes to renew the assets in the area while also proceeding with voltage conversion to a higher voltage class for the equipment. Other benefits include taking the opportunity to redesign the feeder configuration to provide improved reliability where possible by creating loops where none exist today as well as converting rear lot supply to front lot. This alternative also provides value in the form of avoided costs to rebuild the existing 8kV substation assets.
	Justification for Recommended Alternative	Like-for-like or reactive replacement does not prove to be as economical on a large scale renewal project with numerous assets affected. 13.8kV and 27.6kV are standard stock items in many cases and can result in savings over the 8kV equivalent. Reduced O&M costs and lower line losses due to the elimination of substation assets, improvements to the system configuration for greater operability and reliability are considered some of the incremental benefits. The full conversion option presents the best value long-term by having conversion completed in a planned manner while also avoiding the substation investment costs, as well as benefits to the operability of the system, which ultimately benefits the customers. For those reasons, Alectra Utilities selected this approach.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Historical projects that compare would be from other similar voltage conversion projects undertaken as part of the 4kV/8kV Renewal Program. These projects typically fall within a range of $2MM - $2.5MM per year for the life of the project.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	The substations in Stoney Creek account for the last remaining 8kV feeder and station assets in an otherwise 27kV class system and nearly 3000 customers. There is a large amount of direct buried XLPE as part of URD subdivisions for these projects, and had been flagged for action due to the vintage of the cable (late '70's). By bundling the voltage conversion along with the renewal of URD assets, greater cost efficiencies can be gained. These URD areas have seen cable faults in recent years, as well as there being faults at the substation level at Dewitt MS.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Generally the 4kV and 8kV assets are of the oldest vintage in the system. The asset condition assessment indicate that the reclosers are in Poor condition.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	1525
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Deerhurst station 3 year stats: 6 outages, 101,889 customer minutes (22.3 minutes/customer/year)
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	This project will address aging assets with inadequate backup. Aging assets represent an increased risk of service interruption to customers and inadequate backup would result in long duration service interruptions upon occurrence. These factors would lead to customer dissatisfaction in this area.
	Value of Customer Impact	Low
	Factors Affecting Project Timing, if any	Not applicable.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not implementing the project would negate any O&M benefit gained by removing a substation from service. Considered a critical component of the distribution system, a typical substation requires monthly inspections and upkeep to ensure reliable operation.
	Reliability and Safety Factors	The benefits to reliability are in the renewal of the aging assets, as well as an opportunity to reconfigure any parts of the feeder that carry a higher risk for an outage (i.e. rear lot supply). There is also an opportunity to implement remote-operable devices to assist in operability of the system in the area affected. Safety benefits are captured in the renewal work being built to current construction standards, providing better working clearances and ergonomics.
	Analysis for "Like for Like" Renewal Project	The like-for-like renewal of these assets (i.e. same system configuration and same distribution voltage) will perpetuate the existing operating constraints and require capital investment to renew substation assets. Renewal of the distribution assets at a higher voltage does not involve any material incremental costs over renewal at the existing voltage. Operating constraints (e.g. undersized conductor, radial feeds) are addressed on a case by case basis where appropriate.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $7,812,081	$0	$2,964,540	$2,598,540	$2,249,001	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

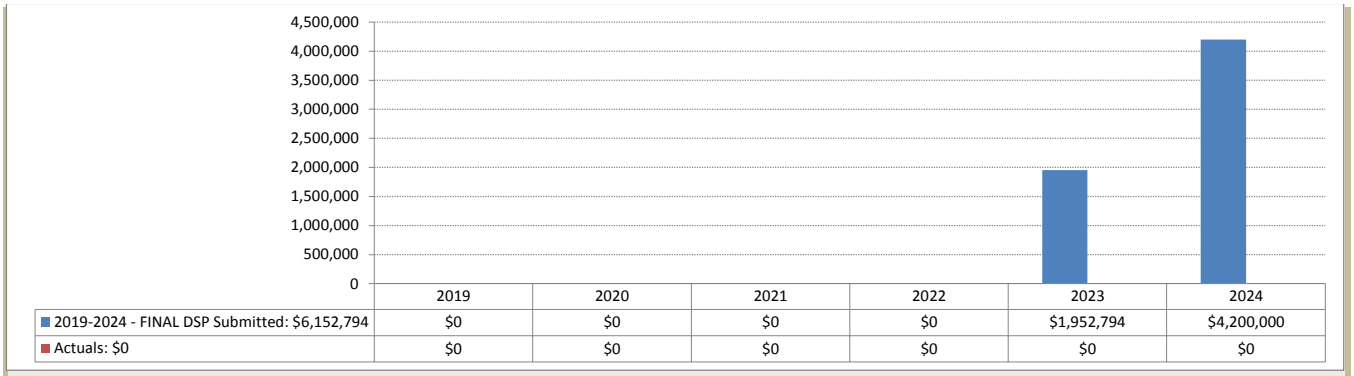
OEB Multi-Project Report

Project Code	150319
Project Name	New MS - Duke MS 20 MVA Substation, Mississauga
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	North-west of Rathburn and Living arts intersection.
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Stations)
	Alectra Subcategory	Station Capacity Projects
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities determined that a new MS would be required in the northwestern region of Mississauga's downtown core. Alectra Utilities has determined that the optimal site for that MS would be the proposed Duke MS site at Centre View Drive and Duke of York Boulevard. Alectra Utilities forecasts expenditures of $6.2M on the Duke MS during the DSP period. Currently, there are approximately 65 buildings in the downtown core and three substations: Woods MS, Confederation MS, and City Centre MS. These substations are equipped with either two or three power transformers, and most of their capacity is dedicated to supplying the existing load in the downtown core. Also, John MS, located on Hurontario Street near John Street, also provides power to Mississauga Valley and Sussex districts. The current capacity available for the downtown core is approximately 140 MVA ONAN rating. Based on growth projected and the land parcels available, Alectra estimates that, upon completion of Downtown21 in 2035, the combined transformation load requirement will increase approximately by 300 MVA. Alectra Utilities will have to expand its infrastructure in the downtown core and increase the number of substations to reliably supply additional load. At least eight substation transformers will need to be dedicated to meet this significant future demand, including in contingency conditions.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	There are two known large developments planned for Mississauga that drive some of the need for stations capacity expenditures during the DSP period. Both are summarized below. Block 8 and Office Towers along Centre View Drive Block 8 is bounded by Rathburn road to the North, Confederation to the west, Living Arts to the East and Square One Drive to the South. The parcel will consists of 6 buildings in total ranging from 40 stories to 54 stories with total 18MW of load which includes 3MW of electric vehicle charging load by 2026. Alectra Utilities is currently working on the design for Phase 1 which consists of 2 towers (896 units) with total load of 6 MVA. In addition, there are planned office towers along Centre view drive and Rathburn which will another 10 MW of load. Alectra Utilities has received application for development of Office tower which will add another 3 MW of load on Centreview and Station Gate. Rogers (M-City) The Rogers M-City will transform a vacant 15-acre lot at the South West corner of Burnhamthorpe road. This development is projected to house some 6,000 residents and will consist of 10 towers 60-75 stories and will add another 30 MW of load. Phase 1 which is designed consists of 2 building with total of 5MW. Alectra Utilities has been notified of the Phase 2 which is of similar size.
	Customer Attachment / Load (KVA)	20MW New Capacity
	Safety	Alectra Utilities will utilize internal and external contractors to complete the design and construction of the stations. The Execution phase will follow Alectra Utilities' internal project management methodology which provides specific guidelines, procedures, work instructions, and industry best practices that allow the project work to be performed in an economically efficient, cost-effective, and safe manner.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Coordination must be done with road extension of Living Arts Drive.
	Economic Development	The proposed land swap arrangement with the builder is the most economical option which ensures that site is secured for Duke MS and station to be constructed in 2023/2024 to supply the loads between Rathburn Road and Centre View Drive.
	Environmental Benefits	Not Applicable

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Status Quo / "Do Nothing" There is insufficient capacity on the system to meet the load growth and the contingency requirement in each of the project areas identified herein, and therefore the Status Quo option is not recommended. Alectra Utilities has also examined the risk of not securing land for the relevant stations and determined that the pace of rapid development and increasing scarcity of suitable parcels (both regarding size and location) favour the timely acquisition of land in the DSP period. If this investment is deferred into the future, Alectra Utilities is likely to incur higher costs associated with the land purchase as well as significant 44 kV and 13.8 kV feeder integration costs. Utilizing Non-Wire Alternatives Alectra Utilities' load forecast process considers the impact of CDM and distribution generation, which is accounted for as part of the load forecast underpinning the Stations Capacity portfolio. Alectra Utilities has also considered other options, such as battery storage, and determined that these options are not economical for the capacity that is required to meet the load growth and contingency conditions. Neither of these are the recommended alternative.
	Alternative #1	Non Wires Alternative Alectra Utilities' load forecast process considers the impact of CDM and distribution generation, which is accounted for as part of the load forecast underpinning the Stations Capacity portfolio. Alectra Utilities has also considered other options, such as battery storage, and determined that these options will not meet the load growth and contingency conditions for the stations to be upgraded during this DSP period Wires Alternative Confederation MS Expansion Confederation MS has two transformers supplies the northern part of Mississauga's downtown core. The current property allows for the installation of a transformer and breaker lineup to increase the capacity at Confederation MS. However, the City of Mississauga has proposed an extension of Square One Drive to Rathburn Road, which will require a portion of the land to be used for the new road. The remaining substation property will then be too small to accommodate an additional transformer and the high voltage equipment associated with it. City Centre MS Expansion There are three 20 MVA transformers installed at the City Centre MS site where the existing infrastructure, including duct banks and switchgear, is fully utilized. The installation of any additional transformers and feeders will require a major reconstruction of the substation and the associated civil infrastructure. Also, new feeders coming out of the substation will have de-rated capacity due to main feeder cable congestion and restricted duct bank configuration. As a result, the installation of an additional transformer is not economical and does not meet the technical requirements needed to supply load in the downtown core efficiently. John MS Expansion Alternative The John MS site has sufficient space for the installation of an additional transformer. However, the new feeders coming out of the substation cannot be extended north to the downtown core unless a new, second pole line with four feeders is constructed along the west side of Hurontario Street from John MS to Burnhamthorpe Road. Considering future projects, including the LRT along Hurontario Street, Alectra Utilities determined that it not be able to install a new pole line on the west side of Hurontario Street in addition to existing pole line on the east side. Neither of these are the recommended alternative.
	Alternative #2	New Duke MS - 20MVA Municipal Station To satisfy the expected demand resulting from the growth and intensification of the downtown core, Alectra Utilities determined that it must install new transformers at two new substations in the northern and southern parts of the downtown core. Based on careful review and consideration of the existing feeder locations, future development and locations of the existing substations, Alectra Utilities determined that the optimal location for the northern substation is near the intersection of Centre View Drive and Duke of York Boulevard. (Duke MS). This is the recommended alternative.
	Justification for Recommended Alternative	Based on the reasons listed above Alectra recommends construction of a new Duke MS.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Land must be obtained and guaranteed. The original "Downtown 21" city plan on which load estimation is based may not materialize within the time constraints proposed of 2021. This aggressive plan is still used as a guide, and is forecast for 2024.
	Comparative Information on Equivalent Historical Projects (if any)	Mini Orlando was created in order to convert existing 44kV capacity into needed 27.6kV capacity north-east of Britannia Rd. and Mavis Rd.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Extra cable capacity to supply future residential and commercial buildings in City Centre.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	This project results from growth in the City Centre.
	Description of Incorporation of Advanced Technology, if applicable	No advanced technology
	Identify any reliability, efficiency, safety or coordination benefits	Old 750kcmil cables are replaced with 1000kcmil standard, thus increasing reliability of supply.



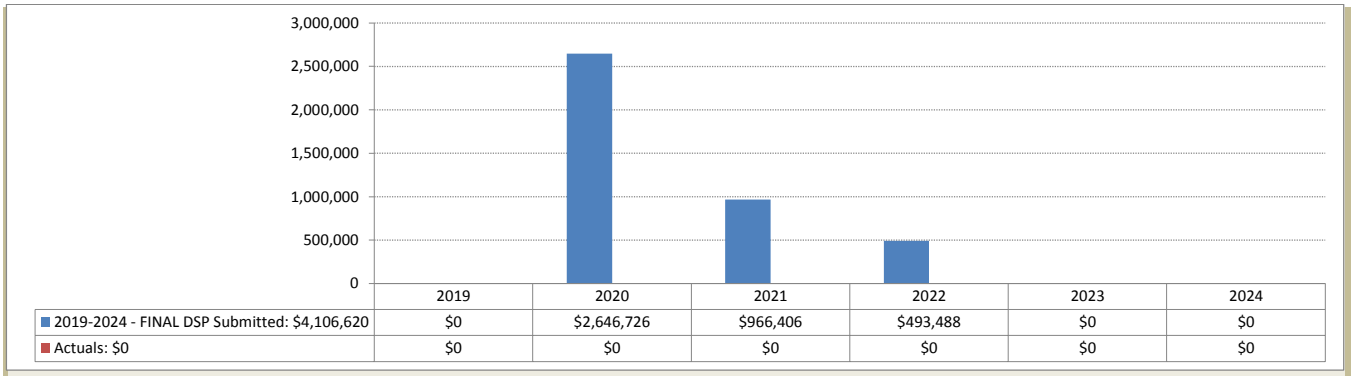
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $6,152,794	$0	$0	$0	$0	$1,952,794	$4,200,000
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150320	
Project Name	Voltage Conversion - Dewitt MS , Hamilton	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Hamilton
	Location	Hamilton, Stoney Creek area
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Overhead Asset Renewal
	Alectra Subcategory	Voltage Conversion
4. Evaluation Criteria (OEB)	Project Summary	This project is addressing the renewal of assets served by Dewitt MS in Stoney Creek. Currently the station supplies customers at a primary voltage of 8kV from an outdoor municipal substation. As part of the renewal of feeder assets, the equipment will be replaced with similar equipment rated for 27.6kV. This will allow the municipal substation assets to be bypassed, thereby avoiding the cost to refurbish station assets in the future. This station is one of 3 in Stoney Creek that inter-tie to each other forming a 'triad', and therefore construction work must occur simultaneously at each of the station service territories to ensure reliable supply during the conversion.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	This project mainly addresses aging assets at the station and on the feeders by performing a renewal of the assets and converting the voltage to a higher class, thereby avoiding any future costs in upgrading the municipal substation and associated equipment. The asset condition assessment indicate that the reclosers and transformer are in Poor condition. The priority assets determining the voltage conversion are the substation assets as failure of a critical component, such as the switchgear bus, can cause a major outage for an extensive timeframe impacting a large number of customers. Furthermore due to system design and construction in the 1950's, feeder redundancy is minimal and loss of a station would result in stranded load and increased cost as generators would be required The legacy substation equipment is •No longer supported by the manufacturer; •Parts are difficult to come by or must be custom made; •Difficult or costly to maintain; •Functional and Operational Obsolesces; (e.g. safety restrictions on operation circuit breakers) •Unable to meet current safety standards (e.g., switchgears that are not arc resistance); •Unable to meet current performance standards Feeder Assets Since there is large population of feeder assets, the condition of feeder assets is diverse. While the overall condition shows the average, as diverse populations masking the impact of deteriorated assets. If the Voltage Conversion projects were not to proceed, significant renewal investments would still be required to renew these deteriorated assets as part of the Overhead Renewal investment.
	Customer Attachment / Load (KVA)	5000 kVA and 612 customers.
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	New construction built to current standards, coordination with joint-use tenants, coordination with the municipality.
	Economic Development	Not applicable.
	Environmental Benefits	Lower line losses due to conversion to higher voltage class.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Under the status quo option, Alectra Utilities would only replace these legacy assets should they fail reactively. Under this scenario, there would be no opportunity to convert these assets to the standardized voltage levels, as assets would have to be replaced in a like-for-like manner. Replacing assets reactively tends to lead to the highest per-unit cost, and greatest impact to customer outage times. Furthermore, the reliability and safety risks associated with this infrastructure would continue to persist. Alectra Utilities would also be required to continue to maintain, and possibly replace or upgrade the legacy substations that supply these lower voltage levels, as the breaker assets have reached functional obsolescence and there are no parts available.

	Alternative #1	Like-for-like replacement of existing assets with new assets at the same voltage ratings. Under the like-for-like replacement option, existing 8.32 kV infrastructure would be replaced with 8.32 kV infrastructure respectively. This approach is very similar to the status quo option, with the exception that customer outages can be avoided by replacing assets before they fail. By planning ahead to perform the replacements, the added benefit of like-for-like over the status quo is lower per-unit costs given that multiple assets can be addressed at a time. However, by keeping these system voltages intact, the functional obsolescence issues associated with these assets will continue to persist and eventually significant substation investments will be required. Should a future outage occur, it will likely be longer and create a larger customer impact, due to the lack of contingency options available at these voltage levels.
	Alternative #2	Full conversion of the lines to new 27.6 kV primary system voltages This alternative proposes to renew the assets in the area while also proceeding with voltage conversion to a higher voltage class for the equipment. Other benefits include taking the opportunity to redesign the feeder configuration to provide improved reliability where possible by creating loops where none exist today as well as converting rear lot supply to front lot. This alternative also provides value in the form of avoided costs to rebuild the existing 8kV substation assets.
	Justification for Recommended Alternative	Like-for-like or reactive replacement does not prove to be as economical on a large scale renewal project with numerous assets affected. 27.6kV rated equipment are standard stock items in many cases and can result in savings over the 8kV equivalent. Reduced O&M costs and lower line losses due to the elimination of substation assets, improvements to the system configuration for greater operability and reliability are considered some of the incremental benefits. The full conversion option presents the best value long-term by having conversion completed in a planned manner while also avoiding the substation investment costs, as well as benefits to the operability of the system, which ultimately benefits the customers. For those reasons, Alectra Utilities selected this approach.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Historical projects that compare would be from other similar voltage conversion projects undertaken as part of the 4kV/8kV Renewal Program. These projects typically fall within a range of $2MM - $2.5MM per year for the life of the project.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	The substations in Stoney Creek account for the last remaining 8kV feeder and station assets in an otherwise 27kV class system and nearly 3000 customers. There is a large amount of direct buried XLPE as part of URD subdivisions for these projects, and had been flagged for action due to the vintage of the cable (late '70's). By bundling the voltage conversion along with the renewal of URD assets, greater cost efficiencies can be gained. These URD areas have seen cable faults in recent years, as well as there being faults at the substation level at Dewitt MS.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Generally the 4kV and 8kV assets are of the oldest vintage in the system. The asset condition assessment indicate that the reclosers and transformer are in Poor condition. Two of the reclosers at the station have recently been taken out of service and are not able to be repaired, leaving the entire station supplying customers through one remaining recloser.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	612
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Dewitt station 3 year stats (2014-2017): 12 outages, 714,117 customer minutes (388 minutes/customer/year)
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	This project will address aging assets with inadequate backup. Aging assets represent an increased risk of service interruption to customers and inadequate backup would result in long duration service interruptions upon occurrence. These factors would lead to customer dissatisfaction in this area.
	Value of Customer Impact	Low
	Factors Affecting Project Timing, if any	Not applicable.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not implementing the project would negate any O&M benefit gained by removing a substation from service. Considered a critical component of the distribution system, a typical substation requires monthly inspections and upkeep to ensure reliable operation.
	Reliability and Safety Factors	The benefits to reliability are in the renewal of the aging assets, as well as an opportunity to reconfigure any parts of the feeder that carry a higher risk for an outage (i.e. rear lot supply). There is also an opportunity to implement remote-operable devices to assist in operability of the system in the area affected. Safety benefits are captured in the renewal work being built to current construction standards, providing better working clearances and ergonomics.
	Analysis for "Like for Like" Renewal Project	The like-for-like renewal of these assets (i.e. same system configuration and same distribution voltage) will perpetuate the existing operating constraints and require capital investment to renew substation assets. Renewal of the distribution assets at a higher voltage does not involve any material incremental costs over renewal at the existing voltage. Operating constraints (e.g. undersized conductor, radial feeds) are addressed on a case by case basis where appropriate.



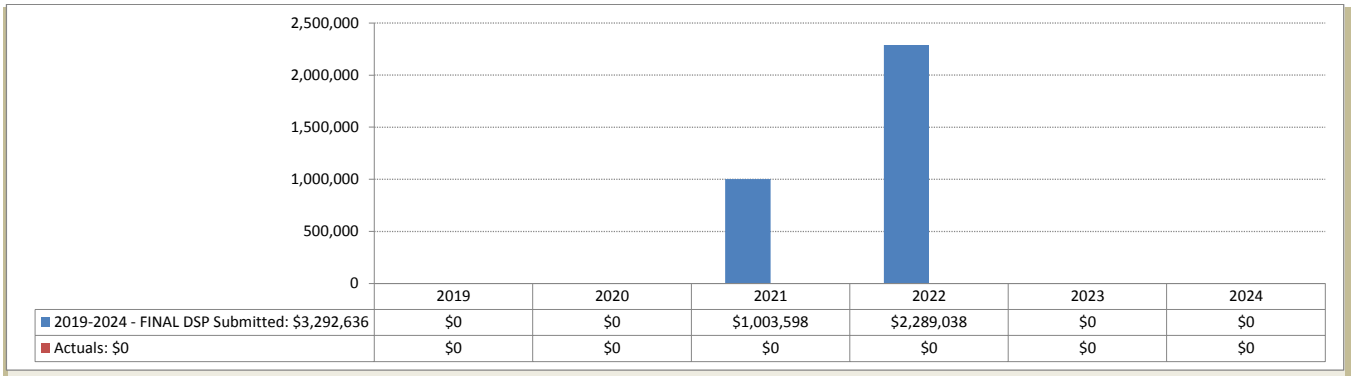
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $4,106,620	$0	$2,646,726	$966,406	$493,488	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150321	
Project Name	Voltage Conversion - Galbraith MS, Hamilton	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Hamilton
	Location	Hamilton, Stoney Creek area
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Overhead Asset Renewal
	Alectra Subcategory	Voltage Conversion
4. Evaluation Criteria (OEB)	Project Summary	This project is addressing the renewal of assets served by Galbraith MS in Stoney Creek. Currently the station supplies customers at a primary voltage of 8kV from an outdoor municipal substation. As part of the renewal of feeder assets, the equipment will be replaced with similar equipment rated for 27.6kV. This will allow the municipal substation assets to be bypassed, thereby avoiding the cost to refurbish station assets in the future. This station is one of 3 in Stoney Creek that inter-tie to each other forming a 'triad', and therefore construction work must occur simultaneously at each of the station service territories to ensure reliable supply during the conversion.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	This project mainly addresses aging assets at the station and on the feeders by performing a renewal of the assets and converting the voltage to a higher class, thereby avoiding any future costs in upgrading the municipal substation and associated equipment. The asset condition assessment indicate that the Switchgear and breakers are in Poor condition. The priority assets determining the voltage conversion are the substation assets as failure of a critical component, such as the switchgear bus, can cause a major outage for an extensive timeframe impacting a large number of customers. Furthermore due to system design and construction in the 1950's, feeder redundancy is minimal and loss of a station would result in stranded load and increased cost as generators would be required The legacy substation equipment is •No longer supported by the manufacturer; •Parts are difficult to come by or must be custom made; •Difficult or costly to maintain; •Functional and Operational Obsolesces; (e.g. safety restrictions on operation circuit breakers) •Unable to meet current safety standards (e.g., switchgears that are not arc resistance); •Unable to meet current performance standards Feeder Assets Since there is large population of feeder assets, the condition of feeder assets is diverse. While the overall condition shows the average, as diverse populations masking the impact of deteriorated assets. If the Voltage Conversion projects were not to proceed, significant renewal investments would still be required to renew these deteriorated assets as part of the Overhead Renewal investment.
	Customer Attachment / Load (KVA)	4244 kVA and 784 customers.
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	New construction built to current standards, coordination with joint-use tenants, coordination with the municipality.
	Economic Development	Not applicable.
	Environmental Benefits	Lower line losses due to conversion to higher voltage class.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Under the status quo option, Alectra Utilities would only replace these legacy assets should they fail reactively. Under this scenario, there would be no opportunity to convert these assets to the standardized voltage levels, as assets would have to be replaced in a like-for-like manner. Replacing assets reactively tends to lead to the highest per-unit cost, and greatest impact to customer outage times. Furthermore, the reliability and safety risks associated with this infrastructure would continue to persist. Alectra Utilities would also be required to continue to maintain, and possibly replace or upgrade the legacy substations that supply these lower voltage levels, as the breaker assets have reached functional obsolescence and there are no parts available.

	Alternative #1	Like-for-like replacement of existing assets with new assets at the same voltage ratings. Under the like-for-like replacement option, existing 8.32 kV infrastructure would be replaced with 8.32 kV infrastructure respectively. This approach is very similar to the status quo option, with the exception that customer outages can be avoided by replacing assets before they fail. By planning ahead to perform the replacements, the added benefit of like-for-like over the status quo is lower per-unit costs given that multiple assets can be addressed at a time. However, by keeping these system voltages intact, the functional obsolescence issues associated with these assets will continue to persist and eventually significant substation investments will be required. Should a future outage occur, it will likely be longer and create a larger customer impact, due to the lack of contingency options available at these voltage levels.
	Alternative #2	Full conversion of the lines to new 27.6 kV primary system voltages This alternative proposes to renew the assets in the area while also proceeding with voltage conversion to a higher voltage class for the equipment. Other benefits include taking the opportunity to redesign the feeder configuration to provide improved reliability where possible by creating loops where none exist today as well as converting rear lot supply to front lot. This alternative also provides value in the form of avoided costs to rebuild the existing 4kV or 8kV substation assets.
	Justification for Recommended Alternative	Like-for-like or reactive replacement does not prove to be as economical on a large scale renewal project with numerous assets affected. 27.6kV are standard stock items in many cases and can result in savings over the 8kV equivalent equipment. Reduced O&M costs and lower line losses due to the elimination of substation assets, improvements to the system configuration for greater operability and reliability are considered some of the incremental benefits. T he full conversion option presents the best value long-term by having conversion completed in a planned manner while also avoiding the substation investment costs, as well as benefits to the operability of the system, which ultimately benefits the customers. For those reasons, Alectra Utilities selected this approach.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Historical projects that compare would be from other similar voltage conversion projects undertaken as part of the 4kV/8kV Renewal Program. These projects typically fall within a range of $2MM - $2.5MM per year for the life of the project.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	The substations in Stoney Creek account for the last remaining 8kV feeder and station assets in an otherwise 27kV class system and nearly 3000 customers. There is a large amount of direct buried XLPE as part of URD subdivisions for these projects, and had been flagged for action due to the vintage of the cable (late '70's). By bundling the voltage conversion along with the renewal of URD assets, greater cost efficiencies can be gained. These URD areas have seen cable faults in recent years, as well as there being faults at the substation level at Dewitt MS.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Generally the 4/8kV assets are of the oldest vintage in the system. The asset condition assessment indicate that the Switchgear and breakers are in Poor condition. The transformer had to be repaired recently. The circuit breaker is 1962 vintage Oil circuit breaker and is obsolete.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	784
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	3 year stats (2014 - 2017) for Galbraith MS: 5 outages, 92,857 customer minutes (39.4 minutes/customer/year)
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	This project will address aging assets with inadequate backup. Aging assets represent an increased risk of service interruption to customers and inadequate backup would result in long duration service interruptions upon occurrence. These factors would lead to customer dissatisfaction in this area.
	Value of Customer Impact	Low
	Factors Affecting Project Timing, if any	Not applicable.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not implementing the project would negate any O&M benefit gained by removing a substation from service. Considered a critical component of the distribution system, a typical substation requires monthly inspections and upkeep to ensure reliable operation.
	Reliability and Safety Factors	The benefits to reliability are in the renewal of the aging assets, as well as an opportunity to reconfigure any parts of the feeder that carry a higher risk for an outage (i.e. rear lot supply). There is also an opportunity to implement remote-operable devices to assist in operability of the system in the area affected. Safety benefits are captured in the renewal work being built to current construction standards, providing better working clearances and ergonomics.
	Analysis for "Like for Like" Renewal Project	The like-for-like renewal of these assets (i.e. same system configuration and same distribution voltage) will perpetuate the existing operating constraints and require capital investment to renew substation assets. Renewal of the distribution assets at a higher voltage does not involve any material incremental costs over renewal at the existing voltage. Operating constraints (e.g. undersized conductor, radial feeds) are addressed on a case by case basis where appropriate.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $3,292,636	$0	$0	$1,003,598	$2,289,038	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

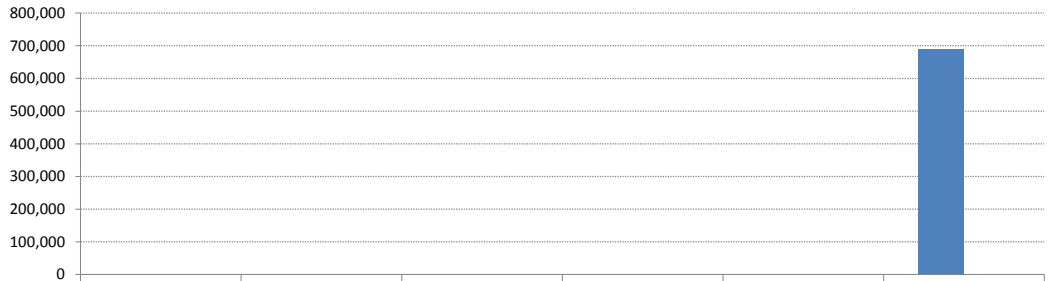
Project Code	150323
Project Name	Station Switchgear Replacement - Bloor MS38 LV1
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	Bloor MS in Mississauga
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Substation Renewal
	Alectra Subcategory	Switchgear Replacement
4. Evaluation Criteria (OEB)	Project Summary	Municipal substation assets are integral to the performance of the Alectra - Central distribution system. They are used to step down sub-transmission voltages to lower distribution voltages, specifically from 44 kV to 13.8 KV, 44 kV to 27.6 kV and 27.6 kV to 4.16 kV. The municipal substation equipment (power transformers and metal clad / metal enclosed switchgear units) are considered critical and some of the most significant assets to the sustainability of the organization. As such, Alectra utilizes a replacement strategy to proactively replace their substation assets before they fail or if they are no longer supported by the manufacturer, hence technically obsolescent, approaching end of life or displaying failures. This can help to avoid a major failure which would have a major impact on customer outage frequency and duration, the environment, safety, and Alectra's reputation. The major power equipment installed at Bloor MS (44 kV-to-13.8 kV) consists of one obsolete conventional low voltage switchgear lineup (LV1), one arc resistant low voltage switchgear (LV2), two 20 MVA power transformers, one MOCB high voltage (HV) circuit breaker and one SF6 high voltage circuit breaker. The equipment details at Bloor MS are as follows: Low Voltage LV1 (13.8 kV) metal clad switchgear (not arc resistant) and circuit breakers • Manufacturer – Federal Pioneer (ITE) • Circuit Breaker Type – 15HK, magnetic air with spring actuator • Year of Manufacture – 1971 Low Voltage LV2 (13.8 kV) metal clad switchgear (arc resistant) and circuit breakers • Manufacturer – Siemens • Circuit Breaker Type – 8BK20, vacuum • Year of Manufacture – 1992 Low Voltage Protections (LV1) • Manufacturer –GE • Relay Type - electromechanical • Year of Manufacture – 1969 Low Voltage Protections (LV2) • Relay Type - solid state • Year of Manufacture – 1992
	Main Driver - System Renewal	Obsolescence
	Priority and Reasons for Priority	A major reason for replacing the obsolete LV1 switchgear is that the manufacturer no longer supports this type of equipment. In addition, the design of the switchgear does not meet Alectra's current safety standards and presents a risk to its employees. The need for replacement is supported by low calculated Health Indices. • LV1 switchgear inspection results have identified this switchgear with an overall performance score. • Scarcity of spare parts. Many spare parts are now obsolete and the equipment is no longer supported by the manufacturer • Lack of arc resistant capability which is a safety hazard to employees • Elimination of arc chutes that may contain asbestos. • Increasing failure rates of magnetic air circuit breakers. Examples are illustrated below. Replacing existing non-arc resistant switchgear with modern arc resistant switchgear will serve to facilitate maintenance and repair practices. With the existing equipment, the switchgear must be offloaded prior to racking breakers in or out. Another reason for replacing the LV1 switchgear is due to the critical location of the substation. Bloor MS is located centrally in and feeds a large number of customers. With the ongoing expansion of the downtown core and the subsequent increase in its loading requirements, it is imperative that Bloor MS is as reliable a station as possible since it is providing backup to City Centre North MS. A new LV switchgear at Bloor MS would also help to maintain reliability in the area.
	Customer Attachment / Load (KVA)	The 2017 peak load at Bloor MS was about 23 MVA, with about 10 MVA supplied from LV1
	Safety	Existing switchgear does not meet current safety criteria. An explosive failure of the existing switchgear could seriously injure personnel in the proximity. The proposed new metal-clad 15 kV switchgear lineup with arc-resistant construction will meet Alectra's standard.

	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	The replacement of obsolete switchgear with new equipment will help modernize the system and facilitate Control Room operations in managing the system.
	Economic Development	Not Applicable.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Doing nothing is not recommended. An increasing risk of equipment failure will have a negative impact on Alectra's customers, safety and its reputation, which Alectra is not prepared to accept. Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted funding requirements and could result in lengthy customer interruptions. Alectra would be forced to purchase new equipment at a premium cost in the event of a failure. System reliability would be affected and restoration of the system to normal conditions could take 8-10 months due to long equipment lead times. Impact on customers can be minimized with proactive replacement.
	Alternative #1	Replace the existing LV1 15 kV switchgear at Bloor MS with new arc-resistant metal-clad switchgear and replace transformer protections. This is the recommended alternative.
	Alternative #2	Not applicable
	Justification for Recommended Alternative	The recommended solution is to replace the LV1 15 kV switchgear at Bloor MS with a new 15 kV metal-clad switchgear lineup with arc-resistant construction that meets Alectra Utilities' standards. It is also recommended that the switchgear replacement be combined with ancillary equipment upgrades required to bring the station up to current standards, improve overall reliability and result in cost savings through bundling of work. The need for replacement is supported by low calculated Health Indices. The main advantages of installing arc resistant metal clad switchgear are as follows: • In the case of a breaker failure there is minimal damage to adjacent equipment. Thus fewer customers are affected by a failure. • Enhanced safety for personnel and equipment. • The switchgear will be equipped with microprocessor based relays, which can be used in future smart grid projects since they have peer-to-peer communication capability. • The new microprocessor based relays can provide additional useful information not available in the electromechanical or electronic relays such as: • Number of operations of the circuit breakers • Fault magnitude • Event recorder The relay data and the transformer on-line temperature monitoring information can be imported into a computerized maintenance management system (CMMS) that will help in the future to provide a real time picture of equipment status. Since the new LV switchgear will be equipped with microprocessor relays, there is an opportunity to upgrade the transformer protection with new microprocessor relay as well. The transformer relay also provides control and protection functions for the high voltage breaker and the LV main breaker. If the HV control cabinet is not upgraded there and additional relay needs to be purchased and installed in the LV switchgear main breaker cell. It was legacy Enersource practice in the past that for any project consisting in LV switchgear upgrades to upgrade also the HV control cabinet. Thus the entire P&C system is upgraded. Execution of this project will serve to extend the useful life of this station and improve the overall reliability of supply to the Mississauga downtown.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Equipment has a long lead time. This risk would be mitigated by starting preliminary engineering and ordering the equipment in 2018 for installation in 2019.
	Comparative Information on Equivalent Historical Projects (if any)	LV switchgear replacements have been done at a number of municipal stations in Mississauga. Similar work is currently being done at City Centre North MS and at York MS.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	The existing switchgear is not arc resistant and does not meet existing standards for safety and poses constraints on maintainability.
	Condition of Asset vs. Typical Life Cycle and Performance Record	At the time that this switchgear is proposed to be replaced, it will be 50 years old. This exceeds the typical useful life of 40 years for circuit breakers in metalclad switchgear and 35 years for electromagnetic relays as indicated in Kinectrics Inc. Report No: K-418099-RA-001-R000 “Asset Amortization Study for the Ontario Energy Board” Existing switchgear has a history of performance issues and is considered to be in poor condition.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	2983
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	The replacement of these obsolete circuit breakers at Bloor MS will improve reliability in the service area. •Frequency is for breakers of this vintage/condition, assuming spare parts are available. •Frequency of catastrophic breaker failure is assumed to be 0.02 per year •Frequency of a breaker failure to operate is assumed to be 0.05 per year •Any breaker failure would result is loss of supply to the entire bus. •Any breaker failure would result is loss of supply to the entire bus. •It can take 2 to 3 hours to transfer load to another bus or station following a breaker mal-operation or to isolate a breaker that has mal-operated. •It can take a week or so to restore a bus following an explosive breaker failure. •A critically damaged breaker can be replaced in a week or so, assuming a spare is available.

Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Failure of this equipment would negatively impact the electricity supply to many residential, commercial and industrial customers in the area.
Value of Customer Impact	Medium
Factors Affecting Project Timing, if any	Equipment delivery times from suppliers
Consequences for O&M System Costs Including Implications of Not Implementing	Existing switchgear has higher maintenance costs than the proposed replacement equipment. Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted funding requirements and could result in lengthy customer interruptions. Replacement of failed equipment is expected to be more costly than proactive replacement. Also, leaving until emergency replacement is required would not allow for efficiencies gained in bundling with other work at this station.
Reliability and Safety Factors	The proposed replacement equipment is more reliable and safer due to arc-resistant construction.
Analysis for "Like for Like" Renewal Project	From a configuration perspective, this is a like-for-like replacement but the replacement equipment is more technologically advanced, requiring reduced maintenance and has improved safety features.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $690,810	$0	$0	$0	$0	$0	$690,810
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

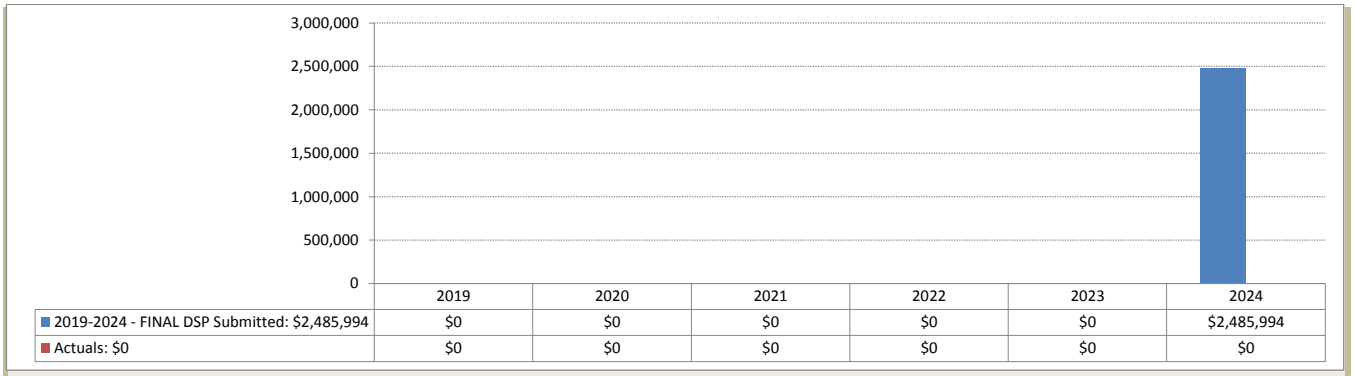
Project Code	150329
Project Name	Rear Lot Renewal Project - Main Street / Unionville / Carlton
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Markham: Main Street / Unionville / Carlton
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Rear Lot Conversion
	Alectra Subcategory	Rear Lot Conversion
4. Evaluation Criteria (OEB)	Project Summary	Convert the Main Street / Unionville / Carlton (Markham) area from rear lot overhead supply to front lot underground supply (primary and secondary). This will reduce number of outages and power restoration time. The project is proposed to be completed over three years . The existing rear lot location Main Street / Unionville / Carlton (Markham)) will be over 35 years old in 2021. The asset is end of life and requires remediation. In addition, the poles in this rear lot location were inspected in 2013 where a majority of the poles are in poor or very poor condition. These assets pose a safety risk for the public and for Alectra Utilities crews, are more prone to failure than other overhead distribution assets, and otherwise do not align with current standards, policies and practices.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	The priority of this project is high. This project is to decrease the outage impacts due to deteriorating distribution system assets and mitigate the outage impacts due to increasing effect of adverse weather events. Reasons for Priority: The electrical system is deteriorating and poses many operations, safety, and customer service concerns that must be addressed. If not addressed, the system will deteriorate further and failures and safety hazards will increase. In December 2013, an ice storm came in across Ontario including Alectra (PowerStream) service territory. During the storm, many trees, including trees in rear lot areas, fell onto power lines and created prolonged power outages to customers. Power restoration in rear lot areas was very difficult due to accessibility. The December 2013 ice storm caused 29,831,573 CMI within the rear lot grids, which accounted for 16.68% of the total system CMI due to the ice storm. The existing rear lot location Main Street / Unionville / Carlton (Markham)) will be over 35 years old in 2021. The asset is end of life and requires remediation. In addition, the poles in this rear lot location were inspected in 2013 where a majority of the poles are in poor or very poor condition. These assets pose a safety risk for the public and for Alectra Utilities crews, are more prone to failure than other overhead distribution assets, and otherwise do not align with current standards, policies and practices.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Safety risk associated with close proximity to power line in the backyard: Although the Electrical Safety Code and easement terms specify minimum clearance between customer facilities and power line, there are cases that customers do not follow the safety rules and install facilities too close to power line. Examples are shed, storage, playground, trampoline, swimming pool, patio deck, landscape, house extension, etc. This encroachment creates a safety hazard for both customers and crews. Safety risk associated with reduced clearance due to encroachment of power line: Over time, growth of vegetation and obstruction due to customer facilities may jeopardize the minimum clearance requirements and restrict crew mobility. Occasionally dogs may also be a safety hazard to the crews.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Not Applicable
	Economic Development	Not Applicable
	Environmental Benefits	Because overhead transformers are installed on the pole in rear lot area, a pole falling down may also cause the transformers to fall down, resulting in transformer tank rupturing, and oil being spilled onto the ground.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Under this option, no proactive investments would be executed to replace either existing rear lot infrastructure and these assets would only be intervened upon in reactive scenarios, when the assets have reached their end-of-life. Under this approach, customers would be exposed to prolonged reliability impacts, due to the accessibility issues associated with rear lot infrastructure, as well as the complex restoration procedures that would be required for a four-feeder outage event. As standardized equipment (e.g. bucket trucks) cannot be used to service rear lot plant, wood poles, transformers and overhead switches would have to be replaced manually, with field crews accessing private customer properties in order to execute the work. Customers and field crews would continue to be exposed to elevated safety risks, due to the minimal proximity between customer plant and the rear lot overhead lines, as well as the non-standard and non-ergonomic work procedures that field crews would have to continue to execute to sufficiently maintain, inspect and service the plant. Finally, as assets are replaced reactively, new assets would need to be installed according to the rear lot configuration. By its design, rear lot can only be converted if the entire line is replaced at once as part of an overall project. Therefore, the legacy design will continue to be maintained under this scenario. This will include the continued operation of the legacy voltage system, along with continuing the associated inefficiencies, such as line losses.
	Alternative #1	Remediate the existing rear lot plant with other design options . The other design options considered are described below. Rear Lot Overhead Option: Under this Option, the existing rear lot plant is replaced with new overhead plant in the rear lot. When the replacement project is implemented, the following design parameters should be considered: •Install critical components such as fuse, switch, and transformer as close to the accessible street as possible This Option is not acceptable because it does not resolve the major operations and customer reliability concerns related to the distribution assets located at rear lot at this location. Partial Underground Option This scenario involves the replacement of existing rear lot infrastructure with a new hybrid solution, where primary voltage infrastructure, including transformers, switches and lines would be installed as per an underground configuration within the front right-of-way, following standard Alectra Utilities installation practices. Under this approach, secondary infrastructure, including wood poles and secondary conductor, would remain in the rear lot in overhead configuration. This approach would not fully address the reliability and safety concerns associated with rear lot distribution, as secondary connections will remain in the rear lot. However, future outage impacts will be reduced and contained to only those customers connected to the associated transformer. Lower voltage classes will also be converted up to the standardized 27.6kV voltage standard as per this investment option. Under this option, reliability and safety issues would continue to persist due some infrastructure remaining overhead. The cost of partial underground renewal is higher than the renewal of the rear lot overhead and further more does not result in mitigating the risks associated
	Alternative #2	Replace with Full Underground Infrastructure This investment scenario considers the full replacement of existing rear lot infrastructure – including primary and secondary plant – with new front lot underground infrastructure. All existing primary and secondary distribution assets within the rear lot corridor will be removed and replaced with new underground primary and secondary infrastructure that is installed within the front lot corridor as per current standard design practices. Underground secondary cables will run from the front lot underground transformers to the individual meter bases in order to supply the customers. Under this approach, existing under-classed legacy wood poles that support four feeders will be replaced with higher-class poles that are better suited to withstand major weather events. Through this investment scenario, these high impact assets will be better secured and weather-hardened against future outage events. This approach would complete mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure. This approach also introduces efficiencies for the utility, as tree trimming activities can be eliminated and line losses associated with the legacy voltage classes can be eliminated.
	Justification for Recommended Alternative	It is recommended to replace the rear lot overhead Main Street / Unionville / Carlton (Markham) infrastructure to a full underground infrastructure (primary and secondary). Under this Option, the existing rear lot plant is removed and new underground plant is installed in front lot. This approach would complete mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure. This approach also introduces efficiencies for the utility, as tree trimming activities can be eliminated and line losses associated with the legacy voltage classes can be eliminated. For these reasons, Alectra Utilities selected this approach.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Fluctuation in cost and staff resource (internal and external) to complete high annual volume of work. Risk Management: PowerStream has retained external contractor working at different work sites throughout the year under a multi-year EPC (Engineering Procurement Construction) Master Service Agreement. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track.
	Comparative Information on Equivalent Historical Projects (if any)	Alectra has completed and is completing similar rear lot remediation project since 2013. Alectra has experience on executing several rear lot remediation project.

	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	The scope involves converting the Main Street / Unionville / Carlton (Markham) area from rear lot overhead supply to front lot underground supply (primary and secondary). There are a total of 164 customers affected by the existing rear lot supply. Rear lot infrastructure is functionally obsolete for the following key reasons: •The rear lot configuration is generally unsafe to the public due to the large trees growing near energized power lines. In tandem with such an unsafe configuration, there are also line clearing hazards and related additional costs to do this work. •Alectra Utilities is unable to use labour saving tools and devices such as bucket trucks to efficiently maintain and repair the distribution system due to assets located in customer backyards. •Rear lot wood poles are generally congested, due to multiple service attachments and communication drops, which generally make it impossible to sufficiently climb poles. Crews must, therefore, use ladders to access these poles. •Alectra Utilities is limited in utilizing ladders to access the overhead system due to Ministry of Labour restrictions for congested areas. •Due to the presence of legacy porcelain top tie insulators, rear lot lines must be fully isolated before any maintenance or repair work on the overhead system can commence. •Porcelain insulators are far more susceptible to contamination and flashover when compared to present-day standard polymer insulators. •Rear lot infrastructure typically contains undersized #4 aluminum conductor steel-reinforced cable and aluminum conductor, along with #4 and #6 copper conductor, which are undersized and generally have a greater probability of annealing due to their reduced carrying capacity. These conductors must be fully isolated before any work can commence.
	Condition of Asset vs. Typical Life Cycle and Performance Record	It is extremely difficult to gain access to the backyard to maintain, repair, and restore power. As a result there are prolonged outages to customers. This is especially more difficult in the event of ice storm. Many of the Rear Lot Supply distribution systems were built in 1950s, 1960s, and 1970s (40-68 years old in 2016). The rear lot equipment is older than typical useful life and the asset condition is deteriorating. According to the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board", typical useful life of overhead transformers and wood poles are 40 and 45 years respectively. Many of the installations are not in compliance to today's standards. The existing rear lot location Royal Orchard – North (Markham) will be 35 years in 2021. The asset is end of life and requires remediation. In addition, the poles in this rear lot location were inspected in 2013 where a majority of the poles are in fair or very poor condition. See attachments for demographic and condition data and photos of the rear lot location in the Main Street / Unionville / Carlton (Markham) area.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	528
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Frequency of Failure: 0.5 failures per year • Estimated number of customers affected by 1 failure: 414 customers inside rear lot area + 100 customers outside rear lot area. Total = 414 + 100 = 514 customers. Assuming 500 residential and 14 commercial • Estimated number of customers affected by 0.5 failures: 514x 0.5 = 257 customers • Frequency of interruption: 0.5 failures per year • Duration of interruption: for 414 customers inside rear lot area duration is 1.7 hours; for 100 customers outside rear lot area duration is 1 hour. Weighted average is 1.6 hours per customer per interruption. • Customers affected per failure: 500 residential + 14 commercial = 514 customers • CMI per 1 failure: 514 x 1.6 hour x 60 min = 49,344 CMI • CMI per 2 failures: 49,344 x 2 = 98,688 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Rear lot supply failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage). Rear lot system also poses safety hazards to the customers because live electrical components are in proximity of customer's backyard and proper clearance may be violated due to customer's installations (examples: trees, garden, swimming pool, storage shed, deck, house extension).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Not Applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	In case of not implementing the project the OM&A cost will continue to occur due to tree trimming activities as well as increase in responding to outages since the assets are deteriorated and prone to failure.
	Reliability and Safety Factors	This project is part of the long-term rear lot supply remediation program. The project will help avoid a total of 2 potential rear lot failures and 260,400 potential CMI. In addition, this project also eliminates safety hazards associated with ageing and deteriorating rear lot system. This approach would complete mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure.
	Analysis for "Like for Like" Renewal Project	The selected option is not a like for like replacement. This investment scenario considers the full replacement of existing rear lot infrastructure – including primary and secondary plant – with new front lot underground infrastructure.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $2,485,994	$0	$0	$0	$0	$0	$2,485,994
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150330
Project Name	Rear Lot Renewal Project - Marsdale, St.Catharines
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	St. Catherines
	Location	St.Catharines, south end
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Rear Lot Conversion
	Alectra Subcategory	Rear Lot Conversion
4. Evaluation Criteria (OEB)	Project Summary	This project is to convert existing rear lot primary distribution to a front lot supply. Rear lot primary poses a problem for both reliability and safety. Due to the reduced access to the distribution assets, restoration of power to customers is significantly impacted by not having access to powered equipment, while also presenting risks to workers .
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Alectra has many pockets of customers being supplied by rear lot construction. The electrical system is ageing and deteriorating and poses many operations, safety, and customer service concerns that must be addressed. If not addressed, the system will deteriorate further and failures and safety hazards will increase to a level that is not manageable and not tolerable by the customers.
	Customer Attachment / Load (KVA)	4177 KVA and 1001 customers
	Safety	Although the Electrical Safety Code and easement terms specify minimum clearance between customer facilities and power line, there are cases that customers do not follow the safety rules and install facilities too close to power line. Examples are shed, storage, playground, trampoline, swimming pool, patio deck, landscape, house extension, etc. This encroachment creates a safety hazard for both customers and crews. Safety risk associated with reduced clearance due to encroachment of power line: Over time, growth of vegetation and obstruction due to customer facilities may jeopardize the minimum clearance requirements and restrict crew mobility. Occasionally dogs may also be a safety hazard to the crews.
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	Not applicalbe
	Economic Development	Not applicable
	Environmental Benefits	Because overhead transformers are installed on the pole in rear lot area, a pole falling down may also cause the transformers to fall down, resulting in transformer tank rupturing, and oil being spilled onto the ground.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Under this option, no proactive investments would be executed to replace either existing rear lot infrastructure and these assets would only be intervened upon in reactive scenarios, when the assets have reached their end-of-life. Under this approach, customers would be exposed to prolonged reliability impacts, due to the accessibility issues associated with rear lot infrastructure, as well as the complex restoration procedures that would be required for a four-feeder outage event. As standardized equipment (e.g. bucket trucks) cannot be used to service rear lot plant, wood poles, transformers and overhead switches would have to be replaced manually, with field crews accessing private customer properties in order to execute the work. Customers and field crews would continue to be exposed to elevated safety risks, due to the minimal proximity between customer plant and the rear lot overhead lines, as well as the non-standard and non-ergonomic work procedures that field crews would have to continue to execute to sufficiently maintain, inspect and service the plant. Finally, as assets are replaced reactively, new assets would need to be installed according to the rear lot configuration. By its design, rear lot can only be converted if the entire line is replaced at once as part of an overall project. Therefore, the legacy design will continue to be maintained under this scenario. This will include the continued operation of the legacy voltage system, along with continuing the associated inefficiencies, such as line losses.

	Alternative #1	Remediate the existing rear lot plant with other design options . The other design options considered are described below. Rear Lot Overhead Option: Under this Option, the existing rear lot plant is replaced with new overhead plant in the rear lot. When the replacement project is implemented, the following design parameters should be considered: •Install critical components such as fuse, switch, and transformer as close to the accessible street as possible This Option is not acceptable because it does not resolve the major operations and customer reliability concerns related to the distribution assets located at rear lot at this location. Partial Underground Option This scenario involves the replacement of existing rear lot infrastructure with a new hybrid solution, where primary voltage infrastructure, including transformers, switches and lines would be installed as per an underground configuration within the front right-of-way, following standard Alectra Utilities installation practices. Under this approach, secondary infrastructure, including wood poles and secondary conductor, would remain in the rear lot in overhead configuration. This approach would not fully address the reliability and safety concerns associated with rear lot distribution, as secondary connections will remain in the rear lot. However, future outage impacts will be reduced and contained to only those customers connected to the associated transformer. Lower voltage classes will also be converted up to the standardized 27.6kV voltage standard as per this investment option. Under this option, reliability and safety issues would continue to persist due some infrastructure remaining overhead. The cost of partial underground renewal is higher than the renewal of the rear lot overhead and further more does not result in mitigating the risks associated with the existing system. This partial underground approach has been adopted where feasible.
	Alternative #2	Replace with Full Underground Infrastructure This investment scenario considers the full replacement of existing rear lot infrastructure – including primary and secondary plant – with new front lot underground infrastructure. All existing primary and secondary distribution assets within the rear lot corridor will be removed and replaced with new underground primary and secondary infrastructure that is installed within the front lot corridor as per current standard design practices. Underground secondary cables will run from the front lot underground transformers to the individual meter bases in order to supply the customers. Under this approach, existing under-classed legacy wood poles will be replaced with higher-class poles that are better suited to withstand major weather events. Through this investment scenario, these high impact assets will be better secured and weather-hardened against future outage events. This approach would completely mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure. This approach also introduces efficiencies for the utility, as tree trimming activities can be eliminated.
	Justification for Recommended Alternative	It is recommended to convert the area to partial underground. Under this Option, the existing rear lot plant is removed and partially underground plant is installed in front lot. This approach would mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure. For these reasons, Alectra Utilities selected this approach.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Customer expectation for what the new distribution will look like is a risk, especially if the customer is pushing for a more aesthetically-pleasing but more expensive alternative by going fully underground. Customer consultation will be an important step in mitigating this risk and ensure the public and the utility are aligned in addressing this renewal.
	Comparative Information on Equivalent Historical Projects (if any)	Similar rear lot projects have been budgeted between $1.25MM - $2MM per year, depending on whether a full underground solution or only partial underground solution is chosen.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Rear lot infrastructure is functionally obsolete for the following key reasons: •The rear lot configuration is generally unsafe to the public due to the large trees growing near energized power lines. In tandem with such an unsafe configuration, there are also line clearing hazards and related additional costs to do this work. •Alectra Utilities is unable to use labour saving tools and devices such as bucket trucks to efficiently maintain and repair the distribution system due to assets located in customer backyards. •Rear lot wood poles are generally congested, due to multiple service attachments and communication drops, which generally make it impossible to sufficiently climb poles. Crews must, therefore, use ladders to access these poles. •Alectra Utilities is limited in utilizing ladders to access the overhead system due to Ministry of Labour restrictions for congested areas. •Due to the presence of legacy porcelain top tie insulators, rear lot lines must be fully isolated before any maintenance or repair work on the overhead system can commence. •Porcelain insulators are far more susceptible to contamination and flashover when compared to present-day standard polymer insulators. •Rear lot infrastructure typically contains undersized #4 aluminum conductor steel-reinforced cable and aluminum conductor, along with #4 and #6 copper conductor, which are undersized and generally have a greater probability of annealing due to their reduced carrying capacity. These conductors must be fully isolated before any work can commence.

Condition of Asset vs. Typical Life Cycle and Performance Record	It is extremely difficult to gain access to the backyard to maintain, repair, and restore power. As a result there are prolonged outages to customers. This is especially more difficult in the event of ice storm. Many of the Rear Lot Supply distribution systems were built in 1950s, 1960s, and 1970s . The rear lot equipment is older than typical useful life and the asset condition is deteriorating. According to the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board", typical useful life of overhead transformers and wood poles are 40 and 45 years respectively. Many of the installations are not in compliance to today's standards. This project has many overhead assets that are 1950's vintage, as well as some sections built in the 1980's. There are also some replacement poles where failures have already occurred from the 2000's. However, a large proportion of the poles are Bell-owned, and we are not provided with condition-based information on the health of these assets.
Number of Customers in Each Customer Class Potentially Affected by Asset Failure	1001
Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Large area with multiple rear lot laterals. Area is supplied by VSM41 and VSM52, in an 80/20 split. The area amounts to about 20% of the feeder's connected kVA and about 30% of the customers. 3 year stats (2014-2017) for VSM41 and VSM52 which supply the area; VSM41: 65 outages, 539,581 customer minutes (64.8 minutes/customer/year) VSM52: 29 outages, 125,186 customer minutes (77.9 minutes/customer/year) Total score: VSM41 * 0.8 + VSM52 * 0.2 = 51.8 + 15.6 = 67.4 minutes/customer/year Total outage score: 21.6 * 0.8 + 9.7 * 0.2 = 17.3 + 1.9 = 19.2 outages/year
Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Rear lot supply failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage). Rear lot system also poses safety hazards to the customers because live electrical components are in proximity of customer's backyard and proper clearance may be violated due to customer's installations (examples: trees, garden, swimming pool, storage shed, deck, house extension).
Value of Customer Impact	High
Factors Affecting Project Timing, if any	Not applicable
Consequences for O&M System Costs Including Implications of Not Implementing	In case of not implementing the project the OM&A cost will continue to occur due to tree trimming activities as well as increase in responding to outages since the assets are deteriorated and prone to failure.
Reliability and Safety Factors	This approach would complete mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure.
Analysis for "Like for Like" Renewal Project	The selected option is not a like for like replacement. This investment scenario considers the full replacement of existing rear lot infrastructure – including primary and secondary plant – with new front lot underground infrastructure.

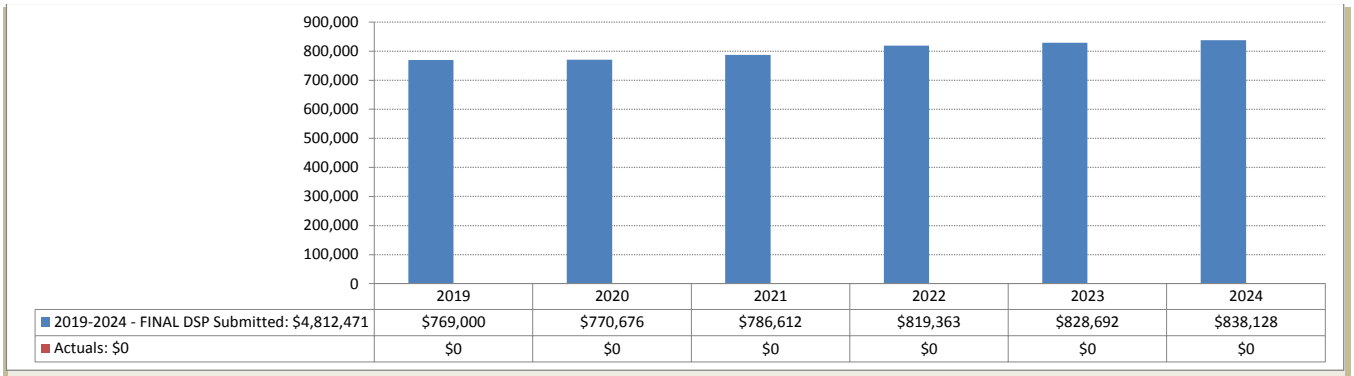
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $3,089,674	$0	$0	$0	$0	$1,069,275	$2,020,399
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150332	
Project Name	Non-Wires Alternative Pilot	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	Yes
	Technology Project or has Technology Component	Yes
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Stations)
	Alectra Subcategory	Station Capacity Projects
4. Evaluation Criteria (OEB)	Project Summary	This project expands the Power.House program to approximately 300 residential solar PV and battery storage units, and integrates these units into control by SCADA/ADMS through a DERMS platform. This will allow our operators to aggregate, monitor and control the units to reduce peak loading on distribution assets, reduce power factor, and provide other power quality services to the grid. While this number of DERs is not great enough to defer traditional distribution expenditure, it provides the scale necessary to demonstrate their effectiveness, and allows us to develop the technical and organizational capability to do so in the future.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	Due to the long planning and construction lead times for traditional distribution infrastructure, the decision to invest is made several years ahead of commissioning. Furthermore, to use DERs to provide mission-critical distribution services in place of firm and highly reliable assets, Alectra needs to develop and demonstrate technical and operational capability in advance of DERs being used for this purpose in a real-world environment. Waiting to develop this capability risks missing the opportunity to influence and reduce distribution investment for many years into the future.
	Customer Attachment / Load (KVA)	Not applicable
	Safety	Not applicable
	Cyber-Security, Privacy	Security will be designed into every aspect of the DERMS platform as it will be fully integrated into Alectra's network, complete with lasting security through ongoing diligence and maintenance. The DERMS platform will be surrounded by complete unified APIs for integration with asset, market, utility and other 3rd party systems. Detailed key technology decisions on cyber-security features and providing for end-to-end security will be made as part of the procurement process. As a minimum requirement, all authentication will be required to be done via JSON web tokens over an HTTPS channel. Enforcement will be done at API boundary for all access to systems. All access to the network should be logged using role- and identity-based access control and logging systems. The level of access to any entity should be defined and limited to the minimum required by the role/identity. A cloud-based solution with data center and network architecture built to meet the requirements of the most security-sensitive organizations, including ISO 27001 and SOC 2 certification should be procured. To ensure customer information remains private, Alectra will be seeking a technology/platform provider that will conform to industrial automation security requirements, guidelines, and best practices, such as the ISA99 standard, to protect personal data.
	Coordination, Interoperability	Alectra is taking a proactive position on evaluating the benefits of non-wires alternatives within their network. It is Alectra's hope that this project will drive the incorporation of DER's into utility's existing planning and operations framework. • Interoperability Standards – DERs currently operate on certain communication protocol standards such as Modbus or DNP3, however there is currently no set standard for the object or information model to define how DER functionality should be uniformly defined. Alectra would like to contribute to development of DER standards for interoperability and play a major role in lowering future utility costs by establishing a more competitive market through which to procure DER services. • Established Processes to Manage Market Services – A key proponent of the new technology will involve defining the protocols and requirements that govern the market services that Alectra will be attempting to model. The dispatch and confirmation protocols will need to be defined through the SCADA/ADMS, which this project will play a critical role in defining. The ideal outcome within 5 years will be that Alectra has a developed approach toward procuring market services to meet local distribution level needs, allowing planners to view DERs as any other transmission or distribution asset. • The technical interface between the aggregate fleet of assets and our control room will be providing extremely valuable learning in how to quantify the technical capabilities of customer sited DERs. This project aims to eventually provide the roadmap for integrating these disparate systems in order perform complex co-optimization tasks.

	Economic Development	The project will have positive economic benefits in the community, primarily by reducing electricity costs for participating households, to be achieved by: -Reducing net electricity consumption with solar PV -Operating the units for TOU arbitrage when not required to reduce peak demand on distribution assets or for power factor compensation -Developing a market and compensation mechanism for providing peak demand shaving and power factor compensation services The innovative integration of DERs into Alectra's operations centre will advance the technology readiness of DERMS software towards commercialisation, with the following economic benefits for Canada: -Advance the market for DERMS, providing ongoing jobs for DERMS providers -Increasing private investment in DERs due to new incentives and decreased barriers to market provided through DER aggregation with DERMS -Establish and disseminate DERMS operating procedures for distribution system operators, reducing the cost of implantation for other LDCs in Canada -Contributing to Ontario and Canada's reputation as an innovation hub in the energy industry The project will result in sustained public education and awareness campaign regarding project participation and benefits, addressing barriers to widespread and successful deployment of battery storage. Additional benefits will result from improvements in skills for Ontario's battery storage market. The project will inform how trades can improve the installation of battery storage and integration of other technologies such as solar and EV charging equipment.
	Environmental Benefits	The project will produce GHG emissions reduction through the displacement of GHG intensive grid scale electricity generation with solar PV generation, and reducing GHGs on the grid by shifting household electricity load from peak periods to less GHG-intensive off-peak periods. Furthermore, we expect this project to provide emissions reductions benefits to Canada as a result of the project's contribution to advancements in DERMS technology and distribution ancillary services markets. We expect this contribution to drive uptake of both private and LDC owned solar-storage units throughout Canada.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do nothing. See priority.
	Alternative #1	Not applicable
	Alternative #2	Not applicable
	Justification for Recommended Alternative	Not applicable
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The storage technologies fail to work as intended or the integration with the ADMS/SCADA fails to meet expectations. Mitigation measures include developing a backup plan in terms of technology/service providers should the battery technology and integration not perform as required for the demonstration project. There are also a combination of manual and automated processes that could be used should fully integrated interfaces among systems prove too difficult. Customer appetite for homes with the proposed technology is lower than anticipated. Research by our project partners has already indicated a strong likelihood that demand for these units will be high. Nonetheless, the team has assumed no financial contribution from the customers thus far for the technologies proposed in the project. As a result, it is very flexible in the kinds of offerings it can provide to customers to incentivize them to purchase homes that are equipped with these measures. If the consortium is required to own the assets outright without customer contributions it will be prepared to do so.
	Comparative Information on Equivalent Historical Projects (if any)	The project builds on the Power.House pilot project launched by an Alectra legacy company, PowerStream, in 2015. This pilot enabled the deployment of 20 Power.House units – an integrated home power plant of rooftop solar panels, energy storage, two-way smart meter and cloud-based energy management system. The pilot resulted in customer savings and Alectra gaining key insights from the integration of usage data.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable
	Description of Incorporation of Advanced Technology, if applicable	The truly innovative part of this smart grid demonstration project is the integration of information technology (IT) systems that manage both site level energy requirements and DER aggregation with operational technology (OT control platforms used by Alectra to monitor and manage the grid), allowing for dispatch of DER assets from the control room.
	Identify any reliability, efficiency, safety or coordination benefits	This demonstration project will develop the capability of distributed solar-storage units to reduce loading on distribution assets (e.g. feeders, distribution substation transformers). Preliminary modelling has identified significant potential economic benefits from power factor correction, for example. The solar-storage units provide back-up to customer's critical loads during grid outages, vastly improving the reliability of electricity supply for these customers.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $4,812,471	$769,000	$770,676	$786,612	$819,363	$828,692	$838,128
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

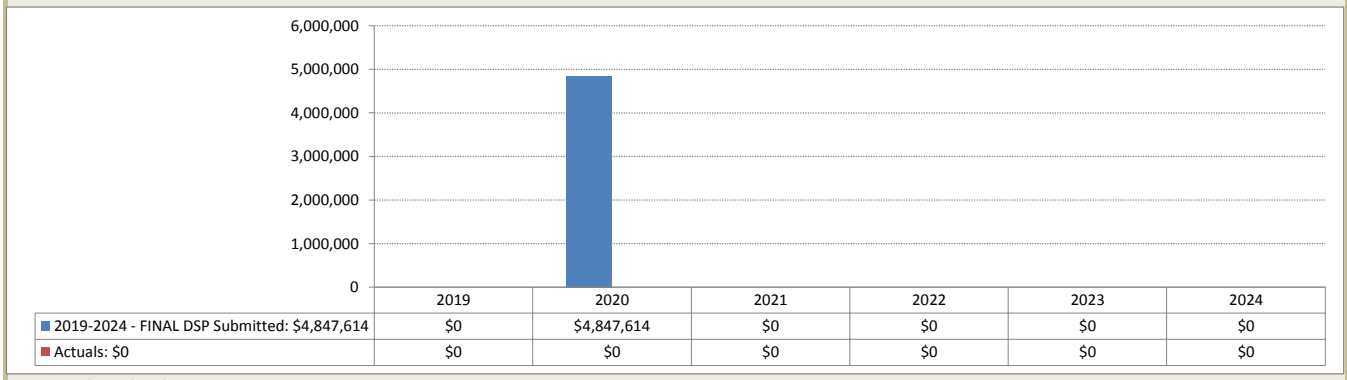
OEB Multi-Project Report

Project Code	150342
Project Name	HaLRT_New Stirton Feeder for TPSS#4 and 8852X load shedding, Hamilton
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Hamilton
	Location	
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	As part of the HaLRT project in Hamilton, some early-works projects were identified where utility infrastructure needed to be modified to accommodate the LRT. This project identifies a new 13.8kV feeder required from Stirton TS to supply TPSS#4 along the LRT corridor, as the existing 13.8kV feeder in the area is unable to accommodate the additional load. The new feeder will also have load transferred to it from the existing 13.8kV feeder in the area, to alleviate the capacity constraint on the 8852X. Contributed capital is estimated for this project at 20% (1.5 MVA/7.2 MVA) due to the amount of load the customer is expected to use as part of the new feeder. This will be updated once an OTC and model run are completed for the customer.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	This project addresses a shortfall in capacity available on the 13.8kV system near the TPSS#4 location. An additional benefit to Alectra is the ability to transfer load from the 8852X to the new feeder proposed to supply the TPSS, thereby improving capacity on this feeder for future development along the LRT corridor.
	Customer Attachment / Load (KVA)	1500kVA for TPSS#4 and additional load transferred from 8852X.
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Coordination with Metrolinx, City of Hamilton, and other utilities as part of the HaLRT project.
	Economic Development	By improving capacity in the area near the LRT TPSS, future development and intensification that is likely to be attracted to the LRT corridor can be more adequately supplied with existing infrastructure, mitigating cost barriers to attracting new customers/growth.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Status quo isn't an option as the existing feeder is already exceeding its planning limit and cannot accommodate the new TPSS#4 load requirement.
	Alternative #1	Alternative #1 is to build the new feeder from Stirton TS to the TPSS location as an overhead pole line construction. This is the least cost alternative. The risk associated with going with this alternative is high, due to minimal space available along the right-of-way along Wilson St. With buildings encroaching on the property line, any pole line with multiple circuits will have to be constructed with tall poles, whose circumference at the base could pose an obstruction to foot traffic along the congested sidewalk. As such, permission from the City of Hamilton may not be granted as this would be in violation of the Accessibility for Ontarians with Disabilities act (AODA), requiring a meter clearance for mobility around obstructions.
	Alternative #2	Alternative #2 is to build the new feeder from Stirton TS to the TPSS location by installing underground infrastructure. This would provide additional value in improved reliability of the feeder and also improve the underground infrastructure for future underground supply to the area, for anticipated loading requests due to intensification of development along the LRT corridor. A variation on this alternative, presented as Alternative #3 is to build underground along Wilson St to Victoria Ave, and then rising up for the last portion to the customer to be supplied overhead, to reduce the cost of the project.
	Justification for Recommended Alternative	The risk associated with going with the overhead construction alternative is high, due to minimal space available along the right-of-way along Wilson St. With buildings encroaching on the property line, any pole line with multiple circuits will have to be constructed with tall poles, whose circumference at the base could pose an obstruction to foot traffic along the sidewalk. As such, permission from the City of Hamilton may not be granted as this would be in violation of the Accessibility for Ontarians with Disabilities act (AODA), requiring a meter clearance for mobility around obstructions. Furthermore, with intensification expected due to the LRT, having additional duct space to serve new customers from Wilson St will enable Alectra to connect new customers as economic development continues along this stretch of the LRT. Therefore the recommended alternative is to proceed with an all underground solution.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The risk associated with going with the overhead construction alternative is high, due to minimal space available along the right-of-way along Wilson St. With buildings encroaching on the property line, any pole line with multiple circuits will have to be constructed with tall poles, whose circumference at the base could pose an obstruction to foot traffic along the sidewalk. As such, permission from the City of Hamilton may not be granted as this would be in violation of the Accessibility for Ontarians with Disabilities act (AODA), requiring a meter clearance for mobility around obstructions.
	Comparative Information on Equivalent Historical Projects (if any)	A similar customer-driven project was scoped out and designed in 2018, but ultimately cancelled. However discussions regarding restoration costs for concrete-base roads held with the City of Hamilton as well as contractor estimates to perform the underground work on a per unit cost were used in deriving the costs estimated for this project.

	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not applicable.
	Identify any reliability, efficiency, safety or coordination benefits	By proceeding with one of the recommended underground alternatives, enhanced reliability can be expected over the overhead construction alternative due to the elimination of weather-, animal contact-, and vehicular-related outages.

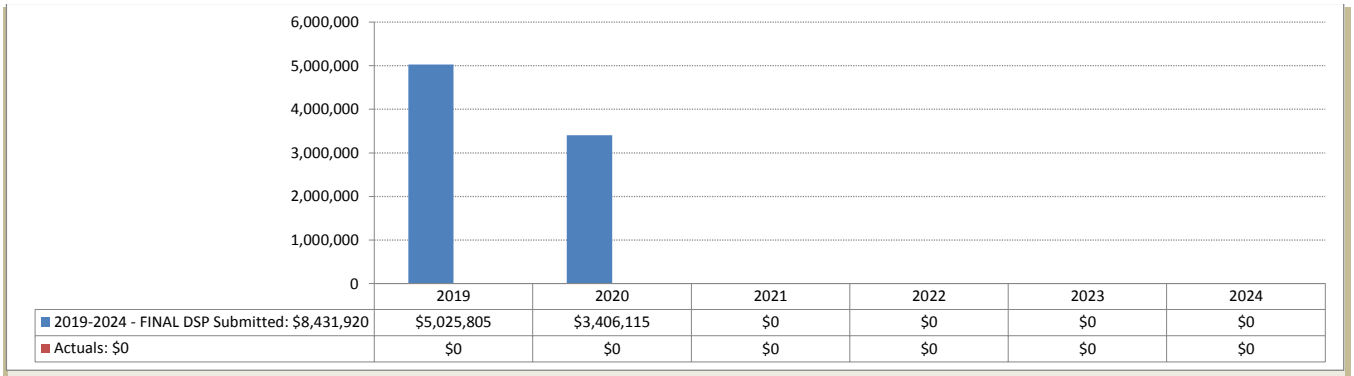


	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $4,847,614	$0	$4,847,614	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150343	
Project Name	Bathurst Street Widening	
Major Category	System Access	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital Road Authority
	Expenditure Type	Non-Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Road Authority
	Alectra Subcategory	Road Authority
4. Evaluation Criteria (OEB)	Project Summary	The Region requires PowerStream to relocate the distribution system to accomodate road works.
	Main Driver - System Access	Service Requests
	Priority and Reasons for Priority	These projects are non-controllable and are a requirement of the Public Service Works on Highways Act R.S.O. 1990, CHAPTER P.49
	Customer Attachment / Load (KVA)	Not applicable
	Safety	The relocation of the distribution system needs to be done in advance of the road work. PS Crews cannot safely work in the same time and space as the Road Crews.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Not Applicable.
	Economic Development	Not Applicable.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	These projects are non-controllable and are a requirement of the Public Service Works on Highways Act R.S.O. 1990, Chapter. 49
	Alternative #1	Not applicable
	Alternative #2	Not Applicable
	Justification for Recommended Alternative	The Region's and local Municipalities requires PowerStream to relocate the distribution system to accomodate road works. These projects are non-controllable and the scope is defined and determined by the limits and amount of road work / road widening being done by the Municipality.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The timing and schedule of the road projects is non-controllable and based on the road projects being advanced by the Municipalities. The scope and timing of the projects are driven by the Municipalities. Planned road projects may be advanced or deferred within a calendar year based on various constraints such as budget, or based on political pressures, economic development, traffic flow, etc.
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Factors Relating to Customer Preferences or Input	The scope and timing of the projects are driven by the Municipalities. Planned road projects may be advanced or deferred within a calendar year based on various constraints such as budget, or based on political pressures, economic development, traffic flow, etc.
	Factors Affecting the Final Cost of the Project	These projects are non-controllable and the scope is defined and determined by the limits and amount of road work / road widening being done by the Municipality.
	How Controlled Costs have been Minimized	Construction service is provided by PowerStream and its contractor. PowerStream's contractor was selected through a competitive RFP process which provides best costs and cost certainty.
	Identify if Other Planning Objectives are Met by the Project, if so, which ones	Not Applicable
	Results of Final Economic Evaluation, if applicable	Not Applicable.
	System Impacts (Nature, Magnitude and Costs)	These projects are non-controllable and the scope is defined and determined by the limits and amount of road work / road widening being done by the Municipality.



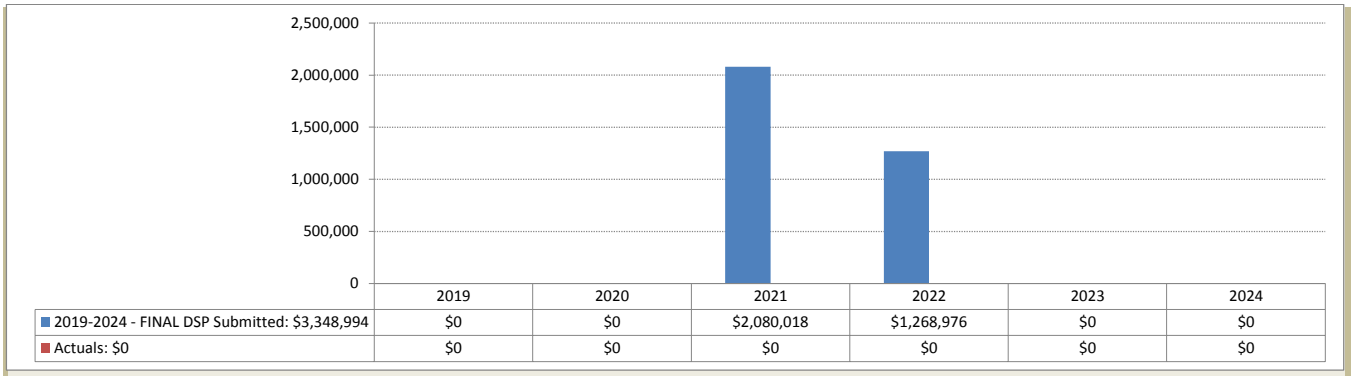
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $8,431,920	$5,025,805	$3,406,115	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150351	
Project Name	Voltage Conversion - Aberdeen MS, Hamilton	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Hamilton
	Location	Hamilton
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Overhead Asset Renewal
	Alectra Subcategory	Voltage Conversion
4. Evaluation Criteria (OEB)	Project Summary	This project is addressing the renewal of assets served by Aberdeen MS in Hamilton. Currently the station supplies customers at a primary voltage of 4kV from an indoor municipal substation. As part of the renewal of feeder assets, the equipment will be replaced with similar equipment rated for 13.8kV. This will allow the municipal substation assets to be bypassed, thereby avoiding the cost to refurbish station assets in the future. Aberdeen MS and Central MS share inter-ties and have been scheduled to undergo voltage conversion together to sustain operational capability. This project is a continuation of an ongoing conversion at Aberdeen MS started in 2016.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	This project mainly addresses aging assets at the station and on the feeders by performing a renewal of the assets and converting the voltage to a higher class, thereby avoiding any future costs in upgrading the municipal substation and associated equipment. The asset condition assessment indicate that the breakers are in Poor or Very Poor condition. The priority assets determining the voltage conversion are the substation assets as failure of a critical component, such as the switchgear bus, can cause a major outage for an extensive timeframe impacting a large number of customers. Furthermore due to system design and construction in the 1950's, feeder redundancy is minimal and loss of a station would result in stranded load and increased cost as generators would be required The legacy substation equipment is •No longer supported by the manufacturer; •Parts are difficult to come by or must be custom made; •Difficult or costly to maintain; •Functional and Operational Obsolesces; (e.g. safety restrictions on operation circuit breakers) •Unable to meet current safety standards (e.g., switchgears that are not arc resistance); •Unable to meet current performance standards Feeder Assets Since there is large population of feeder assets, the condition of feeder assets is diverse. While the overall condition shows the average, as diverse populations masking the impact of deteriorated assets. If the Voltage Conversion projects were not to proceed, significant renewal investments would still be required to renew these deteriorated assets as part of the Overhead Renewal investment.
	Customer Attachment / Load (KVA)	5000 kVA and 3100 customers.
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	New construction built to current standards, coordination with joint-use tenants, coordination with the municipality.
	Economic Development	Not applicable.
	Environmental Benefits	Lower line losses due to conversion to higher voltage class.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Under the status quo option, Alectra Utilities would only replace these legacy assets should they fail reactively. Under this scenario, there would be no opportunity to convert these assets to the standardized voltage levels, as assets would have to be replaced in a like-for-like manner. Replacing assets reactively tends to lead to the highest per-unit cost, and greatest impact to customer outage times. Furthermore, the reliability and safety risks associated with this infrastructure would continue to persist. Alectra Utilities would also be required to continue to maintain, and possibly replace or upgrade the legacy substations that supply these lower voltage levels, as the breaker assets have reached functional obsolescence and there are no parts available.

	Alternative #1	Like-for-like replacement of existing assets with new assets at the same voltage ratings. Under the like-for-like replacement option, existing 4 kV infrastructure would be replaced with 4 kV infrastructure respectively. This approach is very similar to the status quo option, with the exception that customer outages can be avoided by replacing assets before they fail. By planning ahead to perform the replacements, the added benefit of like-for-like over the status quo is lower per-unit costs given that multiple assets can be addressed at a time. However, by keeping these system voltages intact, the functional obsolescence issues associated with these assets will continue to persist and eventually significant substation investments will be required. Should a future outage occur, it will likely be longer and create a larger customer impact, due to the lack of contingency options available at these voltage levels.
	Alternative #2	Full conversion of the lines to new 13 kV primary system voltages This alternative proposes to renew the assets in the area while also proceeding with voltage conversion to a higher voltage class for the equipment. Other benefits include taking the opportunity to redesign the feeder configuration to provide improved reliability where possible by creating loops where none exist today as well as converting rear lot supply to front lot. This alternative also provides value in the form of avoided costs to rebuild the existing 4kV substation assets.
	Justification for Recommended Alternative	Like-for-like or reactive replacement does not prove to be as economical on a large scale renewal project with numerous assets affected. 13.8kV equipment are standard stock items in many cases and can result in savings over the 4kV equivalent. Reduced O&M costs and lower line losses due to the elimination of substation assets, improvements to the system configuration for greater operability and reliability are considered some of the incremental benefits. The full conversion option presents the best value long-term by having conversion completed in a planned manner while also avoiding the substation investment costs, as well as benefits to the operability of the system, which ultimately benefits the customers. For those reasons, Alectra Utilities selected this approach.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable.
	Comparative Information on Equivalent Historical Projects (if any)	2019 project spending budgeted for Aberdeen MS is ~$1.9 MM. Typically voltage conversion project phases have been budgeted for $2MM-$2.5MM depending on how urbanized the area impacted is composed.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	The two substations servicing the downtown Hamilton operating area service a total of 7,400 customers and were constructed in 1950 and 1960. The overall Station Health Index for Aberdeen and Central substations is 53% and 56% respectively. The switchgear at the Aberdeen substation is 40 years old; Kinectrics determined its effective age is 54 years old. Kinectrics analysis determined that the failure for this switchgear will likely occur within five years. Aberdeen substation, which services 2,600 customers, has inadequate backup for all feeders. The failure of the switchgear at this substation will leave customers without power or subject them to rotating blackouts.
	Condition of Asset vs. Typical Life Cycle and Performance Record Number of Customers in Each Customer Class Potentially Affected by Asset Failure	Generally the 4kV assets are of the oldest vintage in the system. The asset condition assessment indicate that the breakers are in Poor or Very Poor condition. 3100
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Aberdeen MS 3 year stats (2014 - 2017): 16 outages, 498,235 customer minutes (54 minutes/customer/year)
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	This project will address aging assets with inadequate backup. Aging assets represent an increased risk of service interruption to customers and inadequate backup would result in long duration service interruptions upon occurrence. These factors would lead to customer dissatisfaction in this area.
	Value of Customer Impact	Low
	Factors Affecting Project Timing, if any	Not applicable.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not implementing the project would negate any O&M benefit gained by removing a substation from service. Considered a critical component of the distribution system, a typical substation requires monthly inspections and upkeep to ensure reliable operation.
	Reliability and Safety Factors	The benefits to reliability are in the renewal of the aging assets, as well as an opportunity to reconfigure any parts of the feeder that carry a higher risk for an outage (i.e. rear lot supply). There is also an opportunity to implement remote-operable devices to assist in operability of the system in the area affected. Safety benefits are captured in the renewal work being built to current construction standards, providing better working clearances and ergonomics.
	Analysis for "Like for Like" Renewal Project	The like-for-like renewal of these assets (i.e. same system configuration and same distribution voltage) will perpetuate the existing operating constraints and require capital investment to renew substation assets. Renewal of the distribution assets at a higher voltage does not involve any material incremental costs over renewal at the existing voltage. Operating constraints (e.g. undersized conductor, radial feeds) are addressed on a case by case basis where appropriate.



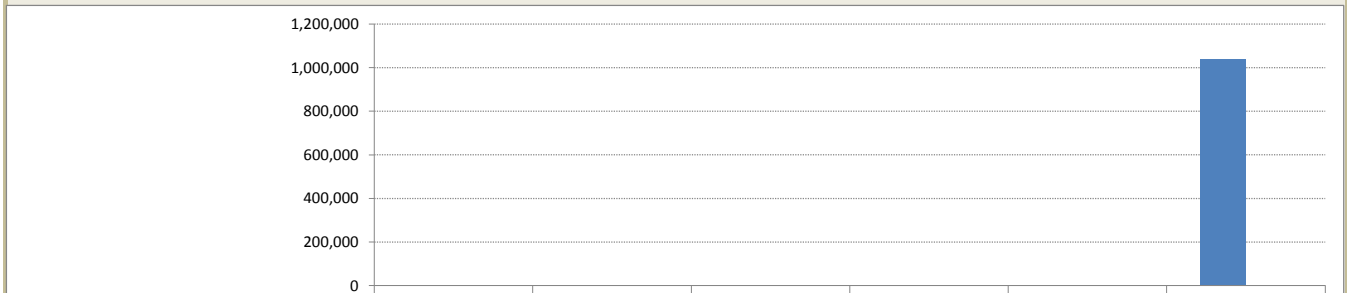
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $3,348,994	$0	$0	$2,080,018	$1,268,976	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150353	
Project Name	Truscott Plaza - Additional capacity, Mississauga	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	The area North and South of Truscott Dr at the intersections of Bodmin Rd, and Seagull Dr.
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	Convert the Truscott Plaza area from 4.16kV to 27.6kV through the installation of a main feeder, switch gear, and 1/0 loops. Existing comercial customers connected to radial 4.16kV systems are converting to looped 27.6kV. In a previous section, a 27.6kV feeder was extended to a new switch gear north of the Truscott Dr and Seagull Dr intersection. New routing will extend 1/0 cables to replace failing cables and provide contingency to customers on Truscott Dr, Bodmin Rd, and Seagull Dr. Section 1: Bring 27.6kV circuit down Sandgate Cres. to switch gear in Plaza (Complete) Section 2: Extend 1/0 up Bodmin Dr. to connect customers west of Bodmin. Section 3: Connect customers east of Bodmin Section 4: Connect customers south of Truscott on Seagull Dr.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	This project addresses aging assets, radial connections, and capacity supply ability by performing a renewal of the assets and converting the voltage to a higher class, thereby avoiding any future costs in upgrading the associated equipment. The asset condition assessment indicates that switchgear are in poor condition. The priority assets determining the voltage conversion are the switchgear and feeders as failure can cause a major outage for an extensive timeframe, particularly given radial connections. Feeder Assets Since there is large population of feeder assets, the condition of feeder assets is diverse. While the overall condition shows the average, as diverse populations masking the impact of deteriorated assets. If the Voltage Conversion projects were not to proceed, significant renewal investments would still be required to renew these deteriorated assets as part of other investments. Radial customers will be given N-1 contingency. 4 existing switch gear will be removed, with the addition of 1 new gear. 2 of these gear pose higher collision hazard as they are located on intersection boulevards.
	Customer Attachment / Load (KVA)	4.16kV voltage does not provide service size for growing energy demands. Counted Capacity of the plaza customers: 4530kVA.
	Safety	Modern equipment reduces safety risks associated with older aging equipment. Current switchgear pose higher collision hazard due to location.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Not Applicable
	Economic Development	Alectra Utilities prioritizes and paces voltage conversion projects based on needs, values and risk identified in business case for each area. The overall pacing has been determined by taking into consideration the following factors •Asset Condition – Station •Asset Age •System Configuration and Capacity •Co-ordination with other Capital and Maintenance Work Programs •Criticality and Customer Impact Alectra Utilities utilizes a multi-variable capital investment optimization tool (Copper Leaf C55) to optimize projects based on values and risk across the entire capital investment portfolio for the DSP period. The projects identified are optimized based on the available funding and the values and risk in the given year.
	Environmental Benefits	Lower line losses due to conversion to higher voltage class.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Status Quo / Run to Failure Under the status quo option, Alectra Utilities would only replace these legacy assets should they fail reactively. Under this scenario, there would be no opportunity to convert these assets to the standardized voltage levels, as assets would have to be replaced in a like-for-like manner. Replacing assets reactively tends to lead to the highest per-unit cost, and greatest impact to customer outage times. Furthermore, the reliability and safety risks associated with this infrastructure would continue to persist. Alectra Utilities would also be required to continue to maintain, and possibly replace or upgrade the legacy substations that supply these lower voltage levels, as many of the breaker assets have reached functional obsolescence and there are no parts available. This is not the recommended alternative.
	Alternative #1	Like-for-like replacement of existing assets with new assets at the same voltage ratings Under the like-for-like replacement option, existing 4.16 kV infrastructure would be replaced with new 4.16 kV infrastructure respectively. This approach is very similar to the status quo option, with the exception that customer outages can be avoided by replacing assets before they fail. By planning ahead to perform the replacements, the added benefit of like-for-like over the status quo is lower per-unit costs given that multiple assets can be addressed at a time. However, by keeping these system voltages intact, the functional obsolescence issues associated with these assets will continue to persist and eventually significant substation investments will be required. Should a future outage occur, it will likely be longer and create a larger customer impact, due to the lack of contingency options available at these voltage levels. This is not the recommended alternative.
	Alternative #2	Full conversion of the lines to new 27.6 kV primary system voltage Renewal investments already would need to be undertaken based on the asset health condition for many of the station assets, poles and distribution transformers. Under this alternative, assets will be aligned to modern standards and practices. Unification of voltage levels across large sections of the system further improves the operability and should lead to reliability gains. Converting to higher-voltages will also create opportunities for Alectra Utilities to reconfigure the grid to add new switching points and automation, and to phase-out trouble areas like rear-lot construction. These improvements will allow Alectra Utilities to improve service to customers by conducting isolation, sectionalizing and restoration activities much faster. This is the recommended alternative.
	Justification for Recommended Alternative	The full conversion option presents the best value long-term by having conversion completed in a planned manner while also avoiding the substation investment costs, as well as benefits to the operability of the system, which ultimately benefits the customers.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Halting voltage conversion would result in the loss of any additional benefits such as: •Reduction in OPEX costs (from eliminated station maintenance); •Increased reliability from feeder ties at 13.8 kV for both 4 kV customers and customers already on 13.8 kV feeders; •Automation (reduction in outage duration) for legacy 4 kV customers and some 13.8 kV customers; •Reduction in reactive costs triggered by asset failure; and •Reduction in line losses. • If Alectra were to renew the deteriorated lower-voltage assets without converting to a higher voltage, it would lose the opportunity to economically transition to higher voltage equipment for a long period. • Rear lot equipment will be more difficult for both inspection and servicing.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable
	Identify any reliability, efficiency, safety or coordination benefits	Since there are a large population of feeder assets, the condition of feeder assets tends to be diverse. While the overall condition shows the average, this can be a case of diverse populations masking the impact of deteriorated assets. If the Voltage Conversion projects were not to proceed, significant renewal investments would still be required to renew these deteriorated assets as part of the Overhead Renewal investment. Even if the assets in the worst condition were replaced, the rest of the system would continue to deteriorate and continue to pose reliability risk and eventually need to be replaced.



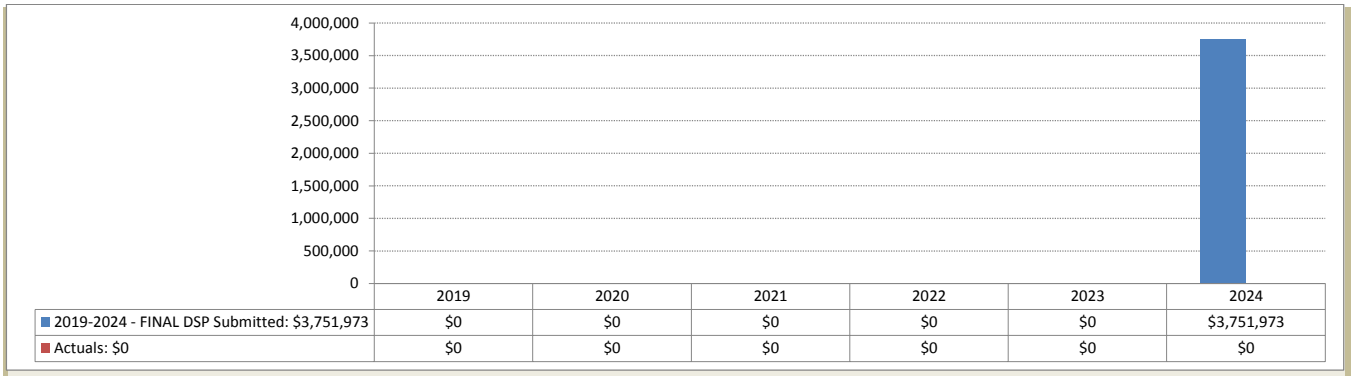
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,039,592	$0	$0	$0	$0	$0	$1,039,592
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150354	
Project Name	Voltage Conversion - Eastmount MS, Hamilton	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Hamilton
	Location	Hamilton, East Hamilton Mountain area
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Overhead Asset Renewal
	Alectra Subcategory	Voltage Conversion
4. Evaluation Criteria (OEB)	Project Summary	This project is addressing the renewal of assets served by Eastmount MS in Hamilton. Currently the station supplies customers at a primary voltage of 4kV from an indoor municipal substation. As part of the renewal of feeder assets, the equipment will be replaced with similar equipment rated for 13.8kV. This will allow the municipal substation assets to be bypassed, thereby avoiding the cost to refurbish station assets in the future.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	This project mainly addresses aging assets at the station and on the feeders by performing a renewal of the assets and converting the voltage to a higher class, thereby avoiding any future costs in upgrading the municipal substation and associated equipment. The asset condition assessment indicate that the Switchgear is in Fair condition and the breakers are in Poor or Very Poor condition. The priority assets determining the voltage conversion are the substation assets as failure of a critical component, such as the switchgear bus, can cause a major outage for an extensive timeframe impacting a large number of customers. Furthermore due to system design and construction in the 1950's, feeder redundancy is minimal and loss of a station would result in stranded load and increased cost as generators would be required The legacy substation equipment is •No longer supported by the manufacturer; •Parts are difficult to come by or must be custom made; •Difficult or costly to maintain; •Functional and Operational Obsolesces; (e.g. safety restrictions on operation circuit breakers) •Unable to meet current safety standards (e.g., switchgears that are not arc resistance); •Unable to meet current performance standards Feeder Assets Since there is large population of feeder assets, the condition of feeder assets is diverse. While the overall condition shows the average, as diverse populations masking the impact of deteriorated assets. If the Voltage Conversion projects were not to proceed, significant renewal investments would still be required to renew these deteriorated assets as part of the Overhead Renewal investment.
	Customer Attachment / Load (KVA)	20,348 kVA and 5812 customers.
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	New construction built to current standards, coordination with joint-use tenants, coordination with the municipality.
	Economic Development	Not applicable.
	Environmental Benefits	Lower line losses due to conversion to higher voltage class.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Under the status quo option, Alectra Utilities would only replace these legacy assets should they fail reactively. Under this scenario, there would be no opportunity to convert these assets to the standardized voltage levels, as assets would have to be replaced in a like-for-like manner. Replacing assets reactively tends to lead to the highest per-unit cost, and greatest impact to customer outage times. Furthermore, the reliability and safety risks associated with this infrastructure would continue to persist. Alectra Utilities would also be required to continue to maintain, and possibly replace or upgrade the legacy substations that supply these lower voltage levels, as the breaker assets have reached functional obsolescence and there are no parts available.

	Alternative #1	Like-for-like replacement of existing assets with new assets at the same voltage ratings. Under the like-for-like replacement option, existing 4.16 kV infrastructure would be replaced with 4.16 kV infrastructure respectively. This approach is very similar to the status quo option, with the exception that customer outages can be avoided by replacing assets before they fail. By planning ahead to perform the replacements, the added benefit of like-for-like over the status quo is lower per-unit costs given that multiple assets can be addressed at a time. However, by keeping these system voltages intact, the functional obsolescence issues associated with these assets will continue to persist and eventually significant substation investments will be required. Should a future outage occur, it will likely be longer and create a larger customer impact, due to the lack of contingency options available at these voltage levels.
	Alternative #2	Full conversion of the lines to new 13.8 kV primary system voltages This alternative proposes to renew the assets in the area while also proceeding with voltage conversion to a higher voltage class for the equipment. Other benefits include taking the opportunity to redesign the feeder configuration to provide improved reliability where possible by creating loops where none exist today as well as converting rear lot supply to front lot. This alternative also provides value in the form of avoided costs to rebuild the existing 4kV substation assets.
	Justification for Recommended Alternative	Like-for-like or reactive replacement does not prove to be as economical on a large scale renewal project with numerous assets affected. 13.8kV equipment are standard stock items in many cases and can result in savings over the 4kV equivalent. Reduced O&M costs and lower line losses due to the elimination of substation assets, improvements to the system configuration for greater operability and reliability are considered some of the incremental benefits. The full conversion option presents the best value long-term by having conversion completed in a planned manner while also avoiding the substation investment costs, as well as benefits to the operability of the system, which ultimately benefits the customers. For those reasons, Alectra Utilities selected this approach.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Historical projects that compare would be from other similar voltage conversion projects undertaken as part of the 4kV/8kV Renewal Program. These projects typically fall within a range of $2MM - $2.5MM per year for the life of the project.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Eastmount and Elmwood municipal substations, originally built in the late 1950's on the Hamilton Mountain, are both 4kV stations that serve over 9000 customers in areas that are geographically constrained by the escarpment and are bordered by 13kV feeders. There are some feeders from these stations which feature rear-lot construction, and generally the overhead construction is on old crossarms. The substations are fitted with older electromechanical relays. By bundling the voltage conversion along with the renewal of rear lot assets, greater cost efficiencies can be gained. As well, some savings can be realized by not rebuilding the station, as there would be needed investments at these stations in the near term otherwise.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Generally the 4kV assets are of the oldest vintage in the system. The asset condition assessment indicate that the Switchgear is in Fair condition and the breakers are in Poor or Very Poor condition. There have been several issues with failing electromechanical relays at this station in recent years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	5812
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Eastmount MS 3 year stats (2014 - 2017): 43 outages, 1,997,706 customer minutes (114.5 minutes/customer/year)
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	This project will address aging assets with inadequate backup. Aging assets represent an increased risk of service interruption to customers and inadequate backup would result in long duration service interruptions upon occurrence. These factors would lead to customer dissatisfaction in this area.
	Value of Customer Impact	Low
	Factors Affecting Project Timing, if any	Not applicable.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not implementing the project would negate any O&M benefit gained by removing a substation from service. Considered a critical component of the distribution system, a typical substation requires monthly inspections and upkeep to ensure reliable operation.
	Reliability and Safety Factors	The benefits to reliability are in the renewal of the aging assets, as well as an opportunity to reconfigure any parts of the feeder that carry a higher risk for an outage (i.e. rear lot supply). There is also an opportunity to implement remote-operable devices to assist in operability of the system in the area affected. Safety benefits are captured in the renewal work being built to current construction standards, providing better working clearances and ergonomics.
	Analysis for "Like for Like" Renewal Project	The like-for-like renewal of these assets (i.e. same system configuration and same distribution voltage) will perpetuate the existing operating constraints and require capital investment to renew substation assets. Renewal of the distribution assets at a higher voltage does not involve any material incremental costs over renewal at the existing voltage. Operating constraints (e.g. undersized conductor, radial feeds) are addressed on a case by case basis where appropriate.



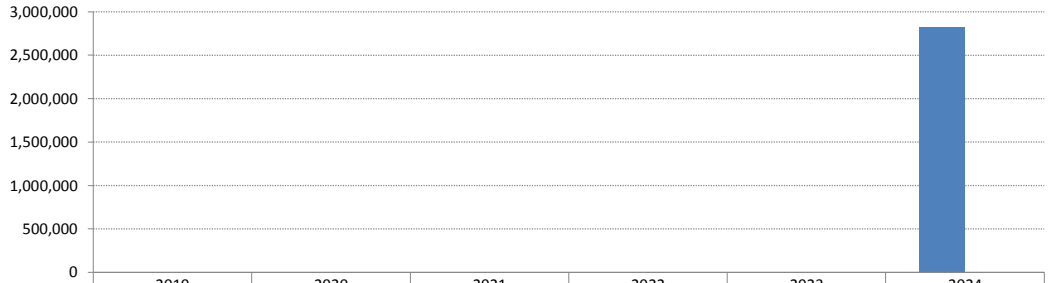
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $3,751,973	$0	$0	$0	$0	$0	$3,751,973
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150355	
Project Name	Voltage Conversion - Elmwood MS, Hamilton	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Hamilton
	Location	Hamilton, West Hamilton Mountain area
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Overhead Asset Renewal
	Alectra Subcategory	Voltage Conversion
4. Evaluation Criteria (OEB)	Project Summary	This project is addressing the renewal of assets served by Elmwood MS in Hamilton. Currently the station supplies customers at a primary voltage of 4kV from an indoor municipal substation. As part of the renewal of feeder assets, the equipment will be replaced with similar equipment rated for 13.8kV. This will allow the municipal substation assets to be bypassed, thereby avoiding the cost to refurbish station assets in the future.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	This project mainly addresses aging assets at the station and on the feeders by performing a renewal of the assets and converting the voltage to a higher class, thereby avoiding any future costs in upgrading the municipal substation and associated equipment. The asset condition assessment indicate that the Switchgear is in Fair condition and the breakers are in Poor condition. The priority assets determining the voltage conversion are the substation assets as failure of a critical component, such as the switchgear bus, can cause a major outage for an extensive timeframe impacting a large number of customers. Furthermore due to system design and construction in the 1950's, feeder redundancy is minimal and loss of a station would result in stranded load and increased cost as generators would be required The legacy substation equipment is •No longer supported by the manufacturer; •Parts are difficult to come by or must be custom made; •Difficult or costly to maintain; •Functional and Operational Obsolesces; (e.g. safety restrictions on operation circuit breakers) •Unable to meet current safety standards (e.g., switchgears that are not arc resistance); •Unable to meet current performance standards Feeder Assets Since there is large population of feeder assets, the condition of feeder assets is diverse. While the overall condition shows the average, as diverse populations masking the impact of deteriorated assets. If the Voltage Conversion projects were not to proceed, significant renewal investments would still be required to renew these deteriorated assets as part of the Overhead Renewal investment.
	Customer Attachment / Load (KVA)	12,429 kVA and 3570 customers.
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	New construction built to current standards, coordination with joint-use tenants, coordination with the municipality.
	Economic Development	Not applicable.
	Environmental Benefits	Lower line losses due to conversion to higher voltage class.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Under the status quo option, Alectra Utilities would only replace these legacy assets should they fail reactively. Under this scenario, there would be no opportunity to convert these assets to the standardized voltage levels, as assets would have to be replaced in a like-for-like manner. Replacing assets reactively tends to lead to the highest per-unit cost, and greatest impact to customer outage times. Furthermore, the reliability and safety risks associated with this infrastructure would continue to persist. Alectra Utilities would also be required to continue to maintain, and possibly replace or upgrade the legacy substations that supply these lower voltage levels, as the breaker assets have reached functional obsolescence and there are no parts available.
	Alternative #1	Like-for-like replacement of existing assets with new assets at the same voltage ratings. Under the like-for-like replacement option, existing 4.16 kV infrastructure would be replaced with 4.16 kV infrastructure respectively. This approach is very similar to the status quo option, with the exception that customer outages can be avoided by replacing assets before they fail. By planning ahead to perform the replacements, the added benefit of like-for-like over the status quo is lower per-unit costs given that multiple assets can be addressed at a time. However, by keeping these system voltages intact, the functional obsolescence issues associated with these assets will continue to persist and eventually significant substation investments will be required. Should a future outage occur, it will likely be longer and create a larger customer impact, due to the lack of contingency options available at these voltage levels.

	Alternative #2	Full conversion of the lines to new 13.8 kV primary system voltages This alternative proposes to renew the assets in the area while also proceeding with voltage conversion to a higher voltage class for the equipment. Other benefits include taking the opportunity to redesign the feeder configuration to provide improved reliability where possible by creating loops where none exist today as well as converting rear lot supply to front lot. This alternative also provides value in the form of avoided costs to rebuild the existing 4kV substation assets.
	Justification for Recommended Alternative	Like-for-like or reactive replacement does not prove to be as economical on a large scale renewal project with numerous assets affected. 13.8kV equipment are standard stock items in many cases and can result in savings over the 4kV equivalent. Reduced O&M costs and lower line losses due to the elimination of substation assets, improvements to the system configuration for greater operability and reliability are considered some of the incremental benefits. The full conversion option presents the best value long-term by having conversion completed in a planned manner while also avoiding the substation investment costs, as well as benefits to the operability of the system, which ultimately benefits the customers. For those reasons, Alectra Utilities selected this approach.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Historical projects that compare would be from other similar voltage conversion projects undertaken as part of the 4kV/8kV Renewal Program. These projects typically fall within a range of $2MM - $2.5MM per year for the life of the project.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Eastmount and Elmwood municipal substations, originally built in the late 1950's on the Hamilton Mountain, are both 4kV stations that serve over 9000 customers in areas that are geographically constrained by the escarpment and are bordered by 13kV feeders. There are some feeders from these stations which feature rear-lot construction, and generally the overhead construction is on old crossarms. The substations are fitted with older electromechanical relays. By bundling the voltage conversion along with the renewal of rear lot assets, greater cost efficiencies can be gained. As well, some savings can be realized by not rebuilding the station, as there would be needed investments at these stations in the near term otherwise.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Generally the 4kV assets are of the oldest vintage in the system. The asset condition assessment indicate that the Switchgear is in Fair condition and the breakers are in Poor condition. There have been several issues with failed electromechanical relays in recent years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	3570
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Elmwood MS 3 year stats (2014 - 2017); 22 outages, 27,912 customer minutes (2.6 minutes/customer/year)
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	This project will address aging and poor condition assets with inadequate backup. Poor condition assets represent an increased risk of service interruption to customers and inadequate backup would result in long duration service interruptions upon occurrence. These factors would lead to customer dissatisfaction in this area.
	Value of Customer Impact	Low
	Factors Affecting Project Timing, if any	Not applicable.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not implementing the project would negate any O&M benefit gained by removing a substation from service. Considered a critical component of the distribution system, a typical substation requires monthly inspections and upkeep to ensure reliable operation.
	Reliability and Safety Factors	The benefits to reliability are in the renewal of the aging assets, as well as an opportunity to reconfigure any parts of the feeder that carry a higher risk for an outage (i.e. rear lot supply). There is also an opportunity to implement remote-operable devices to assist in operability of the system in the area affected. Safety benefits are captured in the renewal work being built to current construction standards, providing better working clearances and ergonomics.
	Analysis for "Like for Like" Renewal Project	The like-for-like renewal of these assets (i.e. same system configuration and same distribution voltage) will perpetuate the existing operating constraints and require capital investment to renew substation assets. Renewal of the distribution assets at a higher voltage does not involve any material incremental costs over renewal at the existing voltage. Operating constraints (e.g. undersized conductor, radial feeds) are addressed on a case by case basis where appropriate.



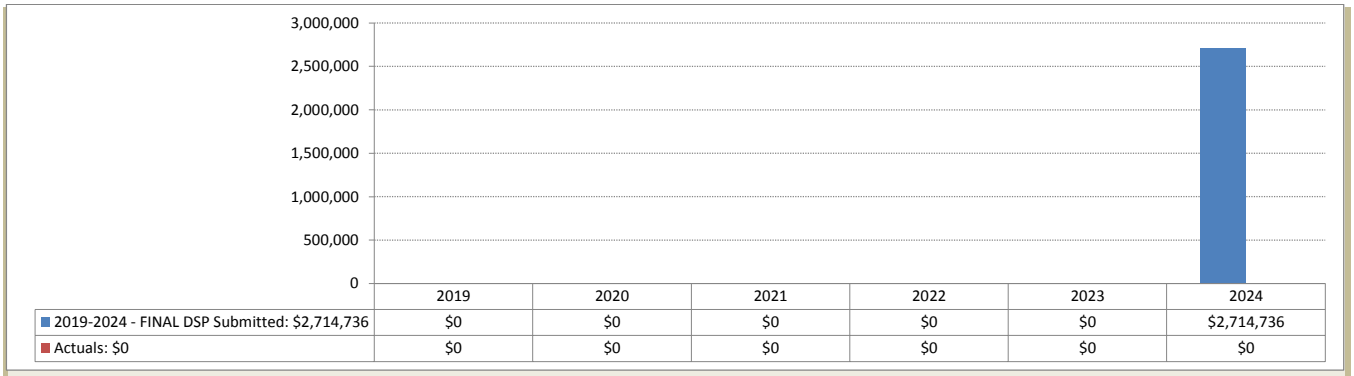
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $2,819,597	$0	$0	$0	$0	$0	$2,819,597
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150356	
Project Name	Voltage Conversion - Clarkson Area, Mississauga	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	Section1: Conversion along Constable Rd & Bodley Rd Section 2-4: The townhomes are located south of Bromsgrove Rd between Tredmore Dr and Seagull Dr.
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Overhead Asset Renewal
	Alectra Subcategory	Voltage Conversion
4. Evaluation Criteria (OEB)	Project Summary	Clarkson Bromsgrove Area 11 in southern Mississauga conversion from 4.16kV to 27.6kV. Rear lot underground single phase 1/0 4.16kV cables, single phase pad mount transformers, and switch gear will be removed and replaced with 27.6kV infrastructure on the boulevards. Townhome equipment will be placed on blanket easements. Section1: Conversion along Constable Rd & Bodley Rd The townhomes are located south of Bromsgrove Rd between Tredmore Dr and Seagull Dr. Section 2: Townhomes (East) Section 3: Townhomes (Central) Section 4: Townhomes (West)
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	The purpose of the planned Voltage Conversion investment is to create long-term value for Alectra Utilities and its customers by replacing deteriorated 4.16 kV distribution assets with modern, higher-voltage equipment. The lower-voltage substation assets that will be replaced through Voltage Conversion investments are the oldest in the distribution system and must be renewed in the DSP period. By decommissioning these assets and converting the system to a higher-voltage equipment that meets present-day safety and performance standards, Alectra Utilities can mitigate the failure and safety risks and improve system resilience and gain efficiencies.
	Customer Attachment / Load (KVA)	Existing kVA of installed transformers: 525 kVA at Constable Rd & Bodley Rd section. 2035 kVA at Townhomes in 3 single phase circuits. 2560kVA Total
	Safety	Rear lot infrastructure poses a safety risk as customers are in closer proximity to equipment. Modern equipment reduces safety risks associated with older aging equipment.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Not Applicable
	Economic Development	Alectra Utilities prioritizes and paces voltage conversion projects based on needs, values and risk identified in business case for each area. The overall pacing has been determined by taking into consideration the following factors •Asset Condition – Station •Asset Age •System Configuration and Capacity •Co-ordination with other Capital and Maintenance Work Programs •Criticality and Customer Impact Alectra Utilities utilizes a multi-variable capital investment optimization tool (Copper Leaf C55) to optimize projects based on values and risk across the entire capital investment portfolio for the DSP period. The projects identified are optimized based on the available funding and the values and risk in the given year.
	Environmental Benefits	Conversion to 27.6kV from 4.16kV will result in less line losses on the circuits. Leaking transformers in backyards pose a larger cost to remediate.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Status Quo / Run to Failure Under the status quo option, Alectra Utilities would only replace these legacy assets should they fail reactively. Under this scenario, there would be no opportunity to convert these assets to the standardized voltage levels, as assets would have to be replaced in a like-for-like manner. Replacing assets reactively tends to lead to the highest per-unit cost, and greatest impact to customer outage times. Furthermore, the reliability and safety risks associated with this infrastructure would continue to persist. Alectra Utilities would also be required to continue to maintain, and possibly replace or upgrade the legacy substations that supply these lower voltage levels, as many of the breaker assets have reached functional obsolescence and there are no parts available. This is not the recommended alternative.

	Alternative #1	Like-for-like replacement of existing assets with new assets at the same voltage ratings Under the like-for-like replacement option, existing 4.16 kV infrastructure would be replaced with new 4.16 kV infrastructure respectively. This approach is very similar to the status quo option, with the exception that customer outages can be avoided by replacing assets before they fail. By planning ahead to perform the replacements, the added benefit of like-for-like over the status quo is lower per-unit costs given that multiple assets can be addressed at a time. However, by keeping these system voltages intact, the functional obsolescence issues associated with these assets will continue to persist and eventually significant substation investments will be required. Should a future outage occur, it will likely be longer and create a larger customer impact, due to the lack of contingency options available at these voltage levels. This is not the recommended alternative.
	Alternative #2	Full conversion of the lines to new 27.6 kV primary system voltage Renewal investments already would need to be undertaken based on the asset health condition for many of the station assets, poles and distribution transformers. Under this alternative, assets will be aligned to modern standards and practices. Unification of voltage levels across large sections of the system further improves the operability and should lead to reliability gains. Converting to higher-voltages will also create opportunities for Alectra Utilities to reconfigure the grid to add new switching points and automation, and to phase-out trouble areas like rear-lot construction. These improvements will allow Alectra Utilities to improve service to customers by conducting isolation, sectionalizing and restoration activities much faster. This is the recommended alternative.
	Justification for Recommended Alternative	The full conversion option presents the best value long-term by having conversion completed in a planned manner while also avoiding the substation investment costs, as well as benefits to the operability of the system, which ultimately benefits the customers.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Operational issues with rear lot construction on some feeders, and direct buried cables. Old 4.16kV structure is located in rear lots, causing difficult access for equipment replacement.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Underground 1/0 cables in rear lot of Constable Dr are over 47 years old (1971) . Underground 1/0 cables at the town homes are over 31 years old (1987).
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	422
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Feeder Faults 2015 - 2017 40F1 - 1320 Customer Hours 40F4- 0.5 Customer Hours 41F4 - 207 Customer Hours
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Customer dissatisfaction will be mitigated by not tearing up backyards and removing transformers from rear lots.
	Value of Customer Impact	Low
	Factors Affecting Project Timing, if any	Not Applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	Halting voltage conversion would result in the loss of any additional benefits such as: •Reduction in OPEX costs (from eliminated station maintenance); •Increased reliability from feeder ties at 13.8 kV for both 4 kV customers and customers already on 13.8 kV feeders; •Automation (reduction in outage duration) for legacy 4 kV customers and some 13.8 kV customers; •Reduction in reactive costs triggered by asset failure; and •Reduction in line losses. • If Alectra were to renew the deteriorated lower-voltage assets without converting to a higher voltage, it would lose the opportunity to economically transition to higher voltage equipment for a long period. • Rear lot equipment will be more difficult for both inspection and servicing.
	Reliability and Safety Factors	Since there are a large population of feeder assets, the condition of feeder assets tends to be diverse. While the overall condition shows the average, this can be a case of diverse populations masking the impact of deteriorated assets. If the Voltage Conversion projects were not to proceed, significant renewal investments would still be required to renew these deteriorated assets as part of the Overhead Renewal investment. Even if the assets in the worst condition were replaced, the rest of the system would continue to deteriorate and continue to pose reliability risk and eventually need to be replaced.
	Analysis for "Like for Like" Renewal Project	Like-for-like renewal of lower-voltage assets would increase Alectra Utilities' stations capital requirements during the first three years of the DSP period by approximately $22M. If Alectra Utilities decided to take an opportunistic approach, where only during rebuilds would conversion take place, in a piece-meal style approach, this would actually introduce more risk to customers. Stations in general are normally backed up by one or more stations in the same geographical area. Similarly feeders themselves are also backed up by other feeders in the surrounding geographical area. Removing any feeder as part of a rebuild could create gaps in the resiliency of the network and increase the risk and exposure to the remaining customers to prolonged outages.



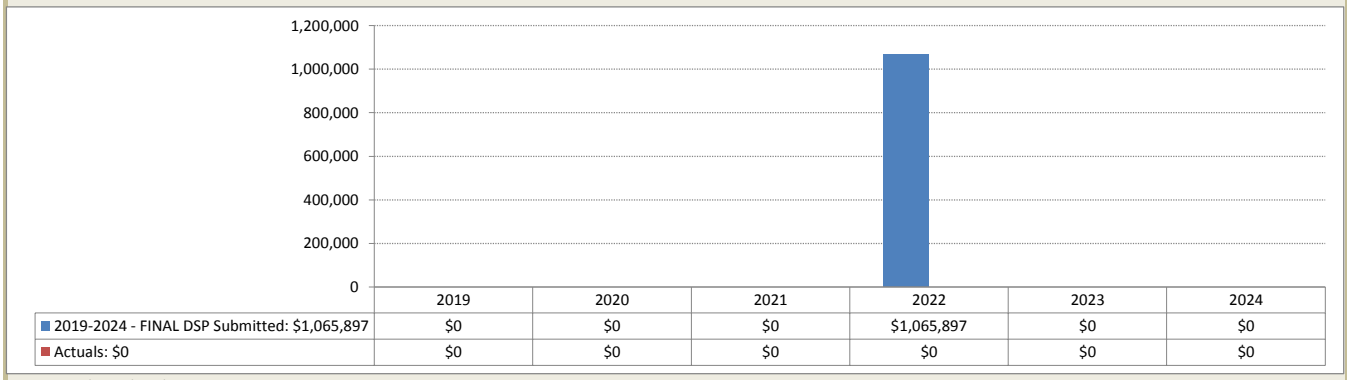
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $2,714,736	$0	$0	$0	$0	$0	$2,714,736
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150358	
Project Name	New build - QEW Dixie West New OH Circuits, Mississauga	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	Queen Elizabeth Way crossing at Stanfield Rd and Ogden Ave.
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	QEW highway crossing Additional 27.6kV circuits. Added betterment coordinated with the QEW Expansion along Dixie West OH Relocate. MTO driven expansion project D07-367911. Incremental betterment portion to add additional 27.6kV lines crossing the QEW. QEW Stanfield Rd. crossing: 1 circuit to 4 circuits. QEW Ogden Ave. crossing: 2 circuits to 4 circuits.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	This Lines Capacity investments is driven primarily by the intensification and redevelopment of the surrounding areas where existing supply is insufficient to meet the increased demand. Coordination with the existing rebuild project will make the incremental crossings addition much easier.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Alectra Utilities is required to ensure its distribution system can support projected load growth while maintaining reliability and quality of service for customers on both a short-term and long-term basis, as required by the Distribution System Code (DSC). Alectra Utilities must also connect new customers within the timelines prescribed by the OEB's service quality standards without adversely affecting the quality and safety of service to existing customers.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	To maximize the efficiency of the planned work, the Lines Capacity investments are coordinated with other infrastructure projects planned by local authorities. By coordinating Alectra Utilities' expansion and renewal plans with municipal and regional authorities' projects, Alectra Utilities can take advantage of other construction and share infrastructure with other utilities, such as telecommunications providers. Coordination of capital projects also ensures that work can be completed before construction moratoriums are placed on locations by municipal road authorities which would prevent Alectra Utilities from disturbing recently completed roads and streetscapes. Project is coordinated with city road works rebuild.
	Economic Development	Capital Lines investments from 2020 to 2024 total $116.1MM. Investments in Lines Capacity provide Alectra Utilities the ability to support connection of new developments, expedite restoration of outages as well as capability to safely and reliably integrate DER, PV and battery systems. Over the DSP period, Alectra Utilities plans to invest in expanding feeders to meet the growth and the contingency capability in the 17 municipalities that Alectra Utilities serves. Relative to the last five years, the planned increase of investment in lines capacity is mainly due to the need to build feeders to support the new urban growth areas in Markham and the redevelopment of Mississauga Lakeshore, Downtown Brampton and areas in downtown Hamilton.
	Environmental Benefits	Operating feeders within planning criteria maximizes asset life, reduces line losses and ensures required power quality levels.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Status Quo / Do Nothing Adding feeders with the existing build will allow coordination cost benefits. Taking no action will ultimately result in feeders becoming overloaded and exceeding their carrying capacity. Once feeders are at full utilization, load shedding will need to be executed during the summer peak period or during contingency conditions to mitigate the risk of failure from overloaded equipment. Supplying customers through highly loaded feeders may impact power quality. For the reasons stated above, Alectra Utilities rejected the status quo or do-nothing approach.
	Alternative #1	Non-Wires Alternatives Alectra Utilities has considered non wire alternative (solar and storage option) and determined that this option is not economical for the capacity that is required. Based on typical capacity of 20 MW per feeder the cost of non-wire alternatives would 15 times that of traditional solution and hence this option has been rejected. This is not the recommended alternative.

	Alternative #2	Construct New Feeders Execution of this investment will alleviate capacity constraints and as well as ensure the availability of sufficient capacity to efficiently connect customers to Alectra Utilities's distribution system. It will allow Alectra Utilities to maintain supply to customers during contingency events and operation flexibility during maintenance and other capital work. This option will help Alectra Utilities maintain service quality and reliability standards for the existing customers as additional load is added to the system. Alectra Utilities plans to construct and configure feeders to present day technical standards to ensure customer choice for integrating distributed generation, electric vehicles and energy storage solutions. This is the recommended alternative.
	Justification for Recommended Alternative	Construction of new feeders is the only option that allows Alectra Utilities to reliably meet forecast connection requirements, and it forms the basis of the planned Lines Capacity investments. Future lines will easily be able to connect to the extra ties across the highway. Future traffic stoppages and work over the highway will be eliminated by coordinating with the existing work. Cost of implementing with the existing rebuild will result in roughly half the cost. $1M rather than future $2M.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Alectra Utilities has identified each proposed Lines Capacity project as required in the proposed timeline and determined that each investment is required to meet the pace of development in each service area to ensure sufficient capacity and reliable service for Alectra Utilities customers. Since larger projects require greater capital investment and take multiple years to build, Alectra Utilities plans to construct large projects in a phased manner to minimize the impact on rates and resources. Incremental installation costs will be much lower due to coordination with existing work.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable
	Identify any reliability, efficiency, safety or coordination benefits	The amount of investment required each year is paced to match timing of known development, considering available capacity, and expected load growth, net of conservation and demand side management. Alectra Utilities designs and plans projects using a phased approach based on feeder loading, funding availability and customer development progress, which allows the utility to pace investments just-in-time for connecting new developments while ensuring stable rates and maintenance of reliability for existing customers in the area. Coordinating with existing road works project will result in a decreased in cost for installing incremental circuits.



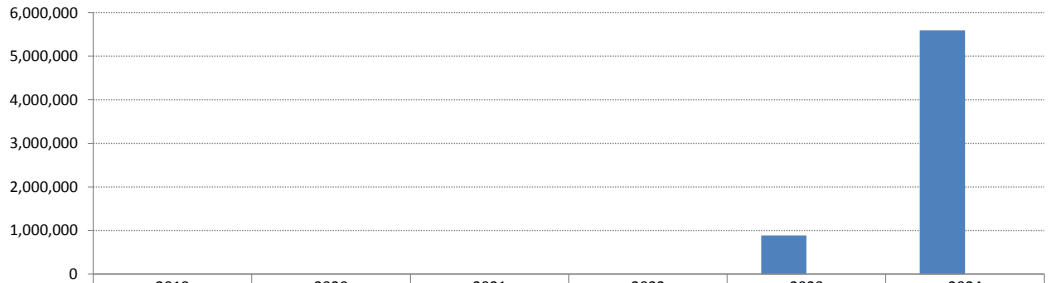
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,065,897	$0	$0	$0	$1,065,897	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150360	
Project Name	New build - Extend 44kV feeder Centre View Dr, Mississauga	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	Centre View Dr, Living Arts Dr, and Rathburn Rd W.
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	A new 44 kV overhead/underground feeder extension is needed to provide supply to downtown Mississauga area on Centre View Drive as well as provide primary supply for Duke Municipal Station (MS). Phase 1: Section on Centre View Dr from Mavis to Living Arts Dr Phase 2: Sections to provide contingency and downtown supply UG estimates assumed for future contingency, as further OH has not been guaranteed. Tentative approval to construct an OH line on Centre View Dr from Mavis to Living Arts Dr was granted by the city.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	Alectra Utilities services downtown Mississauga through a 13.8 kV distribution network. Based on known development plans, this network does not have sufficient capacity to accommodate the planned developments in downtown Mississauga. Alectra Utilities has been notified of the Block 8 and Block 1 plan developments which identifies 6 buildings, each approximately 40 storeys tall, requiring 18 MVA of incremental load between Rathburn Road and Centre View Drive. In addition there are planned office towers along Centre view drive and Rathburn which will another 10 MW of load. In addition, Alectra Utilities is aware that several new developments require connections above the 3 MVA limit of the 13.8 kV system. Without the planned investments, Alectra Utilities will not be able to connect the large developments over 3 MVA. Intensification of Mississauga Downtown Core: The downtown core of the City of Mississauga continues to grow at a substantial rate, with the arrival of new condo and town house development, the expansion of the Square One shopping centre and surrounding retail and commercial development, and the ongoing expansion of City and Regional transportation hubs.
	Customer Attachment / Load (KVA)	40MW New Capacity
	Safety	Alectra Utilities is required to ensure its distribution system can support projected load growth while maintaining reliability and quality of service for customers on both a short-term and long-term basis, as required by the Distribution System Code (DSC). Alectra Utilities must also connect new customers within the timelines prescribed by the OEB's service quality standards without adversely affecting the quality and safety of service to existing customers.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	To maximize the efficiency of the planned work, the Lines Capacity investments are coordinated with other infrastructure projects planned by local authorities. By coordinating Alectra Utilities' expansion and renewal plans with municipal and regional authorities' projects, Alectra Utilities can take advantage of other construction and share infrastructure with other utilities, such as telecommunications providers. Coordination of capital projects also ensures that work can be completed before construction moratoriums are placed on locations by municipal road authorities which would prevent Alectra Utilities from disturbing recently completed roads and streetscapes. Road extension and construction of the traffic circle on Living Arts Dr must be completed before Alectra's work.
	Economic Development	Capital Lines investments from 2020 to 2024 total $116.1MM. Investments in Lines Capacity provide Alectra Utilities the ability to support connection of new developments, expedite restoration of outages as well as capability to safely and reliably integrate DER, PV and battery systems. Over the DSP period, Alectra Utilities plans to invest in expanding feeders to meet the growth and the contingency capability in the 17 municipalities that Alectra Utilities serves. Relative to the last five years, the planned increase of investment in lines capacity is mainly due to the need to build feeders to support the new urban growth areas in Markham and the redevelopment of Mississauga Lakeshore, Downtown Brampton and areas in downtown Hamilton.
	Environmental Benefits	Operating feeders within planning criteria maximizes asset life, reduces line losses and ensures required power quality levels.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Status Quo / Do Nothing This project is required to provide the primary supply to the DUKE MS. Without this process Alectra Utilities will be unable to provide primary supply to Duke MS. For the reasons stated above, Alectra Utilities rejected the status quo or do-nothing approach.

	Alternative #1	Non-Wires Alternatives Alectra Utilities' load forecast process considers the impact of CDM and distributed generation, which is accounted for as part of the load forecast underpinning the stations project and determined that the capacity requirement cannot be met by non wires alternative.
	Alternative #2	This is not the recommended alternative. Construct New Feeder to provide primary supply to Duke MS.
	Justification for Recommended Alternative	Construction of new feeders is the only option that allows Alectra Utilities to provide primary supply to DUKE MS and it forms the basis of the planned Lines Capacity investments.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Land for Duke MS is not obtained yet, and may change the final supply location.
	Comparative Information on Equivalent Historical Projects (if any)	Webb MS supply in city center.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	The amount of investment required each year is paced to match timing of known development, considering available capacity, and expected load growth, net of conservation and demand side management. Alectra Utilities designs and plans projects using a phased approach based on feeder loading, funding availability and customer development progress, which allows the utility to pace investments just-in-time for connecting new developments while ensuring stable rates and maintenance of reliability for existing customers in the area.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable
	Identify any reliability, efficiency, safety or coordination benefits	Work on Living Arts Dr needs to be coordinated with the city road extension.

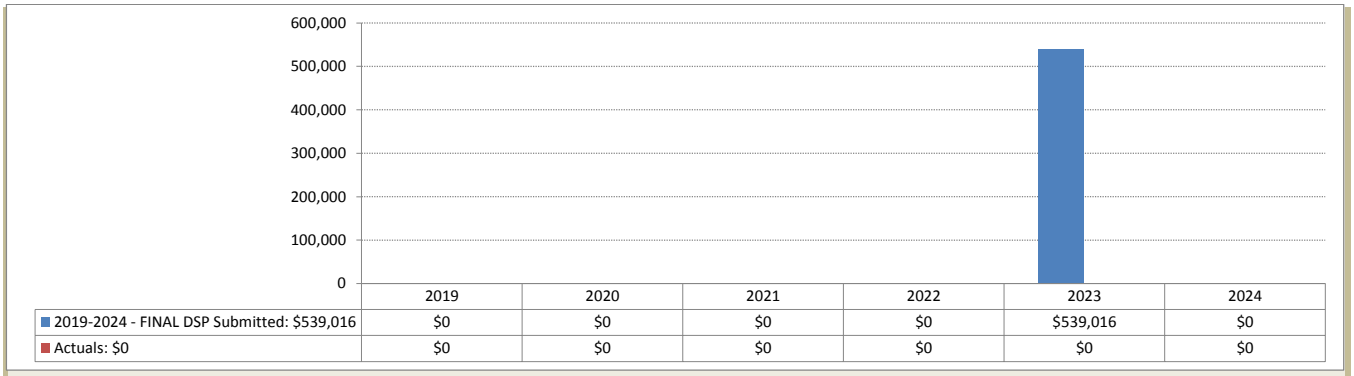


	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $6,478,755	$0	$0	$0	$0	$885,463	$5,593,292
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150361	
Project Name	Airport 88M5 & 88M7 HONI Purchase	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	88M5 and 88M7 lines from Richview TS to the demarcation point 6km north. (Demarcation is near switches YS94655 & YS94656.)
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	This is a Hydro One asset purchase for the Hydro One owned portion of feeders 88M5 and 88M7. Hydro One owns the OH Feeders from Richview TS to the CN rails approximately 6100m away. 88M5 and 88M7 would transfer ownership from HONI to Alectra. Purchase is to allow in-house servicing of the circuits; however the HONI owned sections are located in Toronto city territory.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	Hydro One owns the OH Feeders from Richview TS to the CN rails approximately 6100m away. 88M5 and 88M7 would transfer ownership from HONI to Alectra so that Alectra can supply additional loads at the airport.
	Customer Attachment / Load (KVA)	2017 Concident Peak - September 25, 2017 @ 14:00 88M5 - 54A 88M7 - 0A Future GTAA HUB Load 16-20MVA Estimated. There is capacity on this feeder to facilitate this expansion.
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Not Applicable
	Economic Development	This project will add capacity for the GTAA airport and facilitate expansion of the airport.
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do not Purchase. The lines are owned by HONI and lightly loaded. Alectra currently do not own the lines from the station. For any outages Alectra will need to coordinate with HONI and this will add to the restoration time. This feeder will be supplying the airport and the reliability is paramount.
	Alternative #1	This is not the recommended alternative. Purchase 88M5 & 88M7. This is the recommended alternative.
	Alternative #2	Not Applicable
	Justification for Recommended Alternative	Purchase of the 2 feeders would add to Alectra's asset base.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	CNR has requested removal of Alectra lines in Malton. Similar requests may be made regarding Richview Feeders crossing the CNR tracks.
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable
	Identify any reliability, efficiency, safety or coordination benefits	Not Applicable



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $539,016	$0	$0	$0	$0	$539,016	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

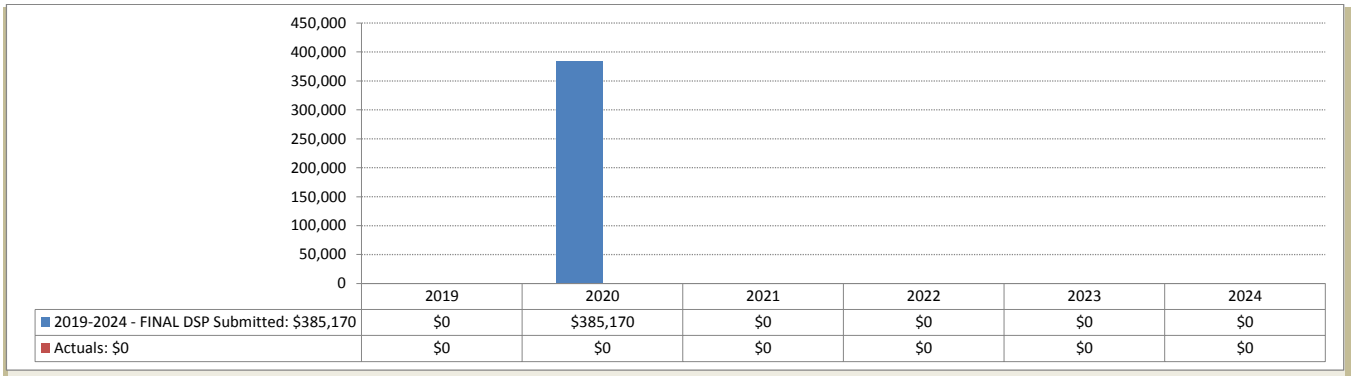
OEB Multi-Project Report

Project Code	150362
Project Name	Voltage Conversion - Dufferin St S, between MS431 and Albert St S, Alliston
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North
	Location	This project is located in Alliston on Dufferin St S between Albert St E and Tupper St E.
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	Yes
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Overhead Asset Renewal
	Alectra Subcategory	Voltage Conversion
4. Evaluation Criteria (OEB)	Project Summary	Switch AB-B1029 was identified as a candidate for end of life replacement and automation to provide additional capabilities for switching in the Alliston area. Due to the fact that this switch is an air brake switch, it cannot be operated under load. In order to replace this switch identified in the 2018 End of Life Switch Replacement plan, due to proximity to MS 431, clearances and previously identified pole replacement candidates, eight poles need to be replaced (P8136, P8135, P8211, P8210, P8209, P13034, P8207, P8206). The previously identified pole under the pole replacement program was P8135, but due to the need to replace multiple poles in the area, this candidate was removed and remains flagged as failing since 2017. Included in the scope of this project is the 3 riser poles from MS431 in which station sustainment has flagged hot spots on the solid blade switches and have future concerns about them operating when MS432 is taken out of service. The station cables are 27.6kV rated cables and Station Sustainment supports the splicing and extending of these cables for this project. Also included in the scope is the replacement of two overhead transformers, one single phase, one three phase.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	This is a combination of issues within one area, that previous year asset programs did not have the budget for due to the complexity of the area. P8135 was scheduled to be replaced under the pole replacement program in 2017, but due to the existing size of the pole, the train tracks in proximity and bringing it to new standards meet changing multiple poles driving the cost up. This pole remains below strength to date and the other poles within this scope are approaching that threshold as well. The second component to this project was a planned replacement of the air brake switch AB-B1029 with a load break switch with a SCADA connected motor mec to provide additional switching capabilities in the area. In order to change the switch, multiple poles (7 listed above) needed to be replaced to accommodate the new standard, the 4.16kV station riser poles and the pole listed below strength. The third component to this project is at the station riser poles, where stations has identified all three riser switches in need or replacement due to increased heat traces year over year. This project would satisfy all above issues, while cleaning all secondary and other connection in the area.
	Customer Attachment / Load (KVA)	Not applicable.
	Safety	Air brake switches are to only be operated when off potential, which means field staff need to perform multiple switching and isolating events in order to operate this switch. The other element in this project is the pole P8135 which is already below the threshold for remaining strength. Each year it is in service remaining strength reduces, increasing the chance of a pole failure. Switches/cutouts at the station riser poles have been flagged with an increase in heat traces year over year and should be replaced in the future.
	Cyber-Security, Privacy	Automated Switches communicate back to the control room via private network. .
	Coordination, Interoperability	All units are installed to latest standards which allow units to participate in advanced sectionalizing schemes at future dates if required.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do nothing. Continue to not be able to operate the air brake switch under load, hampering switching operations, wait for the pole to fail and replace under emergency conditions, and replace the riser switches/cutouts upon failure, or proper budget dollars.
	Alternative #1	As per project summary, replace eight poles, two overhead transformers, 3 riser switches and the air brake switch bringing the area up to current standards with the additional benefit or adding automation and more switching control for the Control Room.
	Alternative #2	Underground this section of line. This is not recommended due to the high cost and the area all being existing overhead construction.
	Justification for Recommended Alternative	Alternative 1. High service reliability and rapid response to power outages is critical to mission success and customer satisfaction in supplying electricity. RTU controlled switches provide rapid transfer of loads in emergencies, reduce restoration time which improves reliability, provide flexibility to reconfigure the system to avoid feeder and station over loads during summer peak, provide real time system readings, reduce the risk of personnel injury and are the platform for the complete distribution automation system. Engineering Planning released a strategy report in 2012 titled "Distribution Automation Report ", which was subsequently updated in 2015. The report recommended that automatic switches be installed at strategic locations over a number of years to: - Reduce feeder down time in case of outages - Reduce the number of customers affected by outages.

6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Alectra Utilities considers the following as general risks to project schedule and cost: - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable. Based on discussion, past similar cases have been left for emergency replacement, although not nearly as complex.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Distribution Switches are critical devices for the operation of the distribution system and are installed at key operating points (e.g. feeder tie points, feeder sectionalizing). Unplanned failures of these devices would impact Alectra Utilities' ability to restore power, resulting in extended outages. Automated Switches provide rapid transfer of loads in emergencies, reduce restoration time which improves reliability, provide flexibility to reconfigure the system to avoid feeder and station over loads during summer peak, provide real time system readings, reduce the risk of personnel injury and are the platform for the complete distribution automation system. During deterioration, these abilities systematically become more unreliable and are often not discovered until they fail when called on to operate.
	Condition of Asset vs. Typical Life Cycle and Performance Record	The asset condition of load break switches relative to their typical lifecycle varies from switch to switch depending upon the operational stresses experienced by the switch. Distribution Switch assets are tracked and prioritized for replacement based on their health index. Assets are replaced at their end-of-life.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	500
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	The cost impact is calculated below based on the following assumptions and estimates (per Distribution Automation switch unit): - Frequency of interruption: 2/year - Duration of interruption: 30 minutes (0.5 hours). This is the estimated incremental time for manual switching in comparison to remote automatic switching - Number of customers affected in an outage: 500 customers (Segmented by manual switches) - Customer load affected in an outage: 2000 kW - Customer Interruption Cost (Frequency): $20.00/kW (mixed Residential , Commercial & Industrial) - Customer Interruption Cost (Duration): $20.00/kWh (mixed Residential, Commercial & Industrial) - Delivery Charge, etc. for loss of revenue calculation: $0.0179/kWh Cost to Customers: - Customer Interruption Cost (Frequency) = Not Applicable - Customer Interruption Cost (Duration) = 2000 kW x 0.5 hrs x $20/kWh x 2 failures/year= $40,000 Cost Comparison: -Total Cost to Customers/year (Interruption) = Cost (Freq) + Cost (Dur) = $0 + $40,000 = $40,000 -Average cost of 27.6kV Switch/Recloser = $75,000. -Average cost of 44kV Switch = $154,000
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Effective switch operation allows Alectra to achieve it's reliability targets and maintain customer satisfaction. Automated switches are currently Alectra's greatest resource in minimizing the effects of outages to large customer areas.
	Value of Customer Impact	Medium
	Factors Affecting Project Timing, if any	This project will involve a planned outage to customers to cut over the circuit to the new pole and splice the cables back into the station. This project would be planned in conjunction with a station sustainment and customers in the area.
	Consequences for O&M System Costs Including Implications of Not Implementing	These projects do not materially impact system O&M costs.
	Reliability and Safety Factors	RTU controlled switches provide the following benefits: - rapid transfer of loads in emergencies, - reduce restoration time which improves reliability, (without automation = 50-80min, with automation = 2-5min) - provide flexibility to reconfigure the system to avoid feeder and station over loads during summer peak, - provide real time system readings, - reduce the risk of personnel injury - more efficient planned outages - enable participation in the complete distribution automation system.
	Analysis for "Like for Like" Renewal Project	Not applicable.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $385,170	$0	$385,170	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

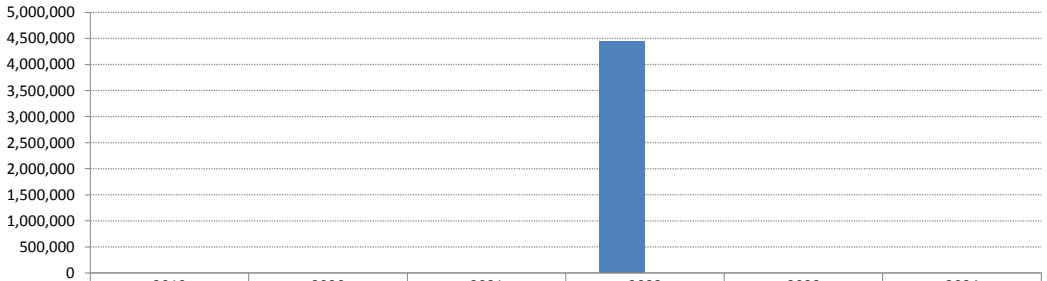
OEB Multi-Project Report

Project Code	150364
Project Name	New build - Port Credit Village East (Marina) 27.6kV Feeders, Mississauga
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	Port Credit Village East Lakeshore Rd from the Credit River to Hurontario St, and Port St to Park St W.
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	Intensification of the Port Credit East development requires a 27.6kV circuit expansion in order to provide capacity and backup contingency for the Mid-rise mixed residential/commercial development. OH extensions will be constructed on Stavebank Rd, and Helen St. UG duct bank will be constructed on Lakeshore Rd to tie into the OH system.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	Alectra Utilities is required to ensure its distribution system can support projected load growth while maintaining reliability and quality of service for customers on both a short-term and long-term basis, as required by the DSC. Alectra Utilities must be able to connect new customers in a timely manner. This Lines Capacity investments is driven primarily by the intensification and redevelopment of the marina area where existing supply is insufficient to meet the increased demand, and the need to address specific locations where customers currently have inadequate backup capacity due to configuration of existing supply lines.
	Customer Attachment / Load (KVA)	4 proposal plans for the Marina were developed. The high model proposes 1500 units ranging from 8-14 stories. Using 3kVA/unit we generate a high level estimate of 4.5MVA. This does not address further growth in the adjacent lands.
	Safety	Alectra Utilities is required to ensure its distribution system can support projected load growth while maintaining reliability and quality of service for customers on both a short-term and long-term basis, as required by the Distribution System Code (DSC). Alectra Utilities must also connect new customers within the timelines prescribed by the OEB's service quality standards without adversely affecting the quality and safety of service to existing customers.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	To maximize the efficiency of the planned work, the Lines Capacity investments are coordinated with other infrastructure projects planned by local authorities. By coordinating Alectra Utilities' expansion and renewal plans with municipal and regional authorities' projects, Alectra Utilities can take advantage of other construction and share infrastructure with other utilities, such as telecommunications providers. Coordination of capital projects also ensures that work can be completed before construction moratoriums are placed on locations by municipal road authorities which would prevent Alectra Utilities from disturbing recently completed roads and streetscapes.
	Economic Development	Investments in Lines Capacity provide Alectra Utilities the ability to support connection of new developments, expedite restoration of outages as well as capability to safely and reliably integrate DER, PV and battery systems.
	Environmental Benefits	Operating feeders within planning criteria maximizes asset life, reduces line losses and ensures required power quality levels.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Status Quo / Do Nothing Alectra Utilities is required to ensure its distribution system can support projected load growth while maintaining reliability and quality of service for customers on both a short-term and long-term basis, as required by the DSC. Alectra Utilities must be able to connect new customers in a timely manner. The 4.16kV feeders are already loaded and their capacity limits will not support new emerging development, taking no action will result in new customers not being serviced, feeders becoming overloaded and exceeding their carrying capacity. Once feeders are at full utilization, load shedding will need to be executed during the summer peak period or during contingency conditions to mitigate the risk of failure from overloaded equipment. Supplying customers through highly loaded feeders may impact power quality. The area has limited/and or no back up options. In case of an outage approximate 4.5MVA of future load will be lost until the repair is completed. For the reasons stated above, Alectra Utilities rejected the status quo or do-nothing approach.
	Alternative #1	Non-Wires Alternatives Alectra Utilities' load forecast process considers the impact of CDM and distributed generation and has been considered during the needs New feeders are required to connect customers hence the non wire alternative was not considered.

	Alternative #2	Construct New Feeders Execution of this investment will alleviate capacity constraints and as well as ensure the availability of sufficient capacity to efficiently connect customers to Alectra Utilities's distribution system. It will allow Alectra Utilities to maintain supply to customers during contingency events and operation flexibility during maintenance and other capital work. This option will help Alectra Utilities maintain service quality and reliability standards for the existing customers as additional load is added to the system. Alectra Utilities plans to construct and configure feeders to present day technical standards to ensure customer choice for integrating distributed generation, electric vehicles and energy storage solutions. This is the recommended alternative.
	Justification for Recommended Alternative	Construction of new feeders is the only option that allows Alectra Utilities to reliably meet forecast connection requirements, and it forms the basis of the planned Lines Capacity investments. Conversion of 4.16kV to 27.6kV agrees with the overall voltage conversion plan.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	This project timelines matches the pace of development in Since larger projects require greater capital investment and take multiple years to build, Alectra Utilities plans to construct large projects in a phased manner to minimize the impact on rates and resources.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable
	Identify any reliability, efficiency, safety or coordination benefits	The amount of investment required each year is paced to match timing of known development, considering available capacity, and expected load growth, net of conservation and demand side management. Alectra Utilities designs and plans projects using a phased approach based on feeder loading, funding availability and customer development progress, which allows the utility to pace investments just-in-time for connecting new developments while ensuring stable rates and maintenance of reliability for existing customers in the area.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $4,439,592	$0	$0	$0	$4,439,592	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

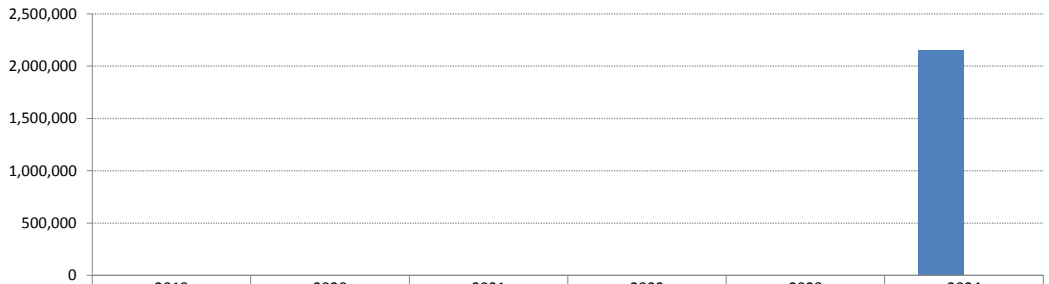
OEB Multi-Project Report

Project Code	150367
Project Name	Mini-Orlando MS 27.6kV Land Purchase, Mississauga
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	Mini Orlando MS North-East Corner of Mavis Rd and Britannia Rd.
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Stations)
	Alectra Subcategory	Station Capacity Projects
4. Evaluation Criteria (OEB)	Project Summary	Mini-Orlando MS is situated on leased land in the area of Mavis Road, south of Highway 401, provides capacity for the commercial and industrial customers in the Heartland area. Based on the analysis set out below, Alectra Utilities forecasts the value of this property to be $2.15M. Alectra will purchase the land that Mini-Orlando MS resides on. Lease expires 2020
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	The Heartland Town Centre is an outdoor shopping centre located in Mississauga. Heartland Town Centre occupies 2,200,000 square feet of space and has 180 stores, making it is one of Canada's largest malls. The Heartland Town Centre is serviced by 27.6 kV supply. Mini-Orlando MS was specifically built to supply the Heartland Town Centre, since the nearby Erindale TS did not have sufficient capacity to supply the development. Although Erindale TS supplies both 44 kV and 27.6 kV service, the station's 27.6 kV supply is overcapacity, while its 44 kV supply had available capacity. Since Erindale TS could not supply 27.6 kV capacity, the mini-Orlando Station was constructed to transforms the available 44 kV of Erindale TS to 27.6 kV to feed the Heartland Town Centre, and to off-load capacity from the 27.6 kV supply at Erindale TS. Mini-Orlando MS can accommodate transfer from Erindale TS 27.6 kV feeders and meets the capacity requirement of the industrial/commercial customers of the Heartland Town Centre-area. During the 2017 peak, Mini Orlando shed 13 MVA from the Erindale TS which was still over the LTR limit. In the absence of mini-Orlando, Alectra Utilities would be unable to supply the Heartland Town Centre load as Erindale 27.6 kV is already over the its rated capacity. Given its importance to the area, Alectra Utilities has determined that it would be imprudent to continue leasing the land on which the Mini-Orlando MS is built. There is limited availability of land in the area, and it would not be possible for Alectra Utilities to secure land to move the Mini Orlando MS. Purchasing the property from the current owner would eliminate the capacity risk and cost associated in the case where Alectra Utilities was required to relocate the station (assuming it were possible to find another site for the station). Alectra Utilities plans to purchase the leased property.
	Customer Attachment / Load (KVA)	13MVA during 2017 coincident peak. 40MVA ONAN rating.
	Safety	Alectra Utilities will utilize internal and external contractors to complete the design and construction of the stations. The Execution phase will follow Alectra Utilities' internal project management methodology which provides specific guidelines, procedures, work instructions, and industry best practices that allow the project work to be performed in an economically efficient, cost-effective, and safe manner.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Not Applicable
	Economic Development	Not Applicable
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Status Quo / "Do Nothing" The lease of the station is expiring in 2020. Alectra Utilities has also examined the risk of not securing land for the station and determined that if Alectra Utilities was asked to relocate the there would be significant cost to relocate the station and associated feeder integration cost. In addition the lands available in the area are very scare and Alectra Utilities may not be able to secure suitable land. This is not the recommended alternative.
	Alternative #1	Utilizing Non-Wire Alternatives Alectra Utilities' load forecast process considers the impact of CDM and distribution generation, which is accounted for as part of the load forecast underpinning the Stations Capacity portfolio. Alectra Utilities has also considered other options, such as battery storage, and determined that these options are not economical for the capacity that is required to meet the load growth and contingency conditions. This is not the recommended alternative.

	Alternative #2	Purchase Mini-Orlando lands from Orlando.
	Justification for Recommended Alternative	This is the recommended alternative. Purchase of the lands is the simplest solution to ensuring continued future operation of the Municipal Station.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Failure to acquire lands could ultimately lead to necessity of station relocation.
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Adding capacity on the 27.6KV system entails building a new TS.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	The SA report noted that the existing Erindale TS (T1/T2) DESN load exceeded the normal supply capacity. However, there was extra capacity available in the area's 44 kV system that was able to be utilized by building a step down (44/27.6 kV) distribution station.
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable
	Identify any reliability, efficiency, safety or coordination benefits	Not Applicable



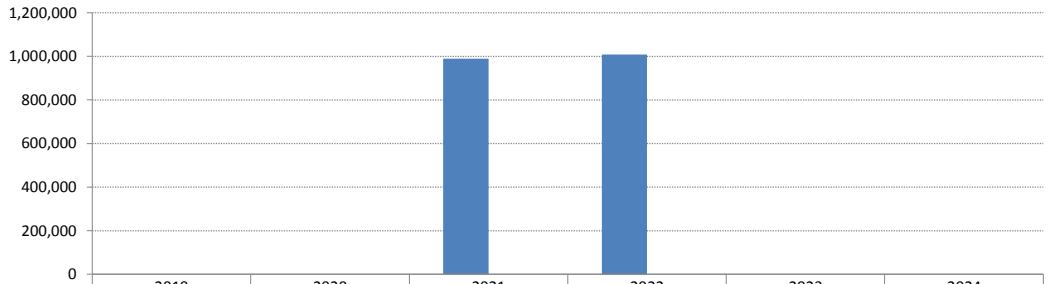
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $2,156,066	$0	$0	$0	$0	$0	$2,156,066
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150368	
Project Name	New build - North Central feeders capacity (Carlton TS to Linwell Rd/Lake St) relief, St.Catharines	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	St. Catherines
	Location	St.Catharines, along Ontario St to Linwell Rd
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	This project is to alleviate capacity issues in the North and Central section of St.Catharines, primarily served by Carlton BY bus feeders. These feeders regularly exceed the planning limit established in the Planning Philosophy. This project would be to bring a new feeder into the area and follow that with feeder reconfiguration to rebalance the loading on the feeders in the area back to below the Planning Limit. The 3 feeders targeted by this project to alleviate overloading are the CTM10, CTM11, and CTM12 which historically had, and forecasted to have the following loading levels in 2017, 2018, 2019, 2020, 2021; CTM10: 89%, 125%, 125%, 133%, 132% *offset by generation to below rated ampacity* CTM11: 79%, 93%, 92%, 92%, 92% CTM12: 87%, 106%, 106%, 105%, 105%
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	This project is meant as part of a 2-part approach to deal with ongoing capacity constraints in the North end of St.Catharines by bringing available supply from Bunting and Carlton TS's. This condition has persisted for several years and has impacted Alectra's ability to supply load requests that have been made by customers, while also hindering the Operation of the system as multiple feeders that tie to each other are exceeding the planning limit and/or encroaching on their thermal limit.
	Customer Attachment / Load (KVA)	Not applicable, new feeder.
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Coordinating this project with Project #150579 which is bringing capacity out of Bunting TS in order to provide timely delivery of adequate new capacity to the area.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Alectra Utilities is required to ensure its distribution system can support projected load growth while maintaining reliability and quality of service for customers on both a short-term and long-term basis, as required by the DSC. Alectra Utilities must be able to connect new customers in a timely manner.
	Alternative #1	The feeders are already loaded and nearing/or their capacity limits, taking no action will result in feeders becoming overloaded and exceeding their carrying capacity. Once feeders are at full utilization, load shedding will need to be executed during the summer peak period or during contingency conditions to mitigate the risk of failure from overloaded equipment. Supplying customers through highly loaded feeders may impact power quality. The recommended alternative is to bring a new overhead feeder from Carlton TS to the North/central area of St.Catharines where several adjacent feeders can be tied into and several chunks of existing feeders can be transferred to this new supply, thereby balancing out the loading to the region to meet planning limits. There are a few underground crossings required along the proposed route. This plan requires reconfiguring existing feeders in the St.Catharines downtown loop to free up a breaker position for this proposed project.
	Alternative #2	Non-Wires Solution Alectra Utilities' load forecast process considers the impact of CDM and distributed generation and has been considered during the needs assessment. This area has benefited from generation to offset load for many years. Alectra Utilities has considered non wire alternative (solar and storage option) and determined that this option is not economical for the capacity that is required. Based on typical capacity of10 MW per feeder the cost of non-wire alternatives would 15 times that of traditional solution and hence this option has been rejected.
	Justification for Recommended Alternative	Execution of this investment will alleviate capacity constraints and as well as ensure the availability of sufficient capacity to efficiently connect customers to Alectra Utilities's distribution system. It will allow Alectra Utilities to maintain supply to customers during contingency events and operation flexibility during maintenance and other capital work. This option will help Alectra Utilities maintain service quality and reliability standards for the existing customers as additional load is added to the system. Alectra Utilities plans to construct and configure feeders to present day technical standards to ensure customer choice for integrating distributed generation, electric vehicles and energy storage solutions.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Coordination with the city for municipal consent.

	Comparative Information on Equivalent Historical Projects (if any)	Project #150390 which is a new capacity feeder for the Waterdown area along existing pole lines and is budgeted for $1.7MM for a similarly scoped project.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable	Automated/remote-operable switches will be utilized at new tie-points.
	Identify any reliability, efficiency, safety or coordination benefits	Enhanced reliability is expected with reconfiguration of the feeders as less customers per feeder will be impacted by an outage and with new remote-operable switches added to improve restoration.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,997,266	$0	$0	$989,556	$1,007,710	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

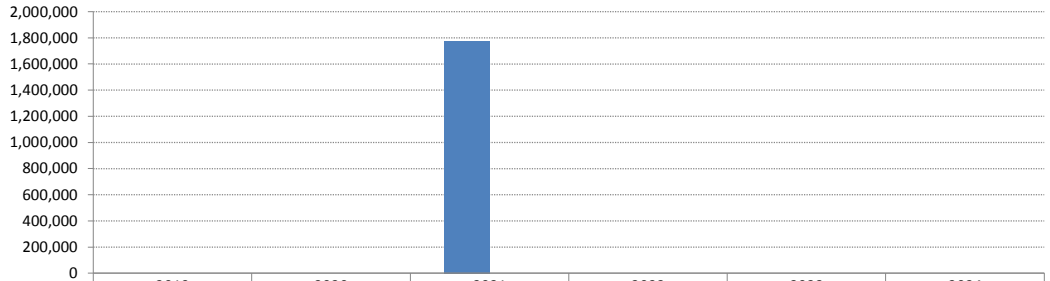
OEB Multi-Project Report

Project Code	150369
Project Name	New build - 44kV Feeder Extension York/Meadowpine, Mississauga
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	Meadowpine Blvd from Howe Court to the OH circuit west of Meadowvale Blvd.
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	A 44kV OH feeder extension along Meadowpine in order to loop the existing 44kV feeding the cold storage . Circuit will run on Meadowpine Blvd from Howe Court to the OH circuit west of Meadowvale Blvd. This project will coordinate with a future 44kV customer on Meadowpine Blvd. The customer is to pay for OH connection to the 44kV and Alectra will pay the incremental costs to loop the circuit.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	This Lines Capacity investments is driven primarily by the need to address backup of the 44kV supply to Meadowpine. There is no 44KV circuit on Meadowpine Blvd. and it is expected that the large customers will be connecting to the 44KV circuit. In addition 16MVA of connected load is on radial supply. The large industrial customer will incur a long outage as it on radial supply. The 44 circuit will be built in order to provide capacity for new 44KV loads and to provide looped feed.
	Customer Attachment / Load (KVA)	44kV R3107M3 had 2017 Peak of 345A 16000kVA currently radial on Howe court.
	Safety	Alectra Utilities is required to ensure its distribution system can support projected load growth while maintaining reliability and quality of service for customers on both a short-term and long-term basis, as required by the Distribution System Code (DSC). Alectra Utilities must also connect new customers within the timelines prescribed by the OEB's service quality standards without adversely affecting the quality and safety of service to existing customers.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	To maximize the efficiency of the planned work, the Lines Capacity investments are coordinated with other infrastructure projects planned by local authorities. By coordinating Alectra Utilities' expansion and renewal plans with municipal and regional authorities' projects, Alectra Utilities can take advantage of other construction and share infrastructure with other utilities, such as telecommunications providers. Coordination of capital projects also ensures that work can be completed before construction moratoriums are placed on locations by municipal road authorities which would prevent Alectra Utilities from disturbing recently completed roads and streetscapes. Coordination should be done with incoming customer on Meadowpine Blvd.
	Economic Development	Investments in Lines Capacity provide Alectra Utilities the ability to support connection of new developments, expedite restoration of outages as well as capability to safely and reliably integrate DER, PV and battery systems.
	Environmental Benefits	Operating feeders within planning criteria maximizes asset life, reduces line losses and ensures required power quality levels.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Status Quo / Do Nothing The area has no back up options. In case of an outage approximate 16MVA of load will be lost until the repair is completed. For the reasons stated above, Alectra Utilities rejected the status quo or do-nothing approach.
	Alternative #1	Non-Wires Alternatives Alectra Utilities has considered non wire alternative (solar and storage option) and determined that this option is not economical for the capacity that is required. Based on typical capacity of 30 MW per feeder the cost of non-wire alternatives would 15 times that of traditional solution and hence this option has been rejected. This is not the recommended alternative.
	Alternative #2	Construct New Feeders Execution of this investment will alleviate capacity constraints and as well as ensure the availability of sufficient capacity to efficiently connect customers to Alectra Utilities's distribution system. It will allow Alectra Utilities to maintain supply to customers during contingency events and operation flexibility during maintenance and other capital work. This option will help Alectra Utilities maintain service quality and reliability standards for the existing customers as additional load is added to the system. Alectra Utilities plans to construct and configure feeders to present day technical standards to ensure customer choice for integrating distributed generation, electric vehicles and energy storage solutions. This is the recommended alternative.
	Justification for Recommended Alternative	Construction of new feeders is the only option that allows Alectra Utilities to reliably meet forecast connection requirements, and it forms the basis of the planned Lines Capacity investments.

6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Alectra Utilities has identified each proposed Lines Capacity project as required in the proposed timeline and determined that each investment is required to meet the pace of development in each service area to ensure sufficient capacity and reliable service for Alectra Utilities customers. Since larger projects require greater capital investment and take multiple years to build, Alectra Utilities plans to construct large projects in a phased manner to minimize the impact on rates and resources.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable
	Identify any reliability, efficiency, safety or coordination benefits	The amount of investment required each year is paced to match timing of known development, considering available capacity, and expected load growth, net of conservation and demand side management. Alectra Utilities designs and plans projects using a phased approach based on feeder loading, funding availability and customer development progress, which allows the utility to pace investments just-in-time for connecting new developments while ensuring stable rates and maintenance of reliability for existing customers in the area. Extension of the feeder will provide contingency and thus increase reliability of the 44kV customers on Meadowpine Blvd. Coordination with an incoming customer will allow costs to be shared with that customer.



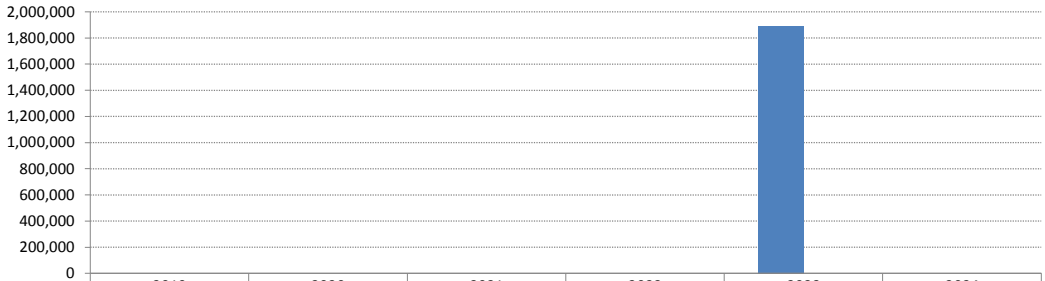
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,776,037	$0	$0	$1,776,037	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150370	
Project Name	New build - 27.6kV New Feeders Lakeview Development, Mississauga	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	Located South of Lakeshore Rd E from Lakefront Promenade to Hydro Rd.
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	Two 27.6kV feeders are to be extended in order to provide for 10,000 tentative units in the Lakeview area. Located South of Lakeshore Rd E from Lakefront Promenade to Hydro Rd. The OH circuits will be extended down Lakefront Promenade, and UG circuits will extend from Lakefront Promenade to Hydro Rd. The routing is preliminary and will be finalized when site plans are made available.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	This Lines Capacity investment is driven primarily by the rapid expansion of urban development into historically rural greenfield regions. 10,000 units are proposed for development in the Lakeview area. At present there are no feeders to feed this development.
	Customer Attachment / Load (KVA)	10,000 units at 2.5KVA/unit = 25MVA
	Safety	Alectra Utilities is required to ensure its distribution system can support projected load growth while maintaining reliability and quality of service for customers on both a short-term and long-term basis, as required by the Distribution System Code (DSC). Alectra Utilities must also connect new customers within the timelines prescribed by the OEB's service quality standards without adversely affecting the quality and safety of service to existing customers.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	To maximize the efficiency of the planned work, the Lines Capacity investments are coordinated with other infrastructure projects planned by local authorities. By coordinating Alectra Utilities' expansion and renewal plans with municipal and regional authorities' projects, Alectra Utilities can take advantage of other construction and share infrastructure with other utilities, such as telecommunications providers. Coordination of capital projects also ensures that work can be completed before construction moratoriums are placed on locations by municipal road authorities which would prevent Alectra Utilities from disturbing recently completed roads and streetscapes.
	Economic Development	Investments in Lines Capacity provide Alectra Utilities the ability to support connection of new developments, expedite restoration of outages as well as capability to safely and reliably integrate DER, PV and battery systems.
	Environmental Benefits	Operating feeders within planning criteria maximizes asset life, reduces line losses and ensures required power quality levels.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Status Quo / Do Nothing These are new development, if new overhead lines are not constructed, it will be physically impossible for Alectra Utilities to connect new customers to the grid. For the reasons stated above, Alectra Utilities rejected the status quo or do-nothing approach.
	Alternative #1	Non-Wires Alternatives For this project these options have not been considered as new feeders are needed to connect the customers to grid. This is not the recommended alternative.
	Alternative #2	Construct New Feeders With the Execution of this investment Alectra will be able to connect new customers. Alectra Utilities plans to construct and configure feeders to present day technical standards to ensure customer choice for integrating distributed generation, electric vehicles and energy storage solutions. This is the recommended alternative.
	Justification for Recommended Alternative	Construction of new feeders is the only option that allows Alectra Utilities to connect customers and it forms the basis of the planned Lines Capacity investments.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Alectra Utilities plans to construct large projects in a phased manner to minimize the impact on rates and resources.

Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
Description of Incorporation of Advanced Technology, if applicable	Not Applicable
Identify any reliability, efficiency, safety or coordination benefits	The amount of investment required each year is paced to match timing of known development, considering available capacity, and expected load growth, net of conservation and demand side management. Alectra Utilities designs and plans projects using a phased approach based on feeder loading, funding availability and customer development progress, which allows the utility to pace investments just-in-time for connecting new developments while ensuring stable rates and maintenance of reliability for existing customers in the area.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,890,065	$0	$0	$0	$0	$1,890,065	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

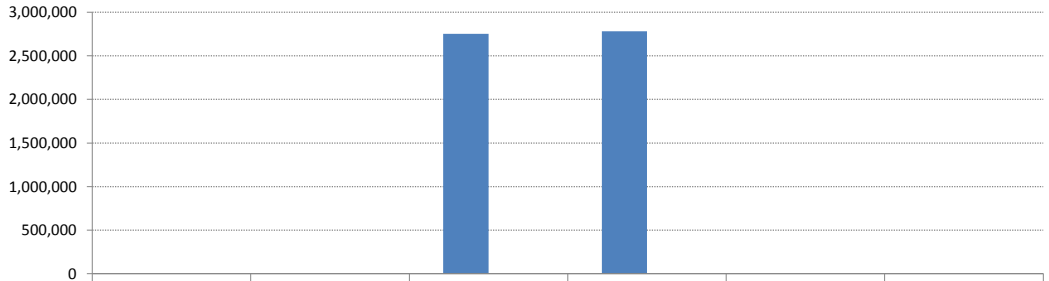
OEB Multi-Project Report

Project Code	150371
Project Name	New build - 27.6kV Feeder Extension Traders, Mississauga
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	The area between Hurontario St and Kennedy Rd from Matheson Blvd to Britannia Rd.
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	Install new feeders in the Traders area between Hurontario St and Kennedy Rd from Matheson Blvd to Britannia Rd. These new feeders will service growing customers in the traders area. Brunel Rd Feeder Traders Blvd E Feeder Whittle Rd & Watline Ave Feeder Watline Ave & McAdam Rd. Feeder Matheson Blvd Feeder Feeder extension should coordinate with incoming/upgrading customer loads.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	This Lines Capacity investments is driven primarily by the intensification and redevelopment of multiple locations around the Traders area where existing supply is insufficient to meet the increased demand.
	Customer Attachment / Load (KVA)	Red Loop 10225kVA (31 Tx, 71 BLDGS.) YC5676 to YC5672 Light Blue Loop 8175kVA (21 Tx, 34 BLDGS.) YC5675 to YC54394 Dark Blue Loop 7775kVA (22 Tx, 51 BLDGS.) YC5439 to YC5671 Orange Loop 4050kVA (13 Tx, 30 BLDGS.) YC5438 to YC54254 Pink Loop 8700kVA (23 Tx, 56 BLDGS.) YC54255 to YC5444
	Safety	Alectra Utilities is required to ensure its distribution system can support projected load growth while maintaining reliability and quality of service for customers on both a short-term and long-term basis, as required by the Distribution System Code (DSC). Alectra Utilities must also connect new customers within the timelines prescribed by the OEB's service quality standards without adversely affecting the quality and safety of service to existing customers.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	To maximize the efficiency of the planned work, the Lines Capacity investments are coordinated with other infrastructure projects planned by local authorities. By coordinating Alectra Utilities' expansion and renewal plans with municipal and regional authorities' projects, Alectra Utilities can take advantage of other construction and share infrastructure with other utilities, such as telecommunications providers. Coordination of capital projects also ensures that work can be completed before construction moratoriums are placed on locations by municipal road authorities which would prevent Alectra Utilities from disturbing recently completed roads and streetscapes. Feeder extension should be coordinated with incoming/upgrading customers in order to offset costs.
	Economic Development	Investments in Lines Capacity provide Alectra Utilities the ability to support connection of new developments, expedite restoration of outages as well as capability to safely and reliably integrate DER, PV and battery systems.
	Environmental Benefits	Operating feeders within planning criteria maximizes asset life, reduces line losses and ensures required power quality levels.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Status Quo / Do Nothing The feeders are already loaded and at their capacity limits, taking no action will result in feeders becoming overloaded and exceeding their carrying capacity. Once feeders are at full utilization, load shedding will need to be executed during the summer peak period or during contingency conditions to mitigate the risk of failure from overloaded equipment. Supplying customers through highly loaded feeders may impact power quality. For the reasons stated above, Alectra Utilities rejected the status quo or do-nothing approach.
	Alternative #1	Non-Wires Alternatives Alectra Utilities has considered non wire alternative (solar and storage option) and determined that this option is not economical for the capacity that is required. Based on typical capacity of 20 MW per feeder the cost of non-wire alternatives would 15 times that of traditional solution and hence this option has been rejected. This is not the recommended alternative.

	Alternative #2	Construct New Feeders Execution of this investment will alleviate capacity constraints and as well as ensure the availability of sufficient capacity to efficiently connect customers to Alectra Utilities's distribution system. It will allow Alectra Utilities to maintain supply to customers during contingency events and operation flexibility during maintenance and other capital work. This option will help Alectra Utilities maintain service quality and reliability standards for the existing customers as additional load is added to the system. Alectra Utilities plans to construct and configure feeders to present day technical standards to ensure customer choice for integrating distributed generation, electric vehicles and energy storage solutions. This is the recommended alternative.
	Justification for Recommended Alternative	Construction of new feeders is the only option that allows Alectra Utilities to reliably meet forecast connection requirements, and it forms the basis of the planned Lines Capacity investments.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Alectra Utilities has identified each proposed Lines Capacity project as required in the proposed timeline and determined that each investment is required to meet the pace of development in each service area to ensure sufficient capacity and reliable service for Alectra Utilities customers. Since larger projects require greater capital investment and take multiple years to build, Alectra Utilities plans to construct large projects in a phased manner to minimize the impact on rates and resources.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable
	Identify any reliability, efficiency, safety or coordination benefits	The amount of investment required each year is paced to match timing of known development, considering available capacity, and expected load growth, net of conservation and demand side management. Alectra Utilities designs and plans projects using a phased approach based on feeder loading, funding availability and customer development progress, which allows the utility to pace investments just-in-time for connecting new developments while ensuring stable rates and maintenance of reliability for existing customers in the area.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $5,533,924	$0	$0	$2,751,754	$2,782,170	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150374	
Project Name	New build - 13.8kV Feeder Extension 9th Line, Derry to Argentia, Mississauga	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	Along Ninth Line from Derry Rd W to Argentia Rd.
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	13.8kV OH feeder extension From Derry Rd W to Argentia Rd. This will provide additional capacity for growth along 9th Line.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	Alectra Utilities is required to ensure its distribution system can support projected load growth while maintaining reliability and quality of service for customers on both a short-term and long-term basis, as required by the DSC. Alectra Utilities must be able to connect new customers in a timely manner. This Lines Capacity investments is driven primarily by the rapid expansion of urban development into historically rural greenfield regions.
	Customer Attachment / Load (KVA)	Existing 13.8kV 82F1 (204A 2017 Peak) (4700kVA available) Proposed extension 13.8kV 82F2 (147A 2017 Peak) (6000kVA available) North tie point 13.8kV 90F1 (33A 2017 Peak)
	Safety	Alectra Utilities is required to ensure its distribution system can support projected load growth while maintaining reliability and quality of service for customers on both a short-term and long-term basis, as required by the Distribution System Code (DSC). Alectra Utilities must also connect new customers within the timelines prescribed by the OEB's service quality standards without adversely affecting the quality and safety of service to existing customers.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	To maximize the efficiency of the planned work, the Lines Capacity investments are coordinated with other infrastructure projects planned by local authorities. By coordinating Alectra Utilities' expansion and renewal plans with municipal and regional authorities' projects, Alectra Utilities can take advantage of other construction and share infrastructure with other utilities, such as telecommunications providers. Coordination of capital projects also ensures that work can be completed before construction moratoriums are placed on locations by municipal road authorities which would prevent Alectra Utilities from disturbing recently completed roads and streetscapes.
	Economic Development	Investments in Lines Capacity provide Alectra Utilities the ability to support connection of new developments, expedite restoration of outages as well as capability to safely and reliably integrate DER, PV and battery systems.
	Environmental Benefits	Operating feeders within planning criteria maximizes asset life, reduces line losses and ensures required power quality levels.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Status Quo / Do Nothing Alectra Utilities is required to ensure its distribution system can support projected load growth while maintaining reliability and quality of service for customers on both a short-term and long-term basis, as required by the DSC. Alectra Utilities must be able to connect new customers in a timely manner. These are new development, if new overhead lines are not constructed, it will be physically impossible for Alectra Utilities to connect new customers to the grid. For the reasons stated above, Alectra Utilities rejected the status quo or do-nothing approach.
	Alternative #1	Non-Wires Alternatives Alectra Utilities' load forecast process considers the impact of CDM and distributed generation and has been considered during the needs For this project these options have not been considered as new feeders are needed to connect the customers to grid. This is not the recommended alternative.

	Alternative #2	Construct New Feeders Execution of this investment will alleviate capacity constraints and as well as ensure the availability of sufficient capacity to efficiently connect customers to Alectra Utilities's distribution system. It will allow Alectra Utilities to maintain supply to customers during contingency events and operation flexibility during maintenance and other capital work. This option will help Alectra Utilities maintain service quality and reliability standards for the existing customers as additional load is added to the system. Alectra Utilities plans to construct and configure feeders to present day technical standards to ensure customer choice for integrating distributed generation, electric vehicles and energy storage solutions. This is the recommended alternative.
	Justification for Recommended Alternative	Construction of new feeders is the only option that allows Alectra Utilities to reliably meet forecast connection requirements, and it forms the basis of the planned Lines Capacity investments.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Alectra Utilities has identified each proposed Lines Capacity project as required in the proposed timeline and determined that each investment is required to meet the pace of development in each service area to ensure sufficient capacity and reliable service for Alectra Utilities customers. Since larger projects require greater capital investment and take multiple years to build, Alectra Utilities plans to construct large projects in a phased manner to minimize the impact on rates and resources.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable
	Identify any reliability, efficiency, safety or coordination benefits	The amount of investment required each year is paced to match timing of known development, considering available capacity, and expected load growth, net of conservation and demand side management. Alectra Utilities designs and plans projects using a phased approach based on feeder loading, funding availability and customer development progress, which allows the utility to pace investments just-in-time for connecting new developments while ensuring stable rates and maintenance of reliability for existing customers in the area.

	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,205,091	$0	$0	$0	$0	$1,205,091	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

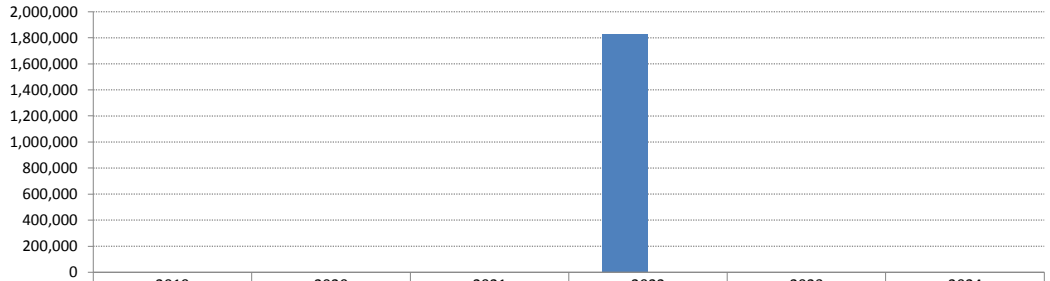
OEB Multi-Project Report

Project Code	150377
Project Name	Voltage Conversion and Rear Lot - Montgomery Dr, Hamilton
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Hamilton
	Location	Hamilton, Ancaster area along Montgomery Dr.
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Overhead Asset Renewal
	Alectra Subcategory	Voltage Conversion
4. Evaluation Criteria (OEB)	Project Summary	This project is to perform a voltage conversion from 4kV to 27.6kV downstream from a distribution step-down transformer on Montgomery Dr in Ancaster. There is also a portion of the project to address some rear lot construction within the neighbourhood.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	The area has seen outages due to the rear lot construction as recently as April 2018, as well, some re-work requested due to a customer service upgrade has positioned this area as an ideal candidate to complete the voltage conversion and remove the step-down transformer, while also tackling a problematic rear lot area.
	Customer Attachment / Load (KVA)	227 customers and 997 kVA
	Safety	There are some safety concerns regarding working on rear lot pole lines, due to access restrictions for larger equipment.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	By removing rear lot supplied transformers to a more accessible front lot location, any potential oil spill issues can be much more effectively addressed.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Under the status quo option, Alectra Utilities would only replace these legacy assets should they fail reactively. Under this scenario, there would be no opportunity to convert these assets to the standardized voltage levels, as assets would have to be replaced in a like-for-like manner. Replacing assets reactively tends to lead to the highest per-unit cost, and greatest impact to customer outage times. Furthermore, the reliability and safety risks associated with this infrastructure would continue to persist.
	Alternative #1	Like-for-like replacement of existing assets with new assets at the same voltage ratings. Under the like-for-like replacement option, existing 4 kV infrastructure would be replaced with 4 kV infrastructure respectively. This approach is very similar to the status quo option, with the exception that customer outages can be avoided by replacing assets before they fail. By planning ahead to perform the replacements, the added benefit of like-for-like over the status quo is lower per-unit costs given that multiple assets can be addressed at a time. The operation concerns of supplying customers from Rear Lot primary would persist.
	Alternative #2	Full conversion of the lines to new 27.6 kV primary system voltages This alternative proposes to renew the assets in the area while also proceeding with voltage conversion to a higher voltage class for the equipment. Other benefits include taking the opportunity to redesign the feeder configuration to provide improved reliability where possible by creating loops where none exist today as well as converting rear lot supply to front lot. The plan for this area is to leverage some of the existing repair work and customer driven redesign to finally eliminate the rear lot in the area and complete the voltage conversion to 27kV for the remaining assets. The majority of customers would be supplied from front lot overhead, but some will have to be supplied via underground secondary.
	Justification for Recommended Alternative	This area would have been left as-is during the last voltage conversion that was conducted in Ancaster to bring surrounding areas to 27kV. Given the vintage of the majority of assets is the 1950's, and there are several sections that have seen spot replacement in the last decade, it makes sense to take the cost effective approach to replace the remaining assets in a systematic way. To perform voltage conversion at the same time is prudent to bring this pocket of customers up to the same voltage class as surrounding areas. The full conversion option presents the best value long-term by having conversion completed in a planned manner as well as benefits to the operability of the system, which ultimately benefits the customers. For those reasons, Alectra Utilities selected this approach.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Municipal consent for any pole relocation. Customer expectation for what the new distribution will look like is a risk, especially if the customer is pushing for a more aesthetically-pleasing but more expensive alternative by going fully underground. Customer consultation will be an important step in mitigating this risk and ensure the public and the utility are aligned in addressing this renewal.
	Comparative Information on Equivalent Historical Projects (if any)	Similar rear lot projects have been budgeted between $1.25MM - $2MM per year, depending on whether a full underground solution or only partial underground solution is chosen.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0

7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	The assets in this area are of 1950's vintage and are generally substandard height for supporting 3 phase primary conductor.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Health index of a sample of assets in the area put them at approximately 60%, however majority of poles are showing visible signs of rot. There are a number of poles where Alectra is a joint use tenant on Bell owned poles in the area, therefore no condition data is available for these assets.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	227
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Some rear lot as part of the project that has been cause of outages in recent history. 2D2X 3 year (2014 - 2017) stats: 68 outages, 4,326,754 customer minutes (421 minutes/customer/year) This project area constitutes about 6% of the customer base and 4% of connected kVA of the feeder. Assume 10% of outages caused by this section of the feeder due to recent rear lot outages in area.
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Rear lot supply failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage). Rear lot system also poses safety hazards to the customers because live electrical components are in proximity of customer's backyard and proper clearance may be violated due to customer's installations (examples: trees, garden, swimming pool, storage shed, deck, house extension).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Not applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	Not applicable
	Reliability and Safety Factors	Due to rear lot location these assets are not easily accessible.
	Analysis for "Like for Like" Renewal Project	Like for like renewal would address the issue of equipment failure due to end-of-life assets in the area, but there is no system benefit in rebuilding this area at 4kV.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,824,762	$0	$0	$0	$1,824,762	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

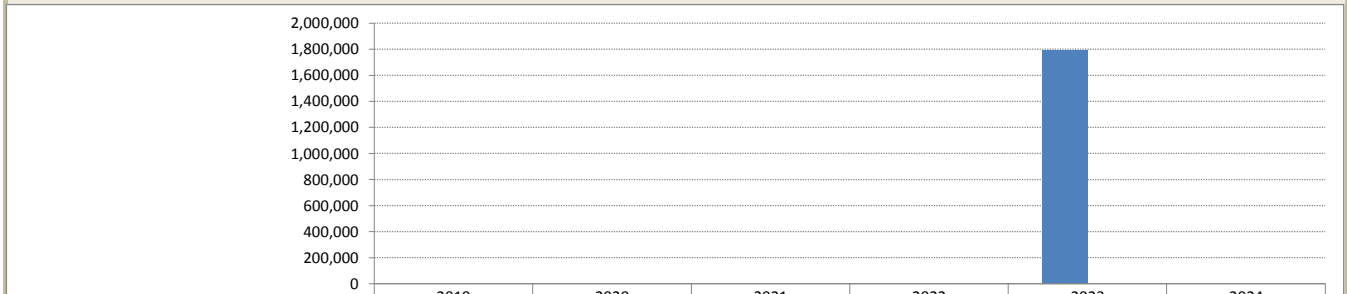
Project Code	150378
Project Name	Rear Lot Renewal Project - East of Queen Street/North of Mill Street
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North
	Location	North-east corner of Mill/Queen Street in Tottenham
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Rear Lot Conversion
	Alectra Subcategory	Rear Lot Conversion
4. Evaluation Criteria (OEB)	Project Summary	Convert the area east of Queen Street and north of Mill Street in Tottenham from rear lot overhead supply to front lot underground supply (primary and secondary). This will reduce number of outages and power restoration time. The project is proposed to be completed over one year. The existing rear lot location east of Queen Street and north of Mill Street in Tottenham will be 37 years old in 2022. The asset is end of life and requires remediation. In addition, the poles in this rear lot location were inspected in 2012 and 2013, where a majority of the poles were found to be in poor condition. These assets pose a safety risk for the public and for Alectra Utilities crews, are more prone to failure than other overhead distribution assets, and otherwise do not align with current standards, policies and practices.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	The priority of this project is high. This project is to decrease the outage impacts due to deteriorating distribution system assets and mitigate the outage impacts due to increasing effect of adverse weather events. Reasons for Priority: The electrical system is deteriorating and poses many operations, safety, and customer service concerns that must be addressed. If not addressed, the system will deteriorate further and failures and safety hazards will increase. In December 2013, an ice storm came in across Ontario including Alectra (East) service territory. During the storm, many trees, including trees in rear lot areas, fell onto power lines and created prolonged power outages to customers. Power restoration in rear lot areas was very difficult due to accessibility. The December 2013 ice storm caused 29,831,573 CMI within the rear lot grids, which accounted for 16.68% of the total system CMI due to the ice storm. The existing rear lot location east of Queen Street and north of Mill Street in Tottenham will be 37 years old in 2022. The asset is end of life and requires remediation. In addition, the poles in this rear lot location were inspected in 2012 and 2013, where a majority of the poles were found to be in poor condition. These assets pose a safety risk for the public and for Alectra Utilities crews, are more prone to failure than other overhead distribution assets, and otherwise do not align with current standards, policies and practices.
	Customer Attachment / Load (KVA)	Total connected load of 438 kVA.
	Safety	Safety risk associated with close proximity to power line in the backyard: Although the Electrical Safety Code and easement terms specify minimum clearance between customer facilities and power line, there are cases that customers do not follow the safety rules and install facilities too close to power line. Examples are shed, storage, playground, trampoline, swimming pool, patio deck, landscape, house extension, etc. This encroachment creates a safety hazard for both customers and crews. Safety risk associated with reduced clearance due to encroachment of power line: Over time, growth of vegetation and obstruction due to customer facilities may jeopardize the minimum clearance requirements and restrict crew mobility. Occasionally dogs may also be a safety hazard to the crews.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Not Applicable
	Economic Development	Not Applicable
	Environmental Benefits	Because overhead transformers are installed on the pole in rear lot area, a pole falling down may also cause the transformers to fall down, resulting in transformer tank rupturing, and oil being spilled onto the ground.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Under this option, no proactive investments would be executed to replace either existing rear lot infrastructure and these assets would only be intervened upon in reactive scenarios, when the assets have reached their end-of-life. Under this approach, customers would be exposed to prolonged reliability impacts, due to the accessibility issues associated with rear lot infrastructure, as well as the complex restoration procedures that would be required for a four-feeder outage event. As standardized equipment (e.g. bucket trucks) cannot be used to service rear lot plant, wood poles, transformers and overhead switches would have to be replaced manually, with field crews accessing private customer properties in order to execute the work. Customers and field crews would continue to be exposed to elevated safety risks, due to the minimal proximity between customer plant and the rear lot overhead lines, as well as the non-standard and non-ergonomic work procedures that field crews would have to continue to execute to sufficiently maintain, inspect and service the plant. Finally, as assets are replaced reactively, new assets would need to be installed according to the rear lot configuration. By its design, rear lot can only be converted if the entire line is replaced at once as part of an overall project. Therefore, the legacy design will continue to be maintained under this scenario. This will include the continued operation of the legacy voltage system, along with continuing the associated inefficiencies, such as line losses.
	Alternative #1	Remediate the existing rear lot plant with other design options . The other design options considered are described below. Rear Lot Overhead Option: Under this Option, the existing rear lot plant is replaced with new overhead plant in the rear lot. When the replacement project is implemented, the following design parameters should be considered: •Install critical components such as fuse, switch, and transformer as close to the accessible street as possible This Option is not acceptable because it does not resolve the major operations and customer reliability concerns related to the distribution assets located at rear lot at this location. Partial Underground Option This scenario involves the replacement of existing rear lot infrastructure with a new hybrid solution, where primary voltage infrastructure, including transformers, switches and lines would be installed as per an underground configuration within the front right-of-way, following standard Alectra Utilities installation practices. Under this approach, secondary infrastructure, including wood poles and secondary conductor, would remain in the rear lot in overhead configuration. This approach would not fully address the reliability and safety concerns associated with rear lot distribution, as secondary connections will remain in the rear lot. However, future outage impacts will be reduced and contained to only those customers connected to the associated transformer. Lower voltage classes will also be converted up to the standardized 27.6kV voltage standard as per this investment option. Under this option, reliability and safety issues would continue to persist due some infrastructure remaining overhead. The cost of partial underground renewal is higher than the renewal of the rear lot overhead and further more does not result in mitigating the risks associated with the existing system. This partial underground approach has been adopted where feasible.
	Alternative #2	Replace with Full Underground Infrastructure This investment scenario considers the full replacement of existing rear lot infrastructure – including primary and secondary plant – with new front lot underground infrastructure. All existing primary and secondary distribution assets within the rear lot corridor will be removed and replaced with new underground primary and secondary infrastructure that is installed within the front lot corridor as per current standard design practices. Underground secondary cables will run from the front lot underground transformers to the individual meter bases in order to supply the customers. Under this approach, existing under-classed legacy wood poles will be replaced with higher-class poles that are better suited to withstand major weather events. Through this investment scenario, these high impact assets will be better secured and weather-hardened against future outage events. This approach would completely mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure. This approach also introduces efficiencies for the utility, as tree trimming activities can be eliminated.
	Justification for Recommended Alternative	It is recommended to convert the area east of Queen Street and north of Mill Street in Tottenham from rear lot overhead supply to front lot underground supply (primary and secondary). Under this Option, the existing rear lot plant is removed and new underground plant is installed in front lot. This approach would complete mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure. This approach also introduces efficiencies for the utility, as tree trimming activities can be eliminated and line losses associated with the legacy voltage classes can be eliminated. For these reasons, Alectra Utilities selected this approach.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Fluctuation in cost and staff resource (internal and external) to complete high annual volume of work. Risk Management: Alectra has retained external contractor working at different work sites throughout the year under a multi-year EPC (Engineering Procurement Construction) Master Service Agreement. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track.
	Comparative Information on Equivalent Historical Projects (if any) Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	Alectra has completed and is completing similar rear lot remediation project since 2013. Alectra has experience on executing several rear lot remediation project. 0

7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	The scope involves converting the area east of Queen Street and north of Mill Street from rear lot overhead supply to front lot underground supply (primary and secondary). There are a total of 104 customers affected by the existing rear lot supply. Rear lot infrastructure is functionally obsolete for the following key reasons: •The rear lot configuration is generally unsafe to the public due to the large trees growing near energized power lines. In tandem with such an unsafe configuration, there are also line clearing hazards and related additional costs to do this work. •Alectra Utilities is unable to use labour saving tools and devices such as bucket trucks to efficiently maintain and repair the distribution system due to assets located in customer backyards. •Rear lot wood poles are generally congested, due to multiple service attachments and communication drops, which generally make it impossible to sufficiently climb poles. Crews must, therefore, use ladders to access these poles. •Alectra Utilities is limited in utilizing ladders to access the overhead system due to Ministry of Labour restrictions for congested areas. •Due to the presence of legacy porcelain top tie insulators, rear lot lines must be fully isolated before any maintenance or repair work on the overhead system can commence. •Porcelain insulators are far more susceptible to contamination and flashover when compared to present-day standard polymer insulators. •Rear lot infrastructure typically contains undersized #4 aluminum conductor steel-reinforced cable and aluminum conductor, along with #4 and #6 copper conductor, which are undersized and generally have a greater probability of annealing due to their reduced carrying capacity. These conductors must be fully isolated before any work can commence.
	Condition of Asset vs. Typical Life Cycle and Performance Record	It is extremely difficult to gain access to the backyard to maintain, repair, and restore power. As a result there are prolonged outages to customers. This is especially more difficult in the event of ice storm. Many of the Rear Lot Supply distribution systems were built in 1950s, 1960s, and 1970s (40-68 years old in 2016). The rear lot equipment is older than typical useful life and the asset condition is deteriorating. According to the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board", typical useful life of overhead transformers and wood poles are 40 and 45 years respectively. Many of the installations are not in compliance to today's standards. The existing rear lot location east of Queen Street and north of Mill Street in Tottenham will be 37 years old in 2022. The asset is end of life and requires remediation. In addition, the poles in this rear lot location were inspected in 2012 and 2013, where a majority of the poles were found to be in poor condition.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	104
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Number of failures and duration based on historical outage data for specific north-east corner of Mill/Queen Street rear lot area: November 2015; 22 hour outage (Incident # 737528) March 2016; 3 hour outage (Incident # 740667) June 2017; 1 hour outage (Incident # 755628) Based on three year average (2015-2017) assume 1 outage at 8.6 hours for north-east corner of Mill/Queen Street rear lot area.
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Rear lot supply failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage). Rear lot system also poses safety hazards to the customers because live electrical components are in proximity of customer's backyard and proper clearance may be violated due to customer's installations (examples: trees, garden, swimming pool, storage shed, deck, house extension).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Not Applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	In case of not implementing the project the OM&A cost will continue to occur due to tree trimming activities as well as increase in responding to outages since the assets are deteriorated and prone to failure.
	Reliability and Safety Factors	This project is part of the long-term rear lot supply remediation program. The project will help avoid potential rear lot failures. In addition, this project also eliminates safety hazards associated with ageing and deteriorating rear lot system. This approach would complete mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure.
	Analysis for "Like for Like" Renewal Project	The selected option is not a like for like replacement. This investment scenario considers the full replacement of existing rear lot infrastructure – including primary and secondary plant – with new front lot underground infrastructure.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,792,484	$0	$0	$0	$0	$1,792,484	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

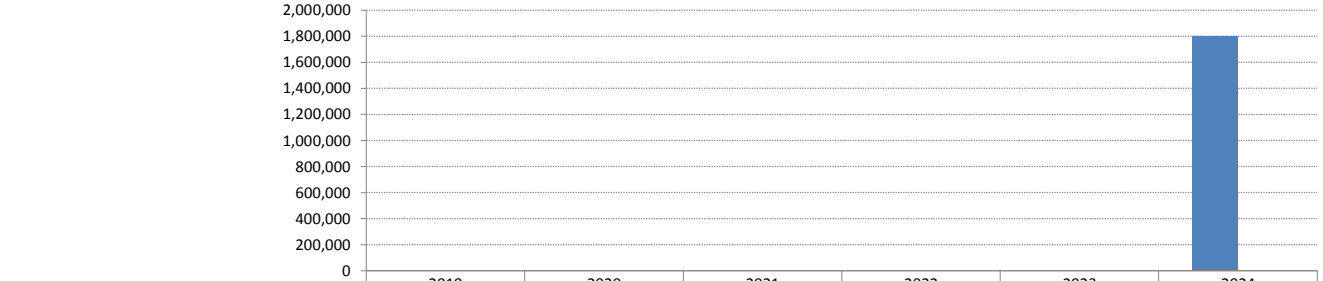
Project Code	150380
Project Name	Rear Lot Renewal Project - Gunn/Oakley Park/St.Vincent
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North
	Location	Oakley Park Square near Gunn Street and St. Vincent Street in Barrie
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Rear Lot Conversion
	Alectra Subcategory	Rear Lot Conversion
4. Evaluation Criteria (OEB)	Project Summary	Convert Oakley Park Square near Gunn Street and St. Vincent Street in Barrie from rear lot overhead supply to front lot underground supply (primary and secondary). This will reduce number of outages and power restoration time. The project is proposed to be completed over one year. The existing rear lot location at Oakley Park Square near Gunn Street and St. Vincent Street in Barrie will be 57 years old in 2024. The asset is end of life and requires remediation. In addition, the poles in this rear lot location were inspected in 2012 and 2013, where the poles were found to be in fair or poor condition. These assets pose a safety risk for the public and for Alectra Utilities crews, are more prone to failure than other overhead distribution assets, and otherwise do not align with current standards, policies and practices.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	The priority of this project is high. This project is to decrease the outage impacts due to deteriorating distribution system assets and mitigate the outage impacts due to increasing effect of adverse weather events. Reasons for Priority: The electrical system is deteriorating and poses many operations, safety, and customer service concerns that must be addressed. If not addressed, the system will deteriorate further and failures and safety hazards will increase. In December 2013, an ice storm came in across Ontario including Alectra (East) service territory. During the storm, many trees, including trees in rear lot areas, fell onto power lines and created prolonged power outages to customers. Power restoration in rear lot areas was very difficult due to accessibility. The December 2013 ice storm caused 29,831,573 CMI within the rear lot grids, which accounted for 16.68% of the total system CMI due to the ice storm. The existing rear lot location at Oakley Park Square near Gunn Street and St. Vincent Street in Barrie will be 57 years old in 2024. The asset is end of life and requires remediation. In addition, the poles in this rear lot location were inspected in 2012 and 2013, where the poles were found to be in fair or poor condition. These assets pose a safety risk for the public and for Alectra Utilities crews, are more prone to failure than other overhead distribution assets, and otherwise do not align with current standards, policies and practices.
	Customer Attachment / Load (KVA)	Total of 91 downstream customers with 275 kVA connected.
	Safety	Safety risk associated with close proximity to power line in the backyard: Although the Electrical Safety Code and easement terms specify minimum clearance between customer facilities and power line, there are cases that customers do not follow the safety rules and install facilities too close to power line. Examples are shed, storage, playground, trampoline, swimming pool, patio deck, landscape, house extension, etc. This encroachment creates a safety hazard for both customers and crews. Safety risk associated with reduced clearance due to encroachment of power line: Over time, growth of vegetation and obstruction due to customer facilities may jeopardize the minimum clearance requirements and restrict crew mobility. Occasionally dogs may also be a safety hazard to the crews.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Not Applicable
	Economic Development	Not Applicable
	Environmental Benefits	Because overhead transformers are installed on the pole in rear lot area, a pole falling down may also cause the transformers to fall down, resulting in transformer tank rupturing, and oil being spilled onto the ground.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Under this option, no proactive investments would be executed to replace either existing rear lot infrastructure and these assets would only be intervened upon in reactive scenarios, when the assets have reached their end-of-life. Under this approach, customers would be exposed to prolonged reliability impacts, due to the accessibility issues associated with rear lot infrastructure, as well as the complex restoration procedures that would be required for a four-feeder outage event. As standardized equipment (e.g. bucket trucks) cannot be used to service rear lot plant, wood poles, transformers and overhead switches would have to be replaced manually, with field crews accessing private customer properties in order to execute the work. Customers and field crews would continue to be exposed to elevated safety risks, due to the minimal proximity between customer plant and the rear lot overhead lines, as well as the non-standard and non-ergonomic work procedures that field crews would have to continue to execute to sufficiently maintain, inspect and service the plant. Finally, as assets are replaced reactively, new assets would need to be installed according to the rear lot configuration. By its design, rear lot can only be converted if the entire line is replaced at once as part of an overall project. Therefore, the legacy design will continue to be maintained under this scenario. This will include the continued operation of the legacy voltage system, along with continuing the associated inefficiencies, such as line losses.
	Alternative #1	Rear Lot Overhead Option: Under this Option, the existing rear lot plant is replaced with new overhead plant in the rear lot. When the replacement project is implemented, the following design parameters should be considered: •Install critical components such as fuse, switch, and transformer as close to the accessible street as possible This Option is not acceptable because it does not resolve the major operations and customer reliability concerns related to the distribution assets located at rear lot at this location. Partial Underground Option This scenario involves the replacement of existing rear lot infrastructure with a new hybrid solution, where primary voltage infrastructure, including transformers, switches and lines would be installed as per an underground configuration within the front right-of-way, following standard Alectra Utilities installation practices. Under this approach, secondary infrastructure, including wood poles and secondary conductor, would remain in the rear lot in overhead configuration. This approach would not fully address the reliability and safety concerns associated with rear lot distribution, as secondary connections will remain in the rear lot. However, future outage impacts will be reduced and contained to only those customers connected to the associated transformer. Lower voltage classes will also be converted up to the standardized 27.6kV voltage standard as per this investment option. Under this option, reliability and safety issues would continue to persist due some infrastructure remaining overhead. The cost of partial underground renewal is higher than the renewal of the rear lot overhead and further more does not result in mitigating the risks associated with the existing system. This partial underground approach has been adopted where feasible.
	Alternative #2	Replace with Full Underground Infrastructure This investment scenario considers the full replacement of existing rear lot infrastructure – including primary and secondary plant – with new front lot underground infrastructure. All existing primary and secondary distribution assets within the rear lot corridor will be removed and replaced with new underground primary and secondary infrastructure that is installed within the front lot corridor as per current standard design practices. Underground secondary cables will run from the front lot underground transformers to the individual meter bases in order to supply the customers. Under this approach, existing under-classed legacy wood poles that support four feeders will be replaced with higher-class poles that are better suited to withstand major weather events. Through this investment scenario, these high impact assets will be better secured and weather-hardened against future outage events. This approach would complete mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure. This approach also introduces efficiencies for the utility, as tree trimming activities can be eliminated and line losses associated with the legacy voltage classes can be eliminated.
	Justification for Recommended Alternative	It is recommended to convert Oakley Park Square near Gunn Street and St. Vincent Street in Barrie from rear lot overhead supply to front lot underground supply (primary and secondary). Under this Option, the existing rear lot plant is removed and new underground plant is installed in front lot. This approach would complete mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure. This approach also introduces efficiencies for the utility, as tree trimming activities can be eliminated and line losses associated with the legacy voltage classes can be eliminated. For these reasons, Alectra Utilities selected this approach.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Fluctuation in cost and staff resource (internal and external) to complete high annual volume of work. Risk Management: Alectra has retained external contractor working at different work sites throughout the year under a multi-year EPC (Engineering Procurement Construction) Master Service Agreement. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track.
	Comparative Information on Equivalent Historical Projects (if any) Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	Alectra has completed and is completing similar rear lot remediation project since 2013. Alectra has experience on executing several rear lot remediation project. 0

7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	The scope involves converting the Oakley Park Square near Gunn Street and St. Vincent Street area from rear lot overhead supply to front lot underground supply (primary and secondary). There are a total of 91 customers affected by the existing rear lot supply. Rear lot infrastructure is functionally obsolete for the following key reasons: •The rear lot configuration is generally unsafe to the public due to the large trees growing near energized power lines. In tandem with such an unsafe configuration, there are also line clearing hazards and related additional costs to do this work. •Alectra Utilities is unable to use labour saving tools and devices such as bucket trucks to efficiently maintain and repair the distribution system due to assets located in customer backyards. •Rear lot wood poles are generally congested, due to multiple service attachments and communication drops, which generally make it impossible to sufficiently climb poles. Crews must, therefore, use ladders to access these poles. •Alectra Utilities is limited in utilizing ladders to access the overhead system due to Ministry of Labour restrictions for congested areas. •Due to the presence of legacy porcelain top tie insulators, rear lot lines must be fully isolated before any maintenance or repair work on the overhead system can commence. •Porcelain insulators are far more susceptible to contamination and flashover when compared to present-day standard polymer insulators. •Rear lot infrastructure typically contains undersized #4 aluminum conductor steel-reinforced cable and aluminum conductor, along with #4 and #6 copper conductor, which are undersized and generally have a greater probability of annealing due to their reduced carrying capacity. These conductors must be fully isolated before any work can commence.
	Condition of Asset vs. Typical Life Cycle and Performance Record	It is extremely difficult to gain access to the backyard to maintain, repair, and restore power. As a result there are prolonged outages to customers. This is especially more difficult in the event of ice storm. Many of the Rear Lot Supply distribution systems were built in 1950s, 1960s, and 1970s (40-68 years old in 2016). The rear lot equipment is older than typical useful life and the asset condition is deteriorating. According to the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board", typical useful life of overhead transformers and wood poles are 40 and 45 years respectively. Many of the installations are not in compliance to today's standards. The existing rear lot location at Oakley Park Square near Gunn Street and St. Vincent Street in Barrie will be 57 years old in 2024. The asset is end of life and requires remediation. In addition, the poles in this rear lot location were inspected in 2012 and 2013, where the poles were found to be in fair or poor condition.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	91
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Number of failures and duration based on historical outage data for specific Oakley Park Square rear lot area: August 2015; 20 hour outage (Incident # 733815) March 2016; 8.4 hour outage (Incident # 741602) March 2016; 10.5 hour outage (Incident # 741986) Based on three year average (2015-2017) assume 1 outage at 13 hours for Oakley Park Square rear lot area.
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Rear lot supply failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage). Rear lot system also poses safety hazards to the customers because live electrical components are in proximity of customer's backyard and proper clearance may be violated due to customer's installations (examples: trees, garden, swimming pool, storage shed, deck, house extension).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Not Applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	In case of not implementing the project the OM&A cost will continue to occur due to tree trimming activities as well as increase in responding to outages since the assets are deteriorated and prone to failure.
	Reliability and Safety Factors	This project is part of the long-term rear lot supply remediation program. The project will help avoid potential rear lot failures. In addition, this project also eliminates safety hazards associated with ageing and deteriorating rear lot system. This approach would complete mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure.
	Analysis for "Like for Like" Renewal Project	The selected option is not a like for like replacement. This investment scenario considers the full replacement of existing rear lot infrastructure – including primary and secondary plant – with new front lot underground infrastructure.

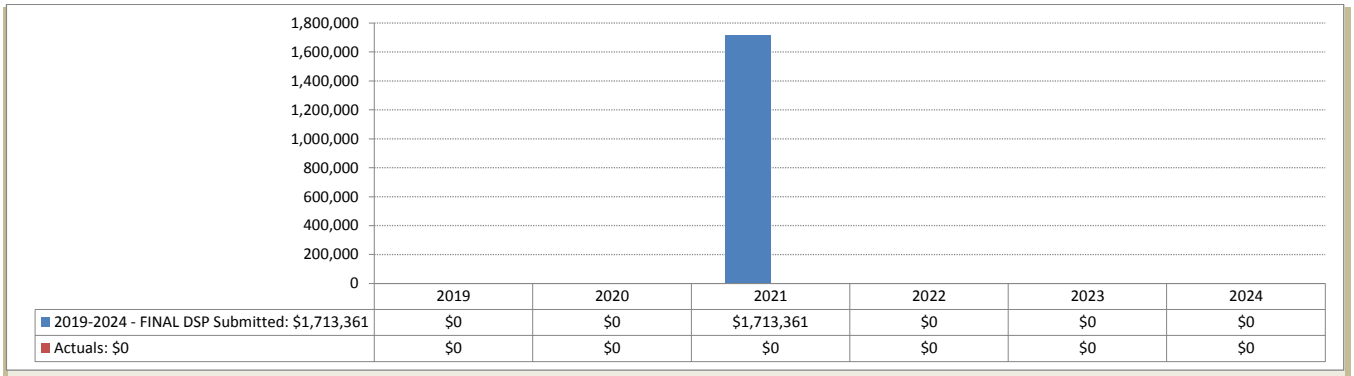


	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,800,029	$0	$0	$0	$0	$0	$1,800,029
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150390	
Project Name	New build - Waterdown 3rd Feeder, Hamilton	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Hamilton
	Location	Hamilton (Waterdown), along Dundas St , from Hwy 6 to Centre Rd
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	This project is to alleviate capacity issues in the Waterdown area of Hamilton, primarily served by two Dundas 27.6kV feeders. This part of the city is seeing steady growth and the load forecast has shown that the existing feeders in the area will be at risk of supplying capacity under a contingency situation. Part of the work to extend a feeder to Waterdown has already been completed, but the intersection of Hwy 6 and Dundas St has been planned to be developed into a cloverleaf intersection for a number of years, leading to ongoing deferrals of this project.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	Continued growth in the area as well as several large customer requests necessitate the increased capacity brought to this area.
	Customer Attachment / Load (KVA)	9756 customers and 111,161 kVA connected.
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Coordination with road authorities on timing of work.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Not proceeding with this project would continue to subject these feeders to loading levels that are above the normal planning limit. This becomes an issue when an outage occurs and in order to restore customers by using adjacent feeders, but in this instance the adjacent feeders are also heavily loaded. Outages often occur during heavy loading periods, which makes restoration under these conditions particularly challenging.
	Alternative #1	Non wires Alternatives Alectra load forecast is net of CDM and DG. Alectra has considered solar and energy storage and for the capacity (20MW) the cost is over 15 times the wires option and hence this option has been rejected.
	Alternative #2	By proceeding with building out the feeder to supply Waterdown with extra capacity, long term growth needs will be met and the feeders will be able to have adequate back-up capabilities during abnormal (N-1) situations. This project is a continuation of existing work already completed.
	Justification for Recommended Alternative	This project is a continuation of work already begun to bring capacity to the area to alleviate constraints on the system where there is growth.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	This project has seen some scheduling impact due to the MTO timing and delays to the proposed cloverleaf at Hwy 6 and Dundas St where this new feeder circuit currently ends. As any work related to this project is on-hold indefinitely, Alectra is proceeding with building out the pole line to bring the capacity to where it is needed and will include consideration to any relocation work required in the future due to the new cloverleaf. Delaying this project any further presents an unacceptable risk to being able to provide adequate capacity to customers in the Waterdown area.
	Comparative Information on Equivalent Historical Projects (if any)	This project consists of normal work to add a second circuit to an existing pole line along Dundas St. There will be some poles that will be required to be replaced to meet current clearance standards for having a double circuit.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	This project will help to address capacity issues where feeders in the Waterdown area are exceeding the Planning limit, and in extreme weather years, encroaching on thermal limits.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not applicable.
	Identify any reliability, efficiency, safety or coordination benefits	Not applicable.

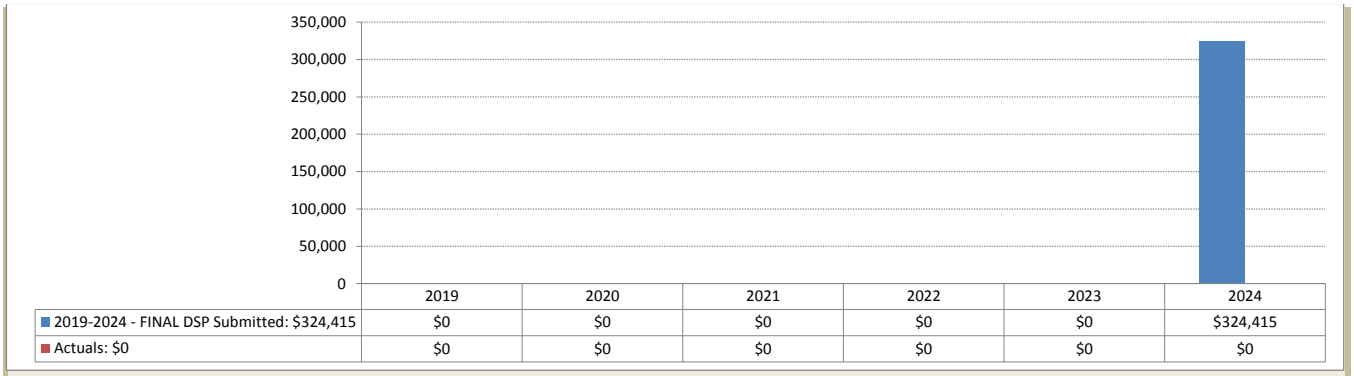


	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,713,361	$0	$0	$1,713,361	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150394	
Project Name	King St. Voltage Conversion & Loop (LRT Betterment)	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	Hurontario St south of King St.
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Overhead Asset Renewal
	Alectra Subcategory	Voltage Conversion
4. Evaluation Criteria (OEB)	Project Summary	4.16kV to 27.6kV Voltage Conversion and looping to increase reliability of existing system. East Hurontario St and King St. Completing this project before LRT work will allow backup during LRT work.
	Main Driver - System Renewal	
	Priority and Reasons for Priority	Not Applicable
	Customer Attachment / Load (KVA)	1750 kVA of existing load.
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Work along Hurontario will occur due to LRT work.
	Economic Development	Not Applicable
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do Nothing Rebuild like-for-like when required.
	Alternative #1	This is not the recommended option. Convert to 27.6kV and loop the building for contingency.
	Alternative #2	This is the recommended option. Not Applicable.
	Justification for Recommended Alternative	4 transformers are radially supplied and 3 are 4.16kV. Conversion and looping will provide contingency and agree with the overall plan of converting from 4.16kV to 27.6kV.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	
	Condition of Asset vs. Typical Life Cycle and Performance Record	
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	
	Value of Customer Impact	
	Factors Affecting Project Timing, if any	
	Consequences for O&M System Costs Including Implications of Not Implementing	
	Reliability and Safety Factors	
	Analysis for "Like for Like" Renewal Project	



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $324,415	$0	$0	$0	$0	$0	$324,415
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

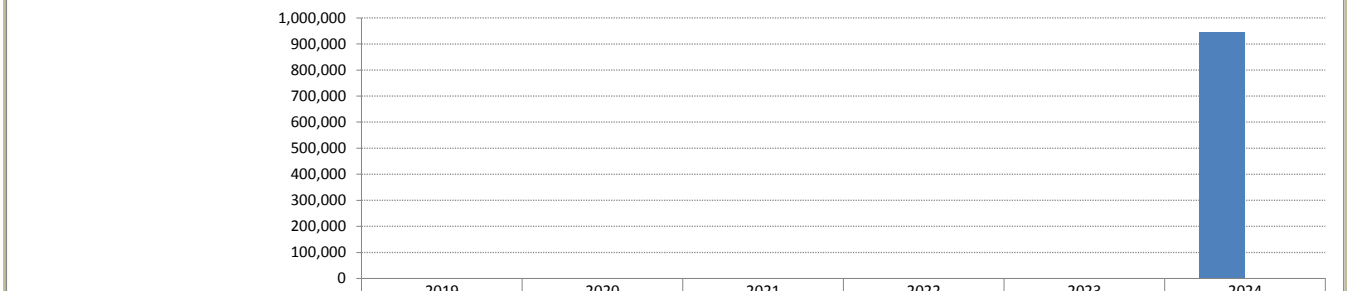
OEB Multi-Project Report

Project Code	150398
Project Name	Rear Lot Renewal Project - Strathcona Dr
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	St. Catherines
	Location	
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Rear Lot Conversion
	Alectra Subcategory	Rear Lot Conversion
4. Evaluation Criteria (OEB)	Project Summary	This project is to convert existing rear lot primary distribution to a front lot supply. Rear lot primary poses a problem for both reliability and safety. Due to the reduced access to the distribution assets, restoration of power to customers is significantly impacted by not having access to powered equipment, while also presenting risks to workers .
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Alectra has many pockets of customers being supplied by rear lot construction. The electrical system is ageing and deteriorating and poses many operations, safety, and customer service concerns that must be addressed. If not addressed, the system will deteriorate further and failures and safety hazards will increase to a level that is not manageable and not tolerable by the customers.
	Customer Attachment / Load (KVA)	187 customers & 730 kVA
	Safety	Rear lot construction is difficult to replace and many of the poles are not to correct specifications and cannot be climbed making repairs take much longer than for standard construction. These assets also pose a risk to the public as the poles or transformer could fall into the customers backyards.
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	Not applicalbe
	Economic Development	Not applicable
	Environmental Benefits	No oil spills from the transformers in customer's backyard.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	By leaving the assets to deteriorate in the rear lot, the customers would see an increasing risk to both prolonged outages as well as exposure to safety-related incidents inherent in having primary distribution assets in backyards.
	Alternative #1	By leaving the primary supplied overhead on pole lines, but burying the secondary services to the customers there will be improved access to the assets compared to status quo, which will improve reliability in the event of an outage. However, since the primary wires will still be exposed to tree contact and weather factors, the reliability benefit can not be seen to be as effective as would be gained by burying the primary.
	Alternative #2	By burying both the primary and secondary and having the assets installed in the front of the property, reliability benefits will be greatly improved over status quo, as well as proper access for maintenance and inspection of assets. This is also the most aesthetically pleasing for the customer, and minimizing the impact to tree trimming.
	Justification for Recommended Alternative	Each year a number of rear lot locations are selected for remediation to address operations concerns and to maintain system reliability and customer service by implementing these rear lot conversion/storm hardening projects. In this instance, the cost delta to go full underground represents a 33% cost premium.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Customer expectation for what the new distribution will look like is a risk, especially if the customer is pushing for a more aesthetically-pleasing but more expensive alternative by going fully underground. Customer consultation will be an important step in mitigating this risk and ensure the public and the utility are aligned in addressing this renewal.
	Comparative Information on Equivalent Historical Projects (if any)	Similar rear lot projects have been budgeted between $1.25MM - $2MM per year, depending on whether a full underground solution or only partial underground solution is chosen.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0

7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	The issues and concerns with rear lot supply are summarized below. Concerns to Customers 1. Long outage restoration time due to difficult accessibility for Alectra crews: • In comparison to front lot customers, rear lot customers have to wait longer for the crews to restore power during an outage. The crews have to gain access to the back yard to identify, locate, isolate, and repair/replace equipment. In heavily vegetated areas, the crews must also clear or trim the vegetation before they can access the equipment. • If the replacement of major equipment (e.g. pole, transformer) is necessary, the outage time will extend because the crews need specialized equipment (e.g. large crane) to reach over customer houses to the rear lot. 2. More frequent outages due to vegetation, animal contact, and lack of access for Alectra crews: • When a rear lot supply was first constructed, the area was likely clear of obstruction. Over time, however, trees/ bushes have grown near the electrical equipment, and may make contact with the power line. The growth of vegetation also increases the risk of animals (e.g. squirrels) coming into contact with electrical equipment. 3. Safety risk associated with close proximity to power line in the backyard: • Although the Electrical Safety Code and easement terms specify minimum clearance between customer facilities and power line, there are many cases that customers do not follow the safety rules and install facilities too close to power line. Examples are shed, storage, playground, trampoline, swimming pool, patio deck, landscape, house extension, etc. This encroachment creates a safety hazard for both customers and crews. Concerns to Alectra: 1. Decreased system reliability: • Higher outage frequency and longer outage duration will negatively impact system reliability. 2. Difficult accessibility for crew and equipment: • Due to obstructions such as trees and customer construction, crews encounter difficulty to gain access, bring in equipment, and create a safe working space in the rear lot. As a result, it is difficult to inspect, maintain, repair and replace equipment. Under emergencies, it is difficult to identify/isolate faulted components and perform switching. Accessibility for service vehicles is often impractical. In some cases, large cranes may be needed to reach over the rear lot from the street. In addition, system security is also at risk because the pole line is out of sight. This increases the risk of equipment being neglected and left to deteriorate. 3. Safety risk associated with reduced clearance due to encroachment of power line:
	Condition of Asset vs. Typical Life Cycle and Performance Record	It is extremely difficult to gain access to the backyard to maintain, repair, and restore power. As a result there are prolonged outages to customers. This is especially more difficult in the event of ice storm. Many of the Rear Lot Supply distribution systems were built in 1950s, 1960s, and 1970s . The rear lot equipment is older than typical useful life and the asset condition is deteriorating. According to the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board", typical useful life of overhead transformers and wood poles are 40 and 45 years respectively. Many of the installations are not in compliance to today's standards.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	187
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	3 year stats for BUM77: 44 outages & 243,365 customer minutes (21 minutes/customer/year)
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Rear lot supply failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage). Rear lot system also poses safety hazards to the customers because live electrical components are in proximity of customer's backyard and proper clearance may be violated due to customer's installations (examples: trees, garden, swimming pool, storage shed, deck, house extension).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Not applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	Not applicable
	Reliability and Safety Factors	Due to rear lot location these assets are not easily accessible.
	Analysis for "Like for Like" Renewal Project	Not applicable.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $944,871	$0	$0	$0	$0	$0	$944,871
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

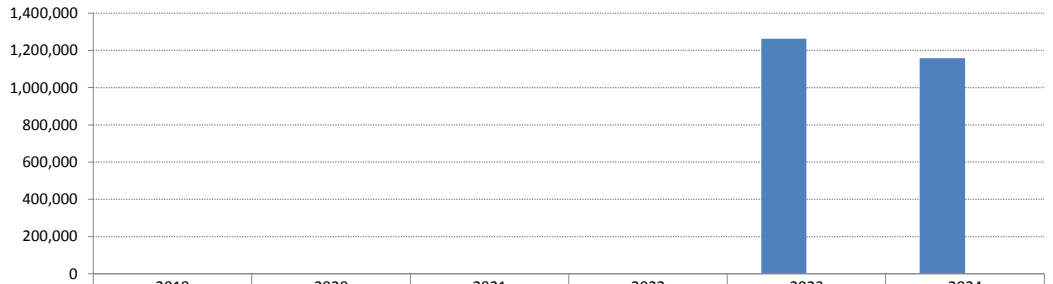
Project Code	150399
Project Name	Rear Lot Renewal Project - Richlieu Dr and Trelawne Dr, St.Catharines
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	St. Catherines
	Location	St.Catharines, north end
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Rear Lot Conversion
	Alectra Subcategory	Rear Lot Conversion
4. Evaluation Criteria (OEB)	Project Summary	This project is to convert existing rear lot primary distribution to a front lot supply. Rear lot primary poses a problem for both reliability and safety. Due to the reduced access to the distribution assets, restoration of power to customers is significantly impacted by not having access to powered equipment, while also presenting risks to workers .
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Alectra has many pockets of customers being supplied by rear lot construction. The electrical system is ageing and deteriorating and poses many operations, safety, and customer service concerns that must be addressed. If not addressed, the system will deteriorate further and failures and safety hazards will increase to a level that is not manageable and not tolerable by the customers.
	Customer Attachment / Load (KVA)	185 customers & 708 kVA
	Safety	Although the Electrical Safety Code and easement terms specify minimum clearance between customer facilities and power line, there are cases that customers do not follow the safety rules and install facilities too close to power line. Examples are shed, storage, playground, trampoline, swimming pool, patio deck, landscape, house extension, etc. This encroachment creates a safety hazard for both customers and crews. Safety risk associated with reduced clearance due to encroachment of power line: Over time, growth of vegetation and obstruction due to customer facilities may jeopardize the minimum clearance requirements and restrict crew mobility. Occasionally dogs may also be a safety hazard to the crews.
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	Not applicalbe
	Economic Development	Not applicable
	Environmental Benefits	Because overhead transformers are installed on the pole in rear lot area, a pole falling down may also cause the transformers to fall down, resulting in transformer tank rupturing, and oil being spilled onto the ground.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Under this option, no proactive investments would be executed to replace either existing rear lot infrastructure and these assets would only be intervened upon in reactive scenarios, when the assets have reached their end-of-life. Under this approach, customers would be exposed to prolonged reliability impacts, due to the accessibility issues associated with rear lot infrastructure, as well as the complex restoration procedures that would be required for a four-feeder outage event. As standardized equipment (e.g. bucket trucks) cannot be used to service rear lot plant, wood poles, transformers and overhead switches would have to be replaced manually, with field crews accessing private customer properties in order to execute the work. Customers and field crews would continue to be exposed to elevated safety risks, due to the minimal proximity between customer plant and the rear lot overhead lines, as well as the non-standard and non-ergonomic work procedures that field crews would have to continue to execute to sufficiently maintain, inspect and service the plant. Finally, as assets are replaced reactively, new assets would need to be installed according to the rear lot configuration. By its design, rear lot can only be converted if the entire line is replaced at once as part of an overall project. Therefore, the legacy design will continue to be maintained under this scenario. This will include the continued operation of the legacy voltage system, along with continuing the associated inefficiencies, such as line losses.

	Alternative #1	Remediate the existing rear lot plant with other design options . The other design options considered are described below. Rear Lot Overhead Option: Under this Option, the existing rear lot plant is replaced with new overhead plant in the rear lot. When the replacement project is implemented, the following design parameters should be considered: •Install critical components such as fuse, switch, and transformer as close to the accessible street as possible This Option is not acceptable because it does not resolve the major operations and customer reliability concerns related to the distribution assets located at rear lot at this location. Partial Underground Option This scenario involves the replacement of existing rear lot infrastructure with a new hybrid solution, where primary voltage infrastructure, including transformers, switches and lines would be installed as per an underground configuration within the front right-of-way, following standard Alectra Utilities installation practices. Under this approach, secondary infrastructure, including wood poles and secondary conductor, would remain in the rear lot in overhead configuration. This approach would not fully address the reliability and safety concerns associated with rear lot distribution, as secondary connections will remain in the rear lot. However, future outage impacts will be reduced and contained to only those customers connected to the associated transformer. Lower voltage classes will also be converted up to the standardized 27.6kV voltage standard as per this investment option. Under this option, reliability and safety issues would continue to persist due some infrastructure remaining overhead. The cost of partial underground renewal is higher than the renewal of the rear lot overhead and further more does not result in mitigating the risks associated with the existing system. This partial underground approach has been adopted where feasible.
	Alternative #2	Replace with Full Underground Infrastructure This investment scenario considers the full replacement of existing rear lot infrastructure – including primary and secondary plant – with new front lot underground infrastructure. All existing primary and secondary distribution assets within the rear lot corridor will be removed and replaced with new underground primary and secondary infrastructure that is installed within the front lot corridor as per current standard design practices. Underground secondary cables will run from the front lot underground transformers to the individual meter bases in order to supply the customers. Under this approach, existing under-classed legacy wood poles will be replaced with higher-class poles that are better suited to withstand major weather events. Through this investment scenario, these high impact assets will be better secured and weather-hardened against future outage events. This approach would completely mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure. This approach also introduces efficiencies for the utility, as tree trimming activities can be eliminated.
	Justification for Recommended Alternative	It is recommended to convert the area to partial underground. This approach would mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure. For these reasons, Alectra Utilities selected this approach.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Customer expectation for what the new distribution will look like is a risk, especially if the customer is pushing for a more aesthetically-pleasing but more expensive alternative by going fully underground. Customer consultation will be an important step in mitigating this risk and ensure the public and the utility are aligned in addressing this renewal.
	Comparative Information on Equivalent Historical Projects (if any)	Alectra Utilties has completed rear lot conversion projects.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Rear lot infrastructure is functionally obsolete for the following key reasons: •The rear lot configuration is generally unsafe to the public due to the large trees growing near energized power lines. In tandem with such an unsafe configuration, there are also line clearing hazards and related additional costs to do this work. •Alectra Utilities is unable to use labour saving tools and devices such as bucket trucks to efficiently maintain and repair the distribution system due to assets located in customer backyards. •Rear lot wood poles are generally congested, due to multiple service attachments and communication drops, which generally make it impossible to sufficiently climb poles. Crews must, therefore, use ladders to access these poles. •Alectra Utilities is limited in utilizing ladders to access the overhead system due to Ministry of Labour restrictions for congested areas. •Due to the presence of legacy porcelain top tie insulators, rear lot lines must be fully isolated before any maintenance or repair work on the overhead system can commence. •Porcelain insulators are far more susceptible to contamination and flashover when compared to present-day standard polymer insulators. •Rear lot infrastructure typically contains undersized #4 aluminum conductor steel-reinforced cable and aluminum conductor, along with #4 and #6 copper conductor, which are undersized and generally have a greater probability of annealing due to their reduced carrying capacity. These conductors must be fully isolated before any work can commence.

Condition of Asset vs. Typical Life Cycle and Performance Record	It is extremely difficult to gain access to the backyard to maintain, repair, and restore power. As a result there are prolonged outages to customers. This is especially more difficult in the event of ice storm. Many of the Rear Lot Supply distribution systems were built in 1950s, 1960s, and 1970s . The rear lot equipment is older than typical useful life and the asset condition is deteriorating. According to the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board", typical useful life of overhead transformers and wood poles are 40 and 45 years respectively. Many of the installations are not in compliance to today's standards.
Number of Customers in Each Customer Class Potentially Affected by Asset Failure	185
Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	3 Year stats for BUM75 (2014 - 2017) 40 outages, 922,245 customer minutes (87 minutes/customer/year)
Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Rear lot supply failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage). Rear lot system also poses safety hazards to the customers because live electrical components are in proximity of customer's backyard and proper clearance may be violated due to customer's installations (examples: trees, garden, swimming pool, storage shed, deck, house extension).
Value of Customer Impact	High
Factors Affecting Project Timing, if any	Not applicable
Consequences for O&M System Costs Including Implications of Not Implementing	In case of not implementing the project the OM&A cost will continue to occur due to tree trimming activities as well as increase in responding to outages since the assets are deteriorated and prone to failure.
Reliability and Safety Factors	This approach mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure.
Analysis for "Like for Like" Renewal Project	The selected option is not a like for like replacement.

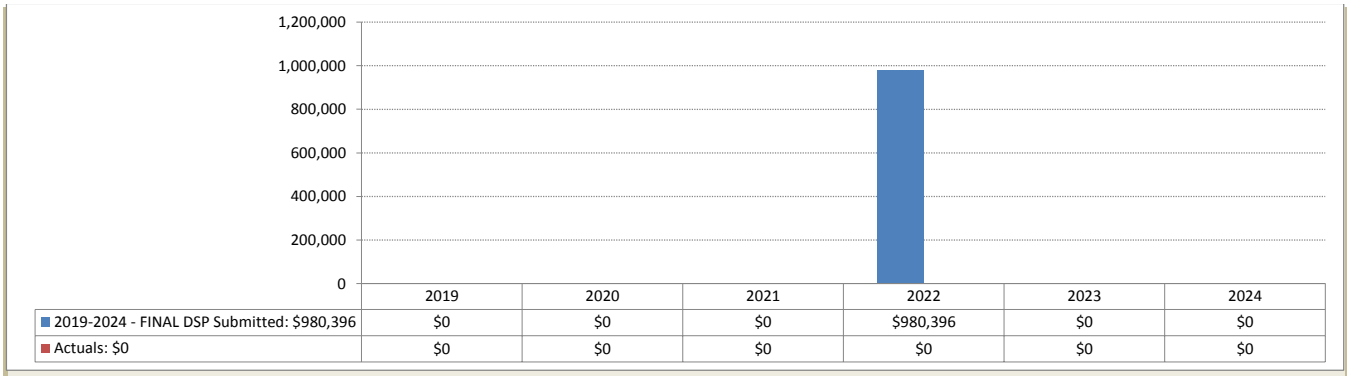


	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $2,420,705	$0	$0	$0	$0	$1,263,321	$1,157,384
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150401	
Project Name	136M6 Goreway TS Extensions	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Brampton
	Location	Goreway Dr from Goreway Dr to Countryside Dr and to Cottrelle Blvd
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	136M6 feeder expansions from Goreway TS to Cottrelle Blvd; first section underground from Goreway TS to Goreway Drive up to Countryside Drive, second section overhead Goreway TS to Cottrelle Blvd. The 136M6 feeder will provide capacity for future residential and small commercial loads around Gore Rd., Ebenezer Rd. & Castlemore Rd. 136M6 will off load and provide contingency for 136M4 on the south section of this area.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	This feeder will supply future residential & small commercial loads around the Gore Rd., Ebenezer Rd. & Castlemore Rd. 136M6 will off load 136M4 on the south section of the area mentioned.
	Customer Attachment / Load (KVA)	Feeder will provide contingency for the below circuits. 136M47 93A (2017 Peak) 136M52 334A (2017 Peak)
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Start of this project will commence after city road widening is complete.
	Economic Development	Not Applicable
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do Nothing Future customers will not be able to receive service.
	Alternative #1	This is not the recommended alternative. Extend 136M6 Extension of the M6 circuit will allow for
	Alternative #2	This is the recommended alternative. Not Applicable
	Justification for Recommended Alternative	Capacity is required to supply customers.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Initiation requires completion of city road widening.
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Capacity will be provided for customers.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable
	Identify any reliability, efficiency, safety or coordination benefits	Not Applicable



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $980,396	$0	$0	$0	$980,396	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

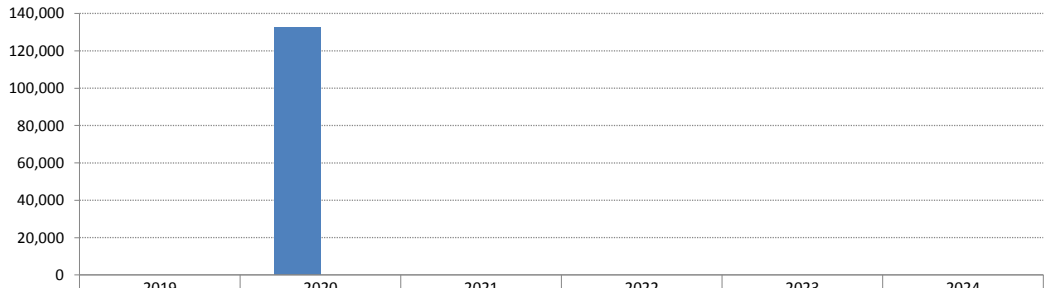
Currency scale is in literal

OEB Multi-Project Report

Project Code	150410
Project Name	42M66 OH Feeder Egress Mississauga Rd, Bovaird to CNR
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Brampton
	Location	Mississauga Rd from Bovaird Dr. to CNR Tracks
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	42M66 overhead circuit expansion on Mississauga Road from Bovaird Drive to CNR tracks. Capacity is needed to accommodate greenfield expansion and provide future customers in the area of Bovaird Dr and Mississauga Rd.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	Capacity is needed for future customers.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Pending road work on Mississauga Rd.
	Economic Development	Not Applicable
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do Nothing. Future load will not be possible. This is not the recommended alternative.
	Alternative #1	Construct OH circuit to extend 42M66 Capacity will be delivered to future customers. This is the recommended alternative.
	Alternative #2	Not Applicable
	Justification for Recommended Alternative	Future capacity will be serviced by the 42M66.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable
	Identify any reliability, efficiency, safety or coordination benefits	Not Applicable

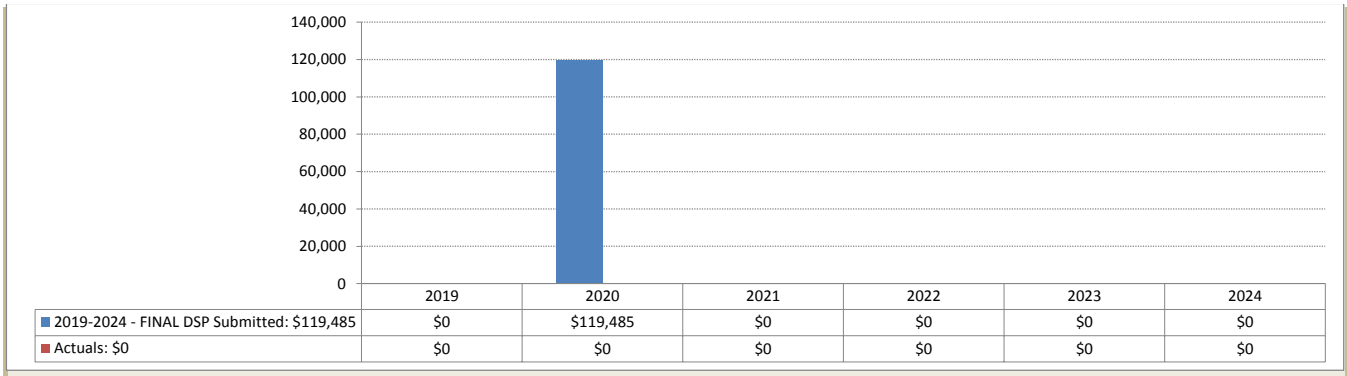


	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $132,323	$0	$132,323	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150411	
Project Name	42M64 Feeder Extension Mississauga Rd, Williams Pkwy to Queen / Embleton	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Brampton
	Location	Mississauga Rd from Queen St. to Embleton Rd.
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	42M64 feeder extension Mississauga Road from Queen Street to Embleton Road in order to supply new subdivision developments at Embleton; provide relief to 25M8 to serve future growth. The current feeder 25M8 is approaching planning limits. The 42M6 will offload 25M8 and will provide contingency for the existing and new customers.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	High Priority due to new developments. Can currently be fed by existing 25M8, but requires expansion for future growth.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Not Applicable
	Economic Development	Not Applicable
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do Nothing New Capacity will not be made available.
	Alternative #1	This is not the recommended alternative. Extend lines to bring capacity into the proposed area. Future developments will require capacity brought by this circuit.
	Alternative #2	This is the recommended alternative. Not Applicable
	Justification for Recommended Alternative	High Priority due to new developments. Can currently be fed by existing 25M8, but requires expansion for future growth.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable
	Identify any reliability, efficiency, safety or coordination benefits	Expansion of this circuit will allow contingency for backup and thus increase reliability.

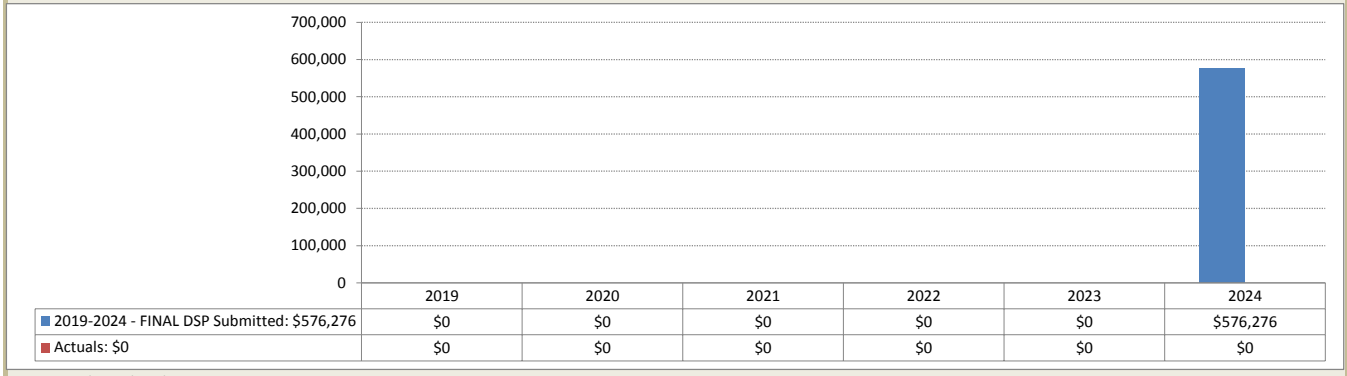


	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $119,485	$0	$119,485	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150421	
Project Name	2D7X Pimlico Dr - Voltage Conversion and Rear Lot	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Hamilton
	Location	
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Overhead Asset Renewal
	Alectra Subcategory	Voltage Conversion
4. Evaluation Criteria (OEB)	Project Summary	This project is to perform a voltage conversion from 4kV to 27.6kV downstream from a step-down transformer on Pimlico Dr in Ancaster. There is also a portion of the project to address some direct buried URD construction within the neighbourhood. This project was part of the Horizon Utilities Custom IR list for 2019 but was deferred to 2020.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	This area is supplied at 4kV through direct buried cable with a rear-lot loop feed, although it is essentially a radial supply since both sides of the loop come from the same step-down transformer. All three of these factors together create a compelling argument for the renewal of the assets in this area.
	Customer Attachment / Load (KVA)	38 customers & 150 kVA
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	Lower line losses due to higher voltage class.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	By leaving the area as-is, we would be deferring the opportunity to address aging infrastructure and potentially exposing these customers to further interruptions.
	Alternative #1	This alternative proposes to renew the assets in the area while also proceeding with voltage conversion to a higher voltage class for the equipment. Other benefits include taking the opportunity to redesign the feeder configuration to provide improved reliability where possible by installing ducts where none exist today, making future response to outages much shorter in duration and future renewal less costly.
	Alternative #2	Not applicable.
	Justification for Recommended Alternative	This area would have been left as-is during the last voltage conversion that was conducted in Ancaster to bring surrounding areas to 27kV. Given the vintage of the majority of assets is the 1950's, it makes sense to take the cost effective approach to replace the remaining assets in a systematic way. To perform voltage conversion at the same time is prudent to bring this pocket of customers up to the same voltage class as surrounding areas.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable.
	Comparative Information on Equivalent Historical Projects (if any)	This area is a spot conversion and as such will be estimated out on an individual project basis.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	The area is supplied by direct buried 70's vintage XLPE cable, which is at or near end of life.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Average health index of the direct buried cables was 0.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	38
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	2D7X 3 year outage stats: 29 outages and 923,110 customer minutes (65.74 minutes/customer/year)
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	This project will address aging assets with inadequate backup. Aging assets represent an increased risk of service interruption to customers and inadequate backup would result in long duration service interruptions upon occurrence. These factors would lead to customer dissatisfaction in this area.
	Value of Customer Impact	Medium
	Factors Affecting Project Timing, if any	Not applicable.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not applicable.
	Reliability and Safety Factors	Reliability benefits are found in the form of installing duct structure where none exists today, minimizing outage time for future interruptions and reducing capital costs for future asset renewal projects.
	Analysis for "Like for Like" Renewal Project	Like for like renewal would address the issue of equipment failure due to end-of-life assets in the area, but there is no system benefit in rebuilding this area at 4kV.

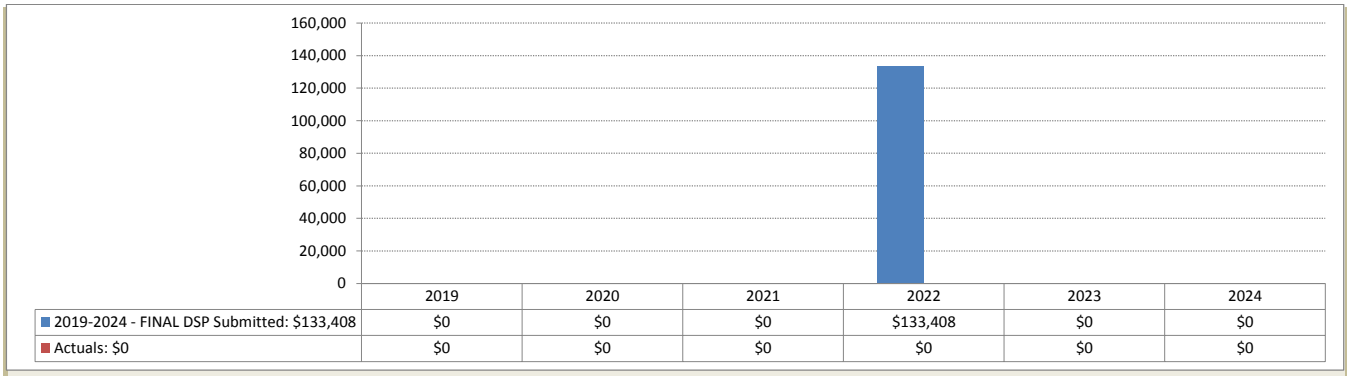


	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $576,276	$0	$0	$0	$0	$0	$576,276
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150422	
Project Name	136M9 Feeder Extension Castlemore Rd, Goreway Dr to McVean Dr	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Brampton
	Location	Castlemore Rd. from Goreway Dr. to McVean Dr.
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	136M9 overhead feeder extension Castlemore Rd. from Goreway Dr. to McVean Dr. This project provides 136M9 capacity along Castlemore Dr from Goreway Dr to McVean Dr., and McVean will bring greenfield capacity up to Mayfield Rd to service north east Brampton. 136M9 in future will connect to and provide offloading and contingency for 136M8 (326A) and 136M42 (290A).
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	The stretch on Castlemore drive brings the 136M9 feeder to McVean Dr. McVean Dr brings the 136M9 up to Mayfield Rd to service north east Brampton. The 138M8 is approaching planning limits and new customers are being connected. The 136M9 will offload 136M8 and will provide additional contingency.
	Customer Attachment / Load (KVA)	136M9 in future will connect to: 136M8 326A (2017 Peak) 136M42 290A (2017 Peak) 136M47 93A (2017 Peak) - Currently provides service on McVean
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Contingent on 2 lane to 6 lane road widening.
	Economic Development	Not Applicable
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do Nothing Future demand will not be met.
	Alternative #1	This is not the recommended alternative. Install OH 136M9 extension This will bring 136m9 egress up to McVean Dr for future extension.
	Alternative #2	This is the recommended alternative. Not Applicable
	Justification for Recommended Alternative	This will bring 136M9 egress up to McVean Dr for future extension. McVean Dr brings the 136M9 up to Mayfield Rd to service north east Brampton.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable
	Identify any reliability, efficiency, safety or coordination benefits	Not Applicable

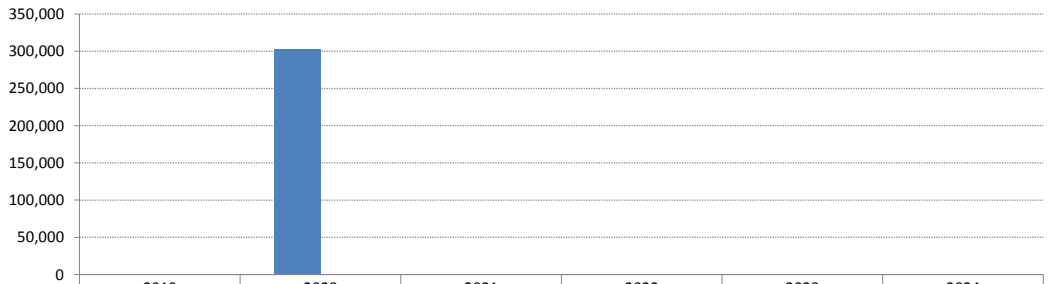


	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $133,408	$0	$0	$0	$133,408	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150464	
Project Name	Fieldworker Upgrade - IT/OT Infrastructure	
Major Category	General Plant	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Undefined
	Location	
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Information Technology Systems
	Alectra Subcategory	IT Upgrades & Enhancements
4. Evaluation Criteria (OEB)	Project Summary	Enhancement to mobile field force system Fieldworker to support process improvement requirements\ Enhancements - Business Driven Enhancements CIS Interfaces Field worker is one of the core applications of the organization, operational enhancements come in from a number of venues and thereby feedback into the other downstream systems. These enhancements are considered for the overall customer and organizational benefits.
	Main Driver - General Plant	Customer Service
	Priority and Reasons for Priority	Business Driven
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Not Applicable.
	Economic Development	Not Applicable.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	By maintaining a status quo Fieldworker, the organization is at risk of missing process improvements and enhancements that drive efficiencies and meet new business demands. Without making changes to address any enhancements, the lack in operational efficiencies of the system will impede the ability to meet customer requirements.
	Alternative #1	Not Applicable
	Alternative #2	Not Applicable
	Justification for Recommended Alternative	To allocate capital dollars to ensure Alectra's mobile field force application (Fieldworker) continues to operate efficiently and meet customer and business requirements.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Ensure proper project management and solftware development lifecycle processes are adhered, along with a steering commitee, vendor management, evaluation criteria & priority.
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Not Applicable.



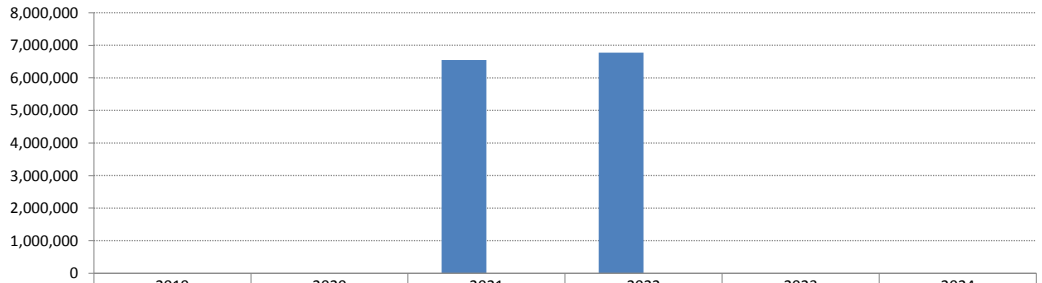
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $303,416	$0	$303,416	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150467	
Project Name	CIS CC&B upgrade	
Major Category	General Plant	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Undefined
	Location	
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Information Technology Systems
	Alectra Subcategory	IT Upgrades & Enhancements
4. Evaluation Criteria (OEB)	Project Summary	Meter to Cash systems are comprised of number of IT systems involved in the meter to cash process including Meter Reading, Advanced Metering Infrastructure (AMI) systems, Meter Data Management, Wholesale and Retail Settlement, EBT transactions, MDMR transactions, Billing, Cash, Collections, Business Intelligence and related field activity systems, including interfaces among these systems. Interfaces to ERP, CRM and GIS applications are also supported. Supporting approximately 900-1000 users; Alectra's meter to cash process is to maintain and operate Oracle Customer Care and Billing (CC&B) CIS system and its auxiliary systems in order to provide efficient and accurate meter readings and billing for the residents of Alectra Utilities. Originally implemented in production in 2018 along with smart meter systems, and other auxiliary applications. The solution supports the following business areas: •Customer Service i.e. customer account management/premise management/customer contact •Collection •Metering i.e. meter management/field activities •Meter Readings i.e. validation/estimation •Billing i.e. bill creation/adjustments •Wholesale Settlement i.e. settlement with IESO, embedded generation, Hydro One, etc. •Retail Settlement i.e. settlement with retailers and retail transactions CCB upgrade is a critical roadmap component to ensure that we maintain adequate support from primary vendor (Oracle) as well as other involved vendors e.g. hardware, Operating Systems, etc. who are part of the CIS echo-system. If unsupported, the operation risks increases daily as there is constant change in technology and constant threats e.g. security. Vendor support would be only for most recent version or n-x depending on the support policy. Thus older software versions outside the n-x will be unsupported and any new releases are not backwards compatible, leaving the organization with significant operational risks. Furthermore, the greater the gap between the version used and latest product version may result in significant additional costs in the future as the upgrade may need to be performed in multiple steps.
	Main Driver - General Plant	Customer Service
	Priority and Reasons for Priority	Prioritization considers business needs and vendor support agreements (in terms of upgrade requirements for the larger enterprise systems). For Alectra Enterprise Systems the vendor roadmaps and vendor specifications provide Investment direction in terms of upgrades. These guidelines ensure the optimal amount of vendor support, enhancements to maximize benefits of the systems and security patches to maintain and protect data and information. For CC&B - Alectra uses the Oracle CC&B roadmap as a guide for vendor support and upgrades.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Various system are integrated to CC&B such as the AMI, MDMR, ERP, GIS. - upgrading will continue to ensure compatibility and functionality with all related systems as each system is enhanced and upgraded.
	Economic Development	Not Applicable.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	By maintaining the status-quo on CCB and meter-to-cash auxiliary systems, Alectra does not benefit from process improvements and enhancements issued with updates and upgrades that drive efficiencies and meet new business demands. More importantly, maintaining status-quo will result in software being out of vendor support exposing the organization to risks as relates to:- 1-Vendor support, system fixes and Security patches to protect customer information and data integrity would be compromised if systems are not upgraded and not supported. 2-System reliability is compromised without system upgrades and update. 3-System failures and potential prolonged restoration to address issues could significantly affect Alectra's operations and its ability to deliver service to customers and execute planned work programs. Finally without upgrade and utilization of new product enhancements, the lack of realizing new operational efficiencies can impede the ability to meet future business customer requirements.
	Alternative #1	Alectra maintains upgrades and software applications to support business and customer facing applications. By maintaining upgrades on software, Alectra would benefit from associated improvements, security patches and system fixes that come with upgrades that in turn drive efficiencies, improve processes and meet new business demands.

	Alternative #2	An alternative to updating software to current versions would be to purchase extended support from the vendor, if available. Alectra has determined that this option would not deliver value for Alectra or its customers, as: - Extended support, if available, comes at a higher operating cost than regular ongoing maintenance. Vendors required to support end of life software version can cost up to 25% – 30% more than normal maintenance costs. However, even if Alectra choses to pay the additional costs, vendors can't guarantee that they will be able to provide the full support particularly as relates to security because the software is one component of the echo-system that is fully dependent on other components (e.g. Operating System, JAVA version, etc.). These other components are often outside of the software vendors' control and they can never guarantee 100% backwards compatibility. Another alternative is to implement a new CIS system, this is a much more expensive option, particularly •Requiring a significant capital investment to implement a new CIS system approximately $78M to $95M •Imposing significant write-off for the value of the current system. Both costs and write-off are completely unwarranted since the current system is capable of meeting the current operation and future demands if upgraded and maintained accordingly. The greater the gap between the version used and latest product version may result in significant additional costs in the future as the upgrade may need to be performed in multiple steps.
	Justification for Recommended Alternative	Alternative 1 selected : To allocate capital dollars to ensure Alectra's Customer Information System continues to operate efficiently and meet customer and business requirements. Upgrading will ensure the optimal amount of vendor support, enhancements to maximize benefits of the system and security patches to maintain and protect data and information.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Ensure proper project management and software development lifecycle processes are adhered, along with a steering commitee, vendor management, evaluation criteria & priority.
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Not Applicable.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $13,322,386	$0	$0	$6,545,804	$6,776,582	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150511
Project Name	Installation of SWI Video security system at 4 MS stations per year - Annual Multi-year initiative-WEST
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Hamilton
	Location	
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Safety & Security
	Alectra Subcategory	Security
4. Evaluation Criteria (OEB)	Project Summary	Install SWI video cameras at 4 MS stations and connect to SCADA network.
	Main Driver - System Service	Safety
	Priority and Reasons for Priority	Station Copper theft and vandalism has been on the increase over the recent years. The implementation of video monitoring will ensure that station security and safety related issues can be easily identified and addressed immediately. Personnel and Public safety is critical so the faster the response to a safety/security related issue the better the chances are that losses would be minimal or non existent.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Video camera monitoring allow for remote equipment condition assessment as well as site and property security monitoring. Weather conditions are also available remotely.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Not Applicable
	Economic Development	Not Applicable
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do nothing.
	Alternative #1	Not Applicable
	Alternative #2	Not Applicable
	Justification for Recommended Alternative	Station security is extremely important. Stations are targets for physical theft and vandalism as well as cyber. A smart video security system like the SWI which is standard at all new TS stations, provides alerting and alarming as well as manual control of video cameras to monitor equipment condtions and operations.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable
	Identify any reliability, efficiency, safety or coordination benefits	Not Applicable

	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $165,225	$0	$0	$0	$0	$0	$165,225
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150512	
Project Name	Installation of SWI Video security system at 4 MS stations per year - Annual Multi-year initiative-CENTRAL	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream North & South
	Location	
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Safety & Security
	Alectra Subcategory	Security
4. Evaluation Criteria (OEB)	Project Summary	Install SWI video cameras at 4 MS stations and connect to SCADA network.
	Main Driver - System Service	Safety
	Priority and Reasons for Priority	Station Copper theft and vandalism has been on the increase over the recent years. The implementation of video monitoring will ensure that station security and safety related issues can be easily identified and addressed immediately. Personnel and Public safety is critical so the faster the response to a safety/security related issue the better the chances are that losses would be minimal or non existent.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Video camera monitoring allow for remote equipment condition assessment as well as site and property security monitoring. Weather conditions are also available remotely.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Not Applicable
	Economic Development	Not Applicable
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do nothing.
	Alternative #1	Not Applicable
	Alternative #2	Not Applicable
	Justification for Recommended Alternative	Station security is extremely important. Stations are targets for physical theft and vandalism as well as cyber. A smart video security system like the SWI which is standard at all new TS stations, provides alerting and alarming as well as manual control of video cameras to monitor equipment condtions and operations.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not Applicable
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable
	Identify any reliability, efficiency, safety or coordination benefits	Not Applicable

	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $165,225	$0	$0	$0	$0	$0	$165,225
Actuals: $0	$0	$0	$0	$0	$0	$0

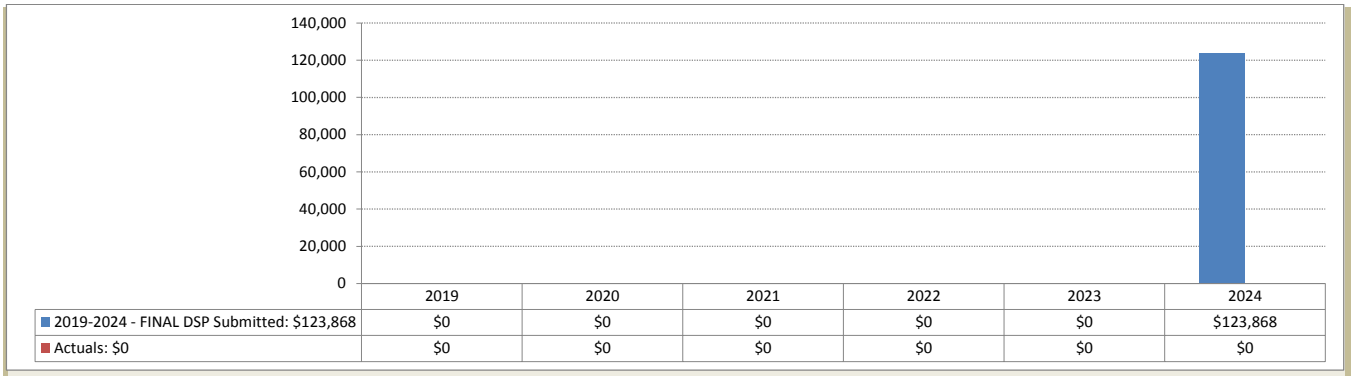
Currency scale is in literal

OEB Multi-Project Report

Project Code	150519
Project Name	Upgrade to Station Facilities (Building / Civil work) MultiYear - East
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North & South
	Location	
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Substation Renewal
	Alectra Subcategory	Stations Replacement Program/P
4. Evaluation Criteria (OEB)	Project Summary	Replace, install, add items that relate to the structural components of stations. This includes roof replacements/repairs, windows, brickwork, doors, gates, fences, foundations, overhead doors, compound, drainage, etc.
	Main Driver - System Renewal	
	Priority and Reasons for Priority	Not applicable
	Customer Attachment / Load (KVA)	Not Applcable
	Safety	Not applicable
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	Not applicable
	Economic Development	Not applicable
	Environmental Benefits	Not applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Not applicable
	Alternative #1	Not Applicable
	Alternative #2	Not applicable
	Justification for Recommended Alternative	There are buidling related upgrades that are required on many station buildings. Station building materials are showing age related failures of which need to be addressed.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	
	Condition of Asset vs. Typical Life Cycle and Performance Record	
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	
	Value of Customer Impact	
	Factors Affecting Project Timing, if any	
	Consequences for O&M System Costs Including Implications of Not Implementing	
	Reliability and Safety Factors	
	Analysis for "Like for Like" Renewal Project	



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $123,868	$0	$0	$0	$0	$0	$123,868
Actuals: $0	$0	$0	$0	$0	$0	$0

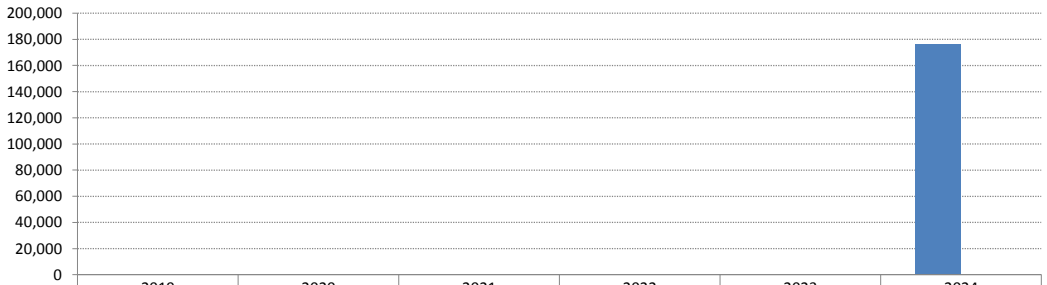
Currency scale is in literal

OEB Multi-Project Report

Project Code	150547
Project Name	Business Support
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Undefined
	Location	Not Applicable
	Units	1
	Project Class	No Burden
	Project Includes R&D	Yes
	Technology Project or has Technology Component	Yes
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Information Technology Systems
	Alectra Subcategory	IT Upgrades & Enhancements
4. Evaluation Criteria (OEB)	Project Summary	The project will encompass a variety of sub projects for the purpose of investigating new and emerging technologies. Building a culture of innovation Alectra will need a continued effort in remaining ahead of the trends and implementing new and more efficient ways of doing business.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	The project address cost reductions through labor and overhead efficiencies through automation.
	Customer Attachment / Load (KVA)	not applicable
	Safety	no impact to physical H&S
	Cyber-Security, Privacy	Change will be vetted through security team
	Coordination, Interoperability	not applicable
	Economic Development	not applicable
	Environmental Benefits	Possible benefits due to the various projects
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to the nature of the innovative project there are various status quo scenarios. As Alectra grows the status quo will not be sufficient to continue a level of innovation expected.
	Alternative #1	Not Applicable
	Alternative #2	not applicable
	Justification for Recommended Alternative	Improving and enhancing the functionality and automation capable within the various streams , will allow for increased productivity , improved customer experience, increased compliance, improved quality, better employee engagement and higher safety
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	not applicable; resources and SME's will be made available
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	not applicable



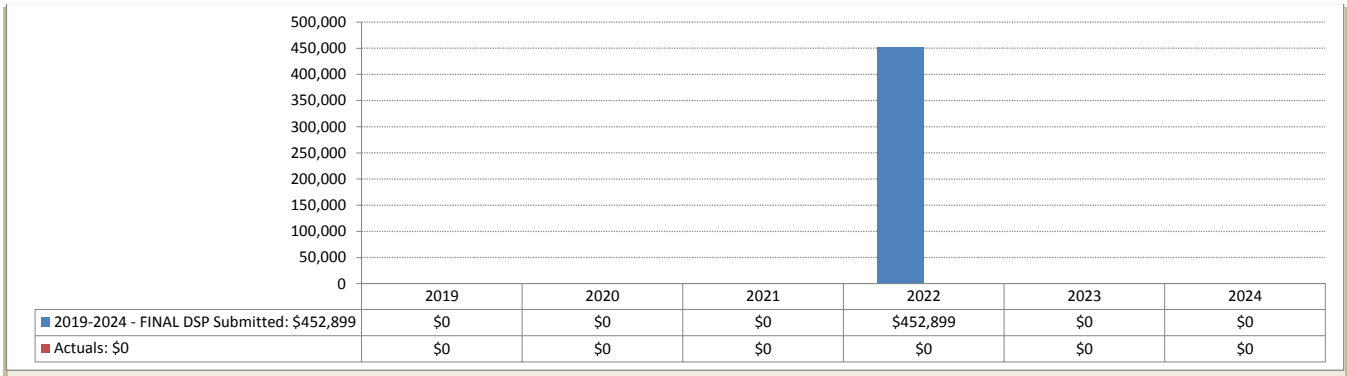
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $176,208	$0	$0	$0	$0	$0	$176,208
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150576	
Project Name	Split the 1/0 loop on Cityview Blvd into two loops	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	on Cityview Blvd from Teston Rd to switchgear 33-L56 (south of Teston Rd) in Vaughan
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	This project is to split the 1/0 loop on Cityview Blvd into two loops. The purpose is to increase supply capacity and increase supply reliability for 1,865 residential customers and 93 commercial customers on the loop. This project is to split the existing 1/0 loop as originally designed in 2005 and includes following: Install one set of 1/0 AL cables on the east side of Cityview Blvd from existing swgr 33-L56 to Teston Rd and connect to feeder 25M1 on Teston Rd. Install one set of 1/0 AL cables on the west side of Cityview Blvd from the crossing to the existing swgr 33-L56 to Teston Rd and connect to feeder 25M1 on Teston Rd. Remove the road crossing on Cityview Blvd north of swgr 33-L56 See the proposed schematic in the attachment for details.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	High Alectra Utilities requires to prepare the distributions system to address the system capacity need driven by green field expansion.
	Customer Attachment / Load (KVA)	The existing loop configuration was supposed to be temporary as per attached Block 33 West design drawing in 2005. Two 1/0 AL risers were supposed to be built in 2005, but were never built for whatever reason. See attached drawing for details. Capacity Impact As of June 2018, Cityview area in Vaughan is supplied by an existing 1/0 loop that has a rating of 200A or 10 MVA. The loop supplies all residential customers between Cityview Blvd and Weston Rd as well as commercial customers on Cityview Blvd including Alectra office and Walmart. There is 18.5MVA connected kVA on the loop: 12MVA on the residential side and 6.5 MVA on the commercial side. A Tesla charging station has been proposed to be supplied from the loop. The transformer size is 2MVA and demand is projected to be 1 MW. It will be in service in 2019. CDM is considered and load forecast is net of CDM. With the completion of Tesla charging station at Major Mack Dr and Cityview Blvd, it will encourage residents in the area to purchase electrical vehicles. Although some will take the advantage of free charging at Tesla charging station, it is expected that some will still charging at home for convenience and result in increase in the peak demand on the residential side of the 1/0 loop. On the east side of Cityview Blvd, there are still many vacant lots. The peak demand can increase significantly in the future. A 1.5 MVA transformer is to be installed for a ICI development on Cityview Blvd in 2019. If one end of the loop fails, the other end has to back up all the loads on the loop. With over 20MVA connected on the loop after Tesla charging station in service in Aug 2018, the 200A fuses may blow under cold load pick up. The risk will increase as the land on the east of Cityview Blvd develops. Reliability Impact As of May 2018, there are 1,865 residential customers and 93 commercial customers on the loop. A new subdivision is 20 MVA
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.

	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, (i.e., not build project as proposed), but to supply load growth from existing facilities. It will impact Alectra distribution system in two following aspects: Capacity Impact As of June 2018, Cityview area in Vaughan is supplied by an existing 1/0 loop that has a rating of 200A or 10 MVA. The loop supplies all residential customers between Cityview Blvd and Weston Rd as well as commercial customers on Cityview Blvd including Alectra office and Walmart. There is 18.5MVA connected kVA on the loop: 12MVA on the residential side and 6.5 MVA on the commercial side. A Tesla charging station has been proposed to be supplied from the loop. The transformer size is 2MVA and demand is projected to be 1 MW. It will be in service in August 2018. With the completion of Tesla charging station at Major Mack Dr and Cityview Blvd, it will encourage residents in the area to purchase electrical vehicles. Although some will take the advantage of free charging at Tesla charging station, it is expected that some will still charging at home for convenience and result in increase in the peak demand on the residential side of the 1/0 loop. On the east side of Cityview Blvd, there are still many vacant lots. The peak demand can increase significantly in the future. If one side of the loop fails, the other side has to back up all the loads on the loop. With over 20MVA connected on the loop after Tesla charging station in service in Aug 2018, the 200A fuses may blow under cold load pick up. The risk will increase as the land on the east of Cityview Blvd develops. Reliability Impact As of May 2018, there are 1,865 residential customers and 93 commercial customers on the loop. A new subdivision is under construction now; the total customer is expected to exceed 2,000 by the end of 2018. Any cable fault and fuse operation will impact significant number of residential customers.
	Alternative #1	The other option is to install approx 220 m of 1000 MCM Cu cables on Cityview Blvd from Teston Rd to existing switchgear 33-L56 (south of Teston Rd), and replace existing switchgear 33-L56 with a new 600A/200A switchgear. The existing switchgear 33-L56 has two 200A switches and two 200A breaker for two transformers (V33TP1000 and V33TP1005). The new swgr will have a 600A switch and three 200A breakers. It will split the 1/0 loop on Cityview Blvd into two loops and supply transformer V33TP1000 and TP1005. • One loop will be from the new swgr to dip 33-P48 on Weston Rd for the residential customers between Cityview Blvd and Weston Rd. The open point will be in the middle at switch V33-L51-2 • One loop will be from the new swgr to dip 33-P93 on Major Mack Dr for the commercial customers on Cityview Blvd between Major Mack Dr and Teston Rd including Alectra office. The open point will be in the middle at switch V33-L63-2. • The existing transformer V33TP1000 will be spliced into the supply to the transformer V33TP1005 that will be from the third 200A breaker of the new swgr See the proposed schematic in the attachment for details. This option is not pursed because it requires change of the existing swgr 33-L56 and the cost is approx. the same as the recommended option. The reliability of this option is lower because the failure of the new swgr and the 1000 MCM will impact both loops.
	Alternative #2	Not applicable.
	Justification for Recommended Alternative	The project is recommended because: • It provides additional 10MVA to the Cityview area for the development of vacant land. • It reduces number of customers on the existing loop and will reduce number of customers affected by a outage Status quo is not acceptable. If one side of the loop fails, the other side cannot back up the entire load without exceeding the cable rating of 200A. The customers may experience long outage if one side of the loop fails. Alternative #1 is not pursed because it requires change of the existing swgr 33-L56 and the cost is approx. the same as the recommended option. The reliability of this option is lower because the failure of the new swgr and the 1000 MCM will impact both loops.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable
	Description of Incorporation of Advanced Technology, if applicable	Not applicable
	Identify any reliability, efficiency, safety or coordination benefits	It reduces number of customers on the existing loop and will reduce number of customers affected by a outage. It will reduce the loading of the 1/0 cable and reduce losses and extend the life of the cables.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $452,899	$0	$0	$0	$452,899	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

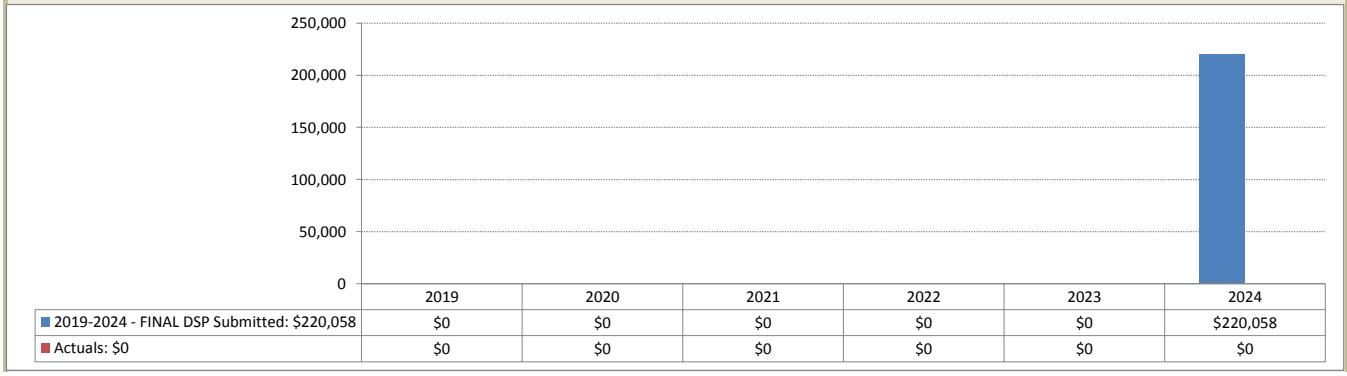
Currency scale is in literal

OEB Multi-Project Report

Project Code	150582
Project Name	Back-end Automation (Orchestration Tool\Setup)
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Undefined
	Location	Not applicable
	Units	1
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	Yes
	Project Will Generate Ongoing IT OM&A Costs	Yes
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Information Technology Systems
	Alectra Subcategory	IT Upgrades & Enhancements
4. Evaluation Criteria (OEB)	Project Summary	Gather requirements, determine available products that meet those requirements and RFP. SOW will include POC of chosen products as well as Professional Services to assist with design, build and implementation.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	This is a medium priority project. that will enable more efficient use the IT Operations Team's time to allow them to focus on more critical tasks, project deliverables etc., an not on day to day commoditized, repeatable low risk tasks.
	Customer Attachment / Load (KVA)	Not applicable
	Safety	Not applicable
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	Not applicable
	Economic Development	Not applicable
	Environmental Benefits	Not applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do Nothing
	Alternative #1	Gather requirements, determine available products that meet those requirements and RFP. SOW will include POC of chosen products as well as Professional Services to assist with design, build and implementation.
	Alternative #2	Not Applicable
	Justification for Recommended Alternative	Orchestration enables users to follow a workflow that delivers to them a service or compute item. Along that workflow, automation enables a computer to repeat a task flawlessly on demand or on a schedule. Orchestration envelops the whole lifecycle and management of required infrastructure for that user. A well-designed IT orchestration system takes away the frustration and manual intervention to create VMs or other IT resources, as well as the long waits and paperwork for app owners who need them from IT. The whole process is subject to workflows, which implement business logic and decisions into practices. They can also include approvals, resource allocation limits and other customizations.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Not applicable



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $220,058	$0	$0	$0	$0	$0	$220,058
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

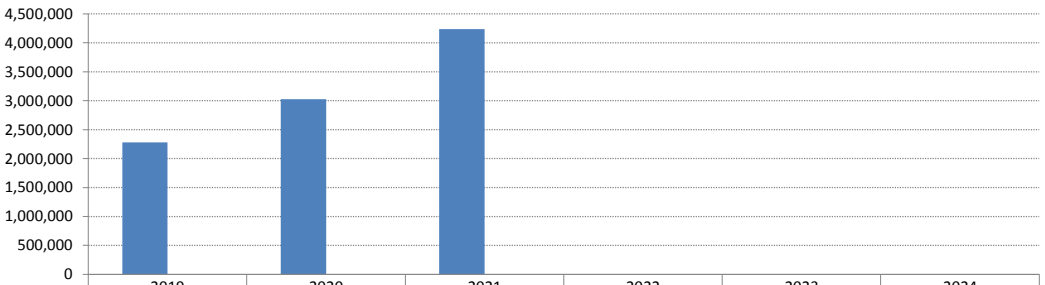
OEB Multi-Project Report

Project Code	150605
Project Name	Residential "ICON F" Meter Replacement - PowerStream RZ
Major Category	System Access
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Various locations in the PowerStream RZ
	Units	2000
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Non-Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Network Metering
	Alectra Subcategory	Metering
4. Evaluation Criteria (OEB)	Project Summary	Remove 108K Sensus ICON F residential meters, from 2013 to 2021, and replace with meters that support these benefits. These meters do not provide a signal to the AMI head end when they lose power. This "last gasp" signal is passed to the Outage Management System. As well as identifying individual customers, the Outage Management System uses signals from multiple meters to determine when power is interrupted for a transformer, or an feeder. This results in prompt identification of the required action and dispatch of crews to restore power. This is much faster than relying on calls from customers, and it identifies outages even when the customer is not at home. Bell Wurld cyber-security audit in 2011 recommended removal of ICON F meters with a flexnet module firmware version that does not meet encryption data standards. "ICON F" meters cannot be upgraded to improve encryption. Meters will be scrapped and replaced with 3rd generation ICON meters with firmware programming. Meter data is susceptible to corruption, which will lead to inaccurate customer bills. A worn of faulty customer meter socket will not provide a good connection with the electric meter. This can result in heat from electrical resistance at the meter jaws. Heat build up from a "hot socket" can result in damage to customer equipment or their premises. The replacement meters have temperature sensors that detect "hot sockets"and send an alarm to the AMI head end., so Alectra can dispatch staff investigate the issue. Carrying out this work after 2021 will be higher due to an increase in meter costs. The meters have a 15 year depreciation period and were installed in 2007 to 2009. They will be removed from service with 80% of their capital value depreciated. Historical costs and unit costs (per meter): Year Units Unit Costs 2017 4,200 $110 historical 2018 6,500 $110 historical 2019 20,000 $115 2020 26,000 $118 2021 35,000 $120
	Main Driver - System Access	Service Requests
	Priority and Reasons for Priority	High. Support outage management and prompt response to customer outages. Reduce damage to customer equipment through detection and alarm of "hot sockets". Eliminate this identified cyber-security risk. Meter costs will rise after 2021.
	Customer Attachment / Load (KVA)	Not applicable
	Safety	Not Applicable.
	Cyber-Security, Privacy	Because the "ICON F" meters are first generation smart meters installed in 2007, and data encryption was not a concern at that time, they do not meet the data encryption requirements that have been implemented since that time. The risk was identified in a cyber-security audit of the PowerStream AMI system in 2011.
	Coordination, Interoperability	Not Applicable
	Economic Development	Not Applicable
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Status quo is to do nothing. The effect of this is: 1. Slower response to customer outages due to failure of "last gasp" alarms. Drop in reliability KPI's. 2. These meters will continue to pose a cyber-security risk. Audit states a likely outcome is meter data manipulated. This will result in incorrect bills to many thousands of customers, and reputational damage. 3. Potential damage to customer property due to undetected "hot sockets". 4. Higher meter costs after 2021 will result in higher required investment if the work is delayed.
	Alternative #1	Carry out field labour with Alectra staff instead of the outside contractor. Alectra staff do not have capacity to carry out this work during regular hours. Cost to carryout this work on overtime will result in a 30% to 40%increase in costs.
	Alternative #2	Delay this work to after 2024. The meter costs will rise substantially after 2021.

	Justification for Recommended Alternative	The benefits listed in the "Status Quo" section are delivered in a financially responsible manner.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The timing and priority for meter replacement will be determined by seal date, model, and serial numbers of the meters being replaced.
	Comparative Information on Equivalent Historical Projects (if any)	Meter changes have been done on time and on budget. Use of contract labour reduces risk for time lines.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Factors Relating to Customer Preferences or Input	Not Applicable.
	Factors Affecting the Final Cost of the Project	Factors affecting the Final Cost of the Project include: 1) Meter type 2) Meter features 3) Manufacturer of Meter 4) Ability to negotiate volume discounts from the meter supplier. 5) Cost of meter communication infrastructure require to support communicating with the meters.
	How Controlled Costs have been Minimized	Controllable costs will be minimized through a comprehensive work plan and competitive meter pricing.
	Identify if Other Planning Objectives are Met by the Project, if so, which ones	Not applicable
	Results of Final Economic Evaluation, if applicable	Not Applicable.
	System Impacts (Nature, Magnitude and Costs)	Not Applicable.

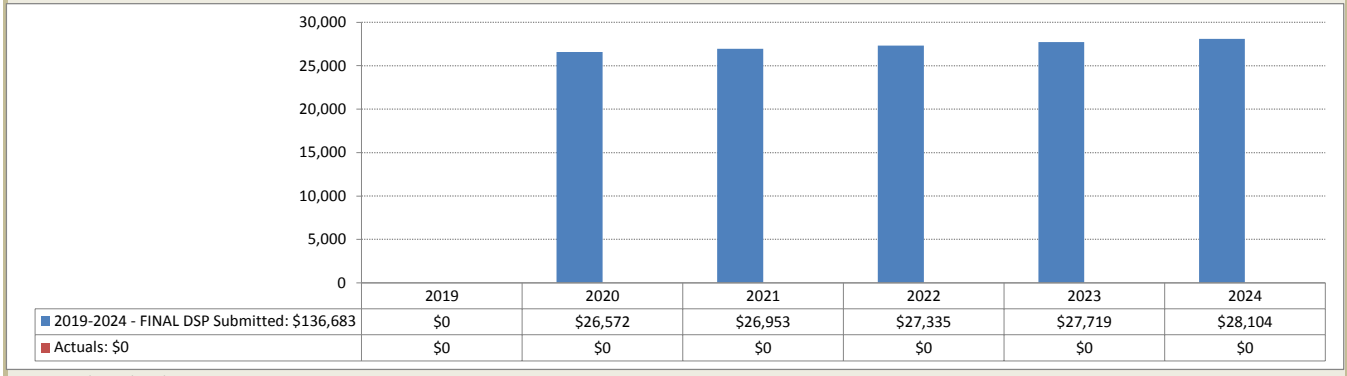


	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $9,539,382	$2,280,384	$3,023,606	$4,235,392	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150606	
Project Name	Station LED Lighting Upgrades - EAST	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream North
	Location	
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Substation Renewal
	Alectra Subcategory	Stations Replacement Program/P
4. Evaluation Criteria (OEB)	Project Summary	Replace incandescent, fluorescent and high-pressure sodium with LED lighting. Indoor and outdoor fixtures for various stations. LED lights last longer and are more energy-efficient.
	Main Driver - System Renewal	Obsolescence
	Priority and Reasons for Priority	Replacement of inefficient lighting fixtures and lamps at stations in the Operational Area will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Not Applicable
	Economic Development	Not Applicable
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Continue using obsolete lighting that requires a higher rate of replacement and results in higher energy consumption. Continue to stock multiple light bulbs for replacement in inventory.
	Alternative #1	Replace with LED light bulbs. LED lights are longer lasting and more energy efficient.
	Alternative #2	Not Applicable
	Justification for Recommended Alternative	Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock. Some lamps are difficult to replace and require special lifts which need to be rented.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Not Applicable
	Condition of Asset vs. Typical Life Cycle and Performance Record	Not Applicable
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	0
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Not Applicable
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Not Applicable
	Value of Customer Impact	Low
	Factors Affecting Project Timing, if any	Not Applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	Not implementing this will result in lighting consuming higher energy for the same function.
	Reliability and Safety Factors	Not Applicable
	Analysis for "Like for Like" Renewal Project	Not Applicable

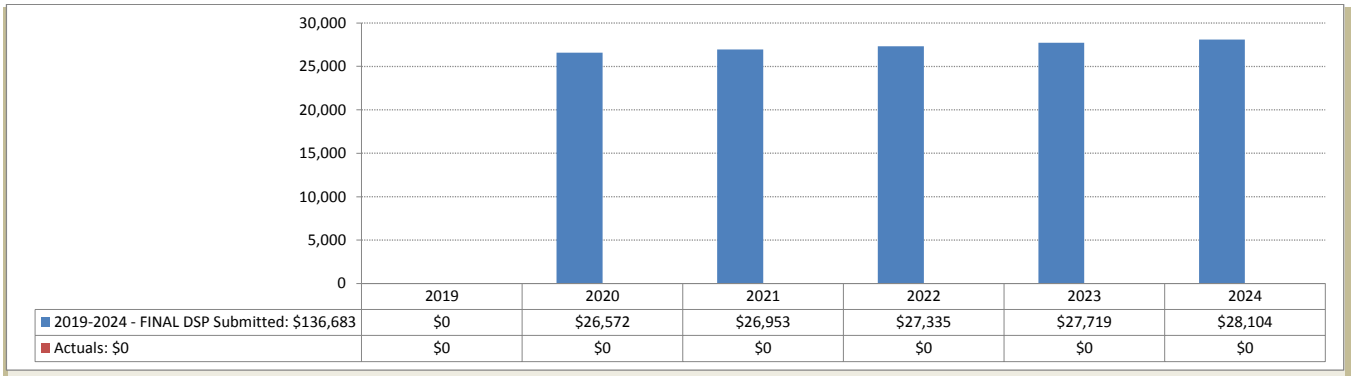


	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $136,683	$0	$26,572	$26,953	$27,335	$27,719	$28,104
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150607	
Project Name	Station LED Lighting Upgrades - Central	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream North
	Location	
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Substation Renewal
	Alectra Subcategory	Stations Replacement Program/P
4. Evaluation Criteria (OEB)	Project Summary	Replace incandescent, fluorescent and high-pressure sodium with LED lighting. Indoor and outdoor fixtures for various stations. LED lights last longer and are more energy-efficient.
	Main Driver - System Renewal	Obsolescence
	Priority and Reasons for Priority	Replacement of inefficient lighting fixtures and lamps at stations in the Central Operational Area will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Not Applicable
	Economic Development	Not Applicable
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Continue using obsolete lighting that requires a higher rate of replacement and results in higher energy consumption. Continue to stock multiple light bulbs for replacement in inventory.
	Alternative #1	Replace with LED light bulbs. LED lights are longer lasting and more energy efficient.
	Alternative #2	Not Applicable
	Justification for Recommended Alternative	Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock. Some lamps are difficult to replace and require special lifts which need to be rented.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Not Applicable
	Condition of Asset vs. Typical Life Cycle and Performance Record	Not Applicable
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	0
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Not Applicable
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Not Applicable
	Value of Customer Impact	Low
	Factors Affecting Project Timing, if any	Not Applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	Not implementing this will result in lighting consuming higher energy for the same function.
	Reliability and Safety Factors	Not Applicable
	Analysis for "Like for Like" Renewal Project	Not Applicable



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $136,683	$0	$26,572	$26,953	$27,335	$27,719	$28,104
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150608	
Project Name	Station LED Lighting Upgrades - West	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream North
	Location	
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Substation Renewal
	Alectra Subcategory	Stations Replacement Program/P
4. Evaluation Criteria (OEB)	Project Summary	Replace incandescent, fluorescent and high-pressure sodium with LED lighting. Indoor and outdoor fixtures for various stations. LED lights last longer and are more energy-efficient.
	Main Driver - System Renewal	Obsolescence
	Priority and Reasons for Priority	Replacement of inefficient lighting fixtures and lamps at stations in the West Operational Area will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Not Applicable
	Economic Development	Not Applicable
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Continue using obsolete lighting that requires a higher rate of replacement and results in higher energy consumption. Continue to stock multiple light bulbs for replacement in inventory.
	Alternative #1	Replace with LED light bulbs. LED lights are longer lasting and more energy efficient.
	Alternative #2	Not Applicable
	Justification for Recommended Alternative	Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock. Some lamps are difficult to replace and require special lifts which need to be rented.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Not Applicable
	Condition of Asset vs. Typical Life Cycle and Performance Record	Not Applicable
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	0
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Not Applicable
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Not Applicable
	Value of Customer Impact	Low
	Factors Affecting Project Timing, if any	Not Applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	Not implementing this will result in lighting consuming higher energy for the same function.
	Reliability and Safety Factors	Not Applicable
	Analysis for "Like for Like" Renewal Project	Not Applicable

	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $56,650	$0	$0	$0	$0	$28,130	$28,520
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

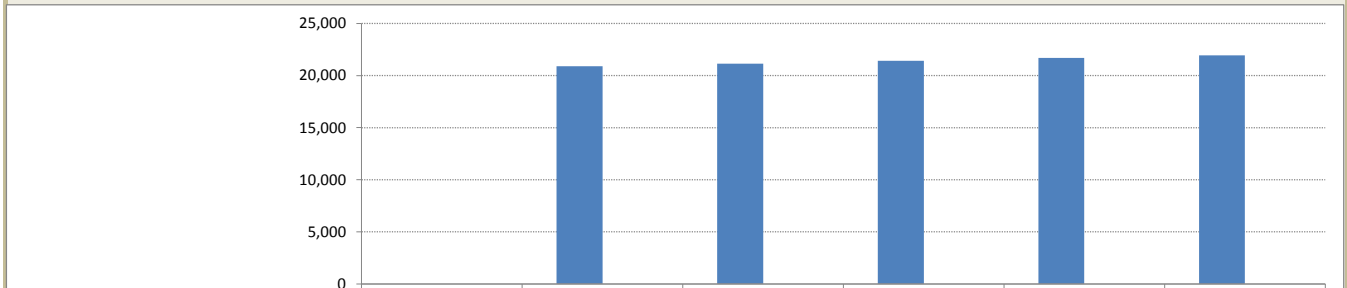
OEB Multi-Project Report

Project Code	150609
Project Name	Driveway Paving - Various Stations - Multi-year initiative - East
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North & South
	Location	
	Units	3
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Substation Renewal
	Alectra Subcategory	Stations Replacement Program/P
4. Evaluation Criteria (OEB)	Project Summary	Paving station driveway to facilitate year-round access. Driveway paving of various stations in this operating area. Existing driveways are covered in gravel, which required filling depressions on a continuous basis. Depressions allow for crawl spaces which result in a safety and security risk. Paving will facilitate snow removal and allow for access year-round to perform maintenance and respond to outages. This will also eliminate trip hazards.
	Main Driver - System Renewal	Safety
	Priority and Reasons for Priority	Existing driveways in the Operational Area that are covered in gravel and require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk are going to be paved. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Paving will eliminate crawl spaces under the fence thus improving safety and security at the station. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Moreover, paved driveways eliminate the risk of trip hazards.
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	Not applicable
	Economic Development	Not applicable
	Environmental Benefits	Not applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Leave as is and continue to add gravel and level as required. Usually post winter season and rainy Spring season. Crawl spaces will not be eliminated and tripping hazards will continue to be a risk. Snow removal might be impeded which could result in a longer outages.
	Alternative #1	Pave the driveway to eliminate the crawl spaces and eliminate tripping hazards and not impede outage restoration.
	Alternative #2	Not applicable
	Justification for Recommended Alternative	This is required to provide a smooth hard surface during all weather seasons. Gravel driveways require smoothing and filling overtime as plowing and vehicles often move the gravel around and allow for crawl space under station compound fences. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Not Applicable
	Condition of Asset vs. Typical Life Cycle and Performance Record	Not Applicable
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	0
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Not Applicable

Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Not Applicable
Value of Customer Impact	Low
Factors Affecting Project Timing, if any	Not Applicable
Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable
Reliability and Safety Factors	Not Applicable
Analysis for "Like for Like" Renewal Project	Not Applicable



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $107,061	$0	$20,881	$21,144	$21,410	$21,678	$21,948
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

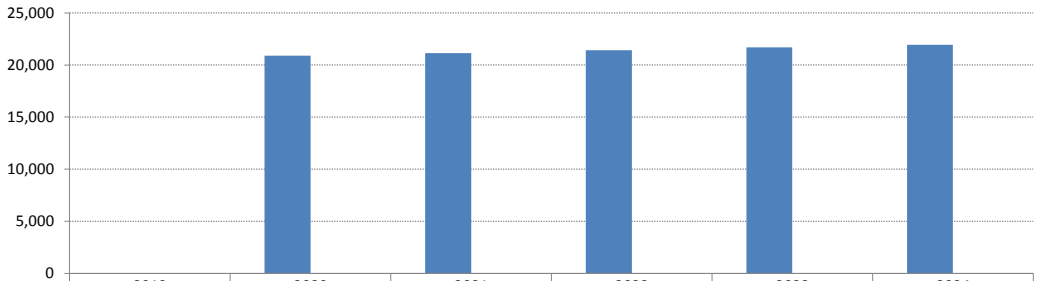
OEB Multi-Project Report

Project Code	150610
Project Name	Driveway Paving - Various Stations - Multi-year initiative - Central
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North & South
	Location	
	Units	3
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Substation Renewal
	Alectra Subcategory	Stations Replacement Program/P
4. Evaluation Criteria (OEB)	Project Summary	Paving station driveway to facilitate year-round access. Driveway paving of various stations in this operating area. Existing driveways are covered in gravel, which required filling depressions on a continuous basis. Depressions allow for crawl spaces which result in a safety and security risk. Paving will facilitate snow removal and allow for access year-round to perform maintenance and respond to outages. This will also eliminate trip hazards.
	Main Driver - System Renewal	Safety
	Priority and Reasons for Priority	Existing driveways in the Operational Area that are covered in gravel and require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk are going to be paved. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Paving will eliminate crawl spaces under the fence thus improving safety and security at the station. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Moreover, paved driveways eliminate the risk of trip hazards.
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	Not applicable
	Economic Development	Not applicable
	Environmental Benefits	Not applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Leave as is and continue to add gravel and level as required. Usually post winter season and rainy Spring season. Crawl spaces will not be eliminated and tripping hazards will continue to be a risk. Snow removal might be impeded which could result in a longer outages.
	Alternative #1	Pave the driveway to eliminate the crawl spaces and eliminate tripping hazards and not impede outage restoration.
	Alternative #2	Not applicable
	Justification for Recommended Alternative	This is required to provide a smooth hard surface during all weather seasons. Gravel driveways require smoothing and filling overtime as plowing and vehicles often move the gravel around and allow for crawl space under station compound fences. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Not Applicable
	Condition of Asset vs. Typical Life Cycle and Performance Record	Not Applicable
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	0
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Not Applicable
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Not Applicable

Value of Customer Impact	Low
Factors Affecting Project Timing, if any	Not Applicable
Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable
Reliability and Safety Factors	Not Applicable
Analysis for "Like for Like" Renewal Project	Not Applicable



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $107,061	$0	$20,881	$21,144	$21,410	$21,678	$21,948
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

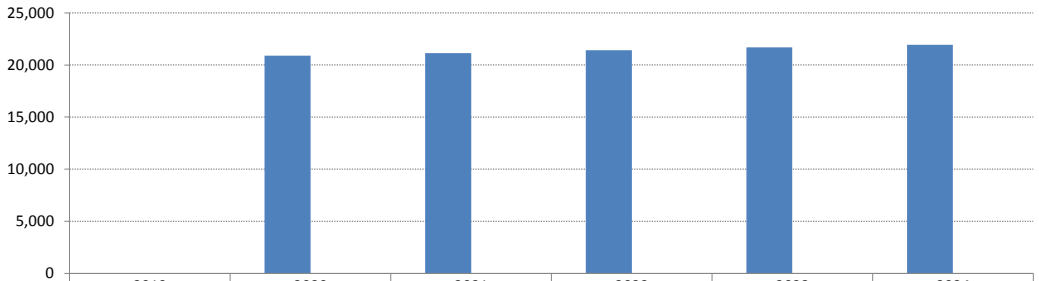
OEB Multi-Project Report

Project Code	150612
Project Name	Driveway Paving - Various Stations - Multi-year initiative - West
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North & South
	Location	
	Units	3
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Substation Renewal
	Alectra Subcategory	Stations Replacement Program/P
4. Evaluation Criteria (OEB)	Project Summary	Paving station driveway to facilitate year-round access. Driveway paving of various stations in this operating area. Existing driveways are covered in gravel, which required filling depressions on a continuous basis. Depressions allow for crawl spaces which result in a safety and security risk. Paving will facilitate snow removal and allow for access year-round to perform maintenance and respond to outages. This will also eliminate trip hazards.
	Main Driver - System Renewal	Safety
	Priority and Reasons for Priority	Existing driveways in the Operational Area that are covered in gravel and require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk are going to be paved. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Paving will eliminate crawl spaces under the fence thus improving safety and security at the station. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Moreover, paved driveways eliminate the risk of trip hazards.
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	Not applicable
	Economic Development	Not applicable
	Environmental Benefits	Not applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Leave as is and continue to add gravel and level as required. Usually post winter season and rainy Spring season. Crawl spaces will not be eliminated and tripping hazards will continue to be a risk. Snow removal might be impeded which could result in a longer outages.
	Alternative #1	Pave the driveway to eliminate the crawl spaces and eliminate tripping hazards and not impede outage restoration.
	Alternative #2	Not applicable
	Justification for Recommended Alternative	This is required to provide a smooth hard surface during all weather seasons. Gravel driveways require smoothing and filling overtime as plowing and vehicles often move the gravel around and allow for crawl space under station compound fences. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Not Applicable
	Condition of Asset vs. Typical Life Cycle and Performance Record	Not Applicable
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	0
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Not Applicable
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Not Applicable

Value of Customer Impact	Low
Factors Affecting Project Timing, if any	Not Applicable
Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable
Reliability and Safety Factors	Not Applicable
Analysis for "Like for Like" Renewal Project	Not Applicable



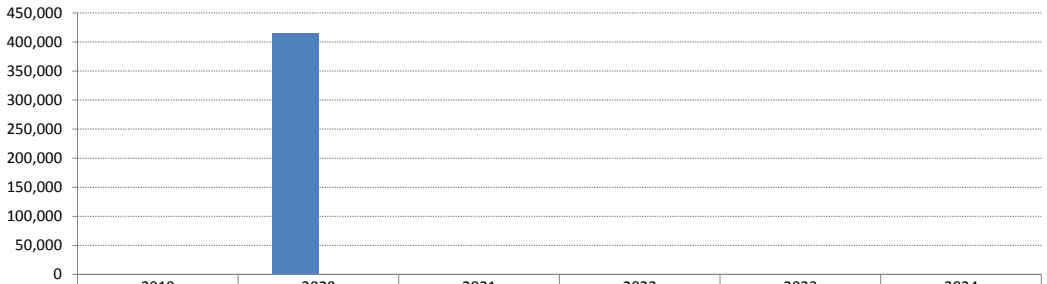
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $107,061	$0	$20,881	$21,144	$21,410	$21,678	$21,948
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150666	
Project Name	Facilities_John_Roof Deck – Rooftop Renovation	
Major Category	General Plant	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	55 John St N. Main garage roof top. Hamilton, Ontario
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Facilities Management
	Alectra Subcategory	Buildings
4. Evaluation Criteria (OEB)	Project Summary	The objectives of the project planned for 2020 working toward Alectra's long term building renewal strategy are to enhance the employee morale and build new culture by creating a common space where employees can relax and enjoy the outdoors without having to leave the safety of the building. This space will also assist with certain corporate events and charity fundraisers. Other Alectra corporate sites have property to allow for this type of space. John St is unique in that the building covers the property, with no available green space, therefore needing to utilize and maximize the space of the roof on the main garage. Other expected objectives and outcomes include: •Energy efficient LED lighting •Small plants and trees will be planted •Built in BBQ will be installed if OBC allows and will be used for corporate events. •AODA compliant access where applicable •Built to OBC •Increase productivity •Increased collaboration •Improved employee morale and culture •Charging stations for electronic devices and WiFi •Exterior waterproof receptacles •Lounge chairs and tables installed •Gardening area for staff •Hose bibs for watering •Pergola
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Create a better work environment for employees, improve morale and culture, promote active engagement, and increase productivity by having a safe and nearby place to take a break, lunch or host department or corporate event. Downtown can be threatening to employees who wish to go outside of the building for lunch or to find a place to sit outdoors. Having this space will increase the safety and security for all our employees.
	Customer Attachment / Load (KVA)	Building Renovation Project
	Safety	Health and Safety will be maintained by the General contractor hired for the project and will act as the constructor. ALL the other Alectra office sites have safe and secure space for our staff to be outside of the property unlike John St. John St has no property beyond its walls making the lower garage roof top a great use of space for our staff. Contractor to follow Alectra health and safety policies. Alectra will maintain owner status. Downtown can be threatening to employees who wish to go outside of the building for lunch or to find a place to sit outdoors. Having this space will increase the safety and security for all our employees.
	Cyber-Security, Privacy	N/A
	Coordination, Interoperability	Build to AODA standards. Update renovated spaces to meet current building and fire codes. Build office spaces to the new Alectra standards. Install corporate Wi-Fi Update area to meet current building codes.
	Economic Development	Many trades, engineers, suppliers, consultants and internal employees are employed for these renovation projects.

	Environmental Benefits	Removal of any hazardous substances such as asbestos if applicable. Separation of demolition materials for disposal where applicable. Older buildings are often painted with lead paint and paints containing mercury-based biocides, use leaded pipes, have asbestos insulation, use mercury-containing fluorescent lamps and PCB ballasts and contain many other hazardous materials. Besides demolition debris, other wastes are generated during new building construction to include but not limited to treated wood, paint and solvent wastes, glues, roofing tars and cylinders. Many buildings are carefully de-constructed for material reuse, and these types of projects can also generate similar Hazardous wastes. Deconstructed materials that are reused are not regulated as waste as long as the properties making them hazardous are not disturbed. For example, a door painted with lead-based paint could be reused as is, even if it would otherwise be regulated as dangerous waste when disposed.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Safety and security risk to staff. No property at 55 John St to take a break outdoors on site like Derry Rd and Cityview sites that have green space and safety and security is not much of a concern for staff at these locations.
	Alternative #1	N/A
	Alternative #2	No Alt #2
	Justification for Recommended Alternative	N/A
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Budget needs to be worthy of a cost effective and efficient work space renovation. Engineering, design, and permits to be obtained for completion in current fiscal year. Schedule timing. Need to ensure the safety and security of all employees equally at all facilities.
	Comparative Information on Equivalent Historical Projects (if any)	Costing estimates are in line with the many previous office space renovation Alectra and legacy utilities have completed over the last 5 years.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Creating departmental cohesive teams by increased collaboration. Staff moral and culture improvements will reflect positively to the customer to better serve internal and external customers.



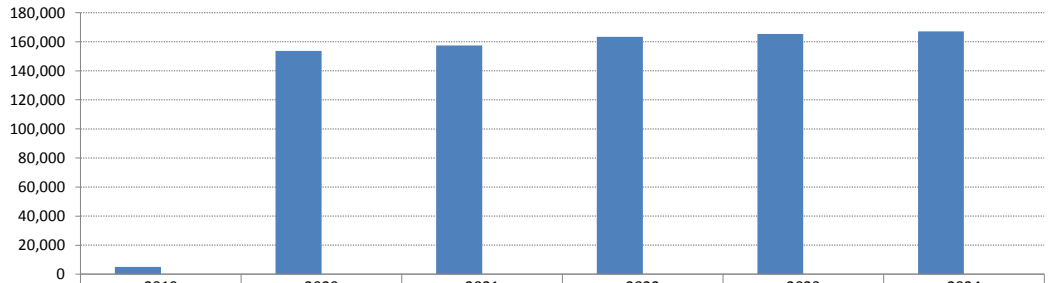
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $416,242	$0	$416,242	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150679	
Project Name	Alectra Drive for the Workplace	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Undefined
	Location	
	Units	
	Project Class	No Burden
	Project Includes R&D	Yes
	Technology Project or has Technology Component	Yes
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	Alectra Drive for the Workplace will demonstrate the value of integrating a smart electric vehicle (EV) charging system that manages the flow of electricity needed to serve the building and EV charging stations, so that electricity costs are minimized while EV drivers have an easy and accessible charging solution. A Distributed Energy Resource Management System (DERMS) platform will be connected to the EV chargers as well as to the Building Automation System to control various Distributed Energy Resources (DERs), including the EV chargers, building loads, battery storage and, in some cases, solar generation. Management and optimization will be performed by the DERMS to manage site demand charges and commodity charges while meeting building owner and vehicle user requirements. Real-time data from the electricity meter will be used to manage demand within established limits. This program aims to encourage the adoption of EV technology while helping businesses to manage their energy costs. It will also provide insight into the characteristics of various types of Distributed Energy Resources, how they can be aggregated and controlled to provide a benefit across all customers (not just the ones driving EVs), at the local, regional and provincial system levels, and customer response to these control strategies. This project will also provide insight that will inform how Alectra's system planning will need to take into account the increased load from electric vehicles over time to maintain the reliability and cost-effectiveness of the electricity system.
	Main Driver - System Service	System Efficiency
	Priority and Reasons for Priority	Electric Vehicles have huge potential to disrupt the transportation model and add a significant load to the distribution network. Hence, it is a key focus area for Alectra such that the organization has a strategy and the means to address this challenge as the growth of EVs continues. A lack of attention to the growth of this load carries risk to the distribution system in terms of reliability, as well as financial risk in the event of early replacement of electrical equipment (e.g., transformers) if they are consistently overloaded from the increased consumption from EVs.
	Customer Attachment / Load (KVA)	Sites are expected to be commercial office buildings which typically have peak loads in the in the 300-1,000 kVA range.
	Safety	Not applicable
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	Interoperability is key while integrating EVs into the grid and microgrids.
	Economic Development	Not applicable
	Environmental Benefits	Significant environmental benefits since EVs have no harmful emissions.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	If Alectra does not act, EV loads will be drawing load throughout the service territory as the adoption rate goes up, and there will not be the means to control the incremental load on the system's assets, leading to financial and distribution system risk. This would also present risk to customer perception and reputation of the reliability of the electricity system, which can negatively impact the future viability of the electricity system.
	Alternative #1	Increased use of distribution assets to manage larger and more unpredictable loads, leading to higher costs for infrastructure upgrades
	Alternative #2	Not applicable
	Justification for Recommended Alternative	Electric Vehicles have huge potential to disrupt the transportation model and add a significant load to the distribution network.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Some of the technology such as aggregation of EVs for V2G services is in its nascent stage and interoperability standards are not well defined. This could create some risk to project completion. Other projects related to smart charging infrastructure carry minimal risk.
	Comparative Information on Equivalent Historical Projects (if any)	Existing EV projects: - DCQC deployment - V2G integration into Cityview microgrid - Studies to understand impact of EVs on distribution asset (Georgian college, Queen's univ, EMAP report etc.)
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0

7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Customers will be aided in reducing demand charges from usage of electric vehicles. Each vehicle draws 7.2 kW, which results in 7.2*~$10/month if charging occurs off-peak. Typical installations for this project at 10 EVSE, which would result in $720/month if charging occurs on-peak for all chargers. Cost increases could be larger if sites are located on a Class A customer site subject to the Industrial Conservation Initiative.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Transformer upgrades could be required if capacity is lacking to serve new EV load; this project could help offset this requirement.
	Description of Incorporation of Advanced Technology, if applicable Identify any reliability, efficiency, safety or coordination benefits	Use of a Distributed Energy Resource Management System to manage demand charges through curtailing charging and bringing other DERs online . Charging and DER utilization can be scheduled to occur off-peak as much as possible and to minimize loading of transformers on-peak.



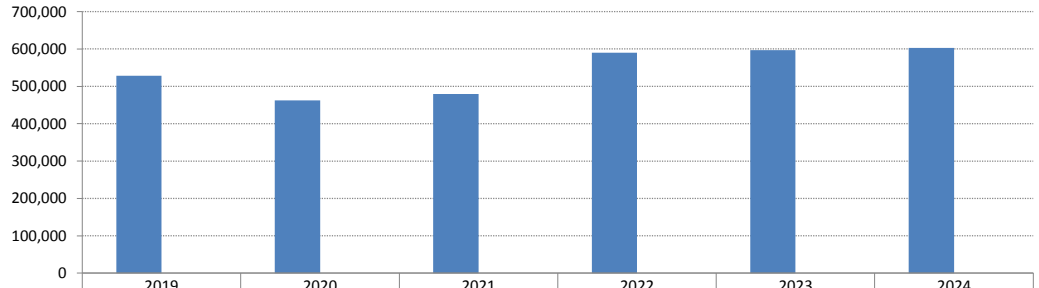
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $812,239	$5,000	$153,731	$157,527	$163,459	$165,320	$167,202
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150680	
Project Name	Alectra Drive at Home	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Undefined
	Location	
	Units	
	Project Class	No Burden
	Project Includes R&D	Yes
	Technology Project or has Technology Component	Yes
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	This project focuses on identifying charging solutions for electric vehicles (EVs) in the residential sector, where the majority of charging takes place. Because of the complexity of providing charging in multi-unit residential buildings (MURBs), an added emphasis will used to identify solutions that meet the needs of drivers and condo owners while providing a benefit to the electricity system and to society at large. The project will provide innovative solutions for installing and operating EV Supply Equipment (EVSE - aka, chargers) in MURBs, and allow for different approaches tailored to the participating building's physical and governance configuration. For example, charging could be installed in common areas using an hourly rate, or it could be installed in individual parking areas with a monthly fee to the unit holder. The buildings' individual load profile will be used to determine the electrical infrastructure available and how EV station control strategies and rate structures should be designed to manage consumption within the building's capacity and to minimize demand charges. It is expected that 3-5 buildings will participate in the initial stages of this project, while additional residential customers in single-family dwellings will also participate in alternative incentive offers for charging behaviour. Installation is expected to be staggered over the years, with the project taking into account feedback from initial deployments to allow it to scale to the population of buildings in this sector . .
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	EVs are a growing load and are likely to be concentrated in certain areas based on demographic criteria. Alectra has an interest in both managing this load and serving its customers as a trusted partner. Approximately 80% of charging takes place at home, but customers in MURBs are less likely to have access to charging at their buildings due to complex ownership structures and the cost of providing service to all parking spots. Governments have responded to the challenges of providing access to EVSE in MURBs, such as through recent changes to the Ontario Building Code mandating that new buildings provide access to charging stations in 20% of parking spaces.
	Customer Attachment / Load (KVA)	Customers will be multi-unit residential buildings (MURBs). Customers for this pilot project have not yet been selected.
	Safety	Not applicable
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	Not applicable
	Economic Development	•Reduced or eliminated transportation-related fuel costs for Canadian homes and business', as more Canadians will be incentivized to purchase EVs over traditional automobiles •Better use of domestically produced electricity which is currently exported at negative prices for many overnight periods in the year due to the inability to curtail nuclear electricity production. •Enable greater use of renewable resources by making the electricity system more flexible through participation in IESO market services. This also creates revenue opportunities for utility which will be shared with customers •Contribute to the national economy by developing innovative, made-in-Canada solutions and technologies that drive down costs for Canadians, reduce GHG emissions and demonstrate Canadian leadership in energy innovation •Contribute to better planning processes , regulation and governance which consider and incorporate energy, environmental, demographic and financial considerations •Understand what methods are most appropriate, and in what circumstances, to influence EV charging – whether through pricing or incentives; and how to implement and maintain customer support for load control as required for building or grid purposes.

	Environmental Benefits	Electric vehicles are one of the biggest opportunities to reduce GHGs in Ontario due to the low carbon content of electricity compared to fossil fuels. The reduction in GHGs that can be attributable to this project come from two main sources: •Reduced GHG content of electricity consumed by electric vehicles through incentives (provided through either pricing or non-price mechanisms) •An increase in EV adoption rates due to increased access to EV charging stations by drivers A third source of reductions includes the enhanced ability of the electricity grid to manage higher levels of renewable generation due to the flexibility of EV load. The level of GHG reduction attributable to this change is difficult to quantify and smaller in scope to the first two sources, and so will not be included in the analysis below. With respect to reduced GHG content of electricity used to charge vehicles, these reductions are both direct to participants in this project, and also indirect, as they could be made available to all EV drivers in Canada. For this analysis, a 20% reduction in the GHG content of vehicle energy has been estimated. For the second source, reduced GHGs emerge from an increase in those who are currently 'garage orphans' but who will be provided with convenient access to charging stations through this project and so can switch to an electrically power vehicle. The indirect savings from these are assumed to bring EV uptake in MURBs to the same level that they have in single-family dwellings
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Most residents of MURBs will continue to be challenged to get access to EVSE, especially those in existing buildings, meaning that . Those that do have access will likely have an economically inefficient solution that either does not encourage efficient charging, or that subsidizes the building owner/tenant or the drivers. This could also lead to a compliance risk, if Alectra is not able to serve its customers who are seeking an EV charging solution to be installed using utility metering (suite metering).
	Alternative #1	Invest in EVSE in buildings with intelligent controls and incentives for both building owner and driver to participate.
	Alternative #2	Provide guidance to building owners and vendors to provide EVSE installation services
	Justification for Recommended Alternative	Having the utility involved will lead to a more economically efficient outcome that also provides Alectra the opportunity to provide additional services to customers and to the grid.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Demand charge reduction for MURB facilities. $60/EVSE *month
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable
	Description of Incorporation of Advanced Technology, if applicable	The project will provide innovative solutions for installing and operating EV Supply Equipment (EVSE - aka, chargers) in MURBs, and allow for different approaches tailored to the participating building's physical and governance configuration. For example, charging could be installed in common areas using an hourly rate, or it could be installed in individual parking areas with a monthly fee to the unit holder. The buildings' individual load profile will be used to determine the electrical infrastructure available and how EV station control strategies and rate structures should be designed to manage consumption within the building's capacity and to minimize demand charges.
	Identify any reliability, efficiency, safety or coordination benefits	Chosen MURBs will be preferentially located in areas with reliability issues/capacity constraints



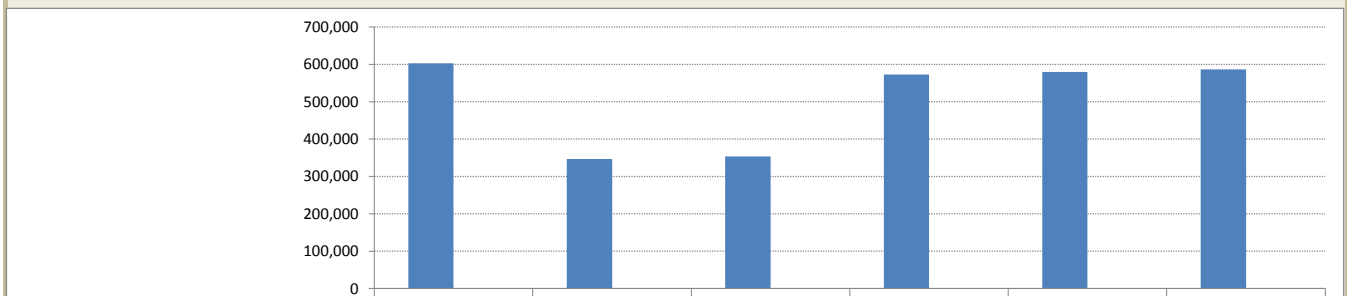
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $3,259,242	$528,000	$462,203	$479,741	$589,693	$596,407	$603,198
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150693	
Project Name	Blockchain	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Undefined
	Location	
	Units	
	Project Class	No Burden
	Project Includes R&D	Yes
	Technology Project or has Technology Component	Yes
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Distributed Energy Resources (DER)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	The objective of the Smart DER Platform is to develop the real-time administration platform and processes needed to manage solar PV, battery storage, EVs and other DERs to both reduce their adverse impact on the grid, and provide capacity and power quality services. The platform will also help Alectra Utilities strengthen control and visibility over DER owners and provide benefits to the entire customer base over the long-term. Through the Smart DER Platform, Alectra Utilities will issue requests for the Power.House customer systems to provide distribution market services where each aspect of market participation will be transacted through and recorded transparently in real-time by the platform. The Smart DER Platform will provide end-to-end visibility on customer usage and DER participation patterns. By analyzing these patterns, Alectra Utilities can prove to be a highly effective intermediary between understanding customer usage and changing customer behavior, consequently providing tangible incentivized benefits. Therefore, the project is a pre-requisite for the widespread adoption and utilization of DERs,
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	Distributed Energy Resources (DERs), including solar, energy storage, electric vehicles, and home energy management devices, can contribute to a more efficient, sustainable energy future. These resources are predicted to gain widespread market penetration in the near future; however, currently, the tools and processes in place in the industry to securely manage contracts, transactions, and settlements are not positioned to be applied to many small DERs and it would be prohibitively expensive to do so. Without developing a cost-effective solution, the economic and environmental benefits of these resources to DER owners and electricity consumers may not be realized.
	Customer Attachment / Load (KVA)	Not applicable
	Safety	Not applicable
	Cyber-Security, Privacy	Cyber security and data privacy considerations are core to the blockchain value proposition. As a private, permissioned blockchain platform, Hyperledger Fabric employs a 'members only' approach whereby only known parties, identified by certificates that are explicitly trusted within the blockchain network, are permitted to access ledger data and execute transactions. In this project, the known parties are IBM, Alectra, Sunverge, and the financial partner to be confirmed. Each organization will have data access and transaction privileges the role they are assigned, all of which are codified into the network itself.
	Coordination, Interoperability	The blockchain platform developed in this project has the potential to expand outside of Alectra's service territory, enabling cost-efficient administration of many DER participants throughout Ontario and North America.
	Economic Development	This will be one of the first projects in the world to incorporate both grid balancing services and blockchain together under a single pilot. The additional use of energy coins will be particularly novel, as this concept has never been proven in a market setting before. This project has the potential to establish Canada's energy sector as a world leader in the blockchain space. It will create valuable technological skill sets with Highly Qualified Personnel here in the country in an area that is rapidly being seen as one of the most promising, disruptive technologies in the world. Blockchain technology also has applications across multiple market verticals, so many of the lessons learned for this particular use case will be applicable across other industries. As the blockchain fabric is inherently designed to transfer value to participating DERs for their role in balancing the grid, the technology paves the way for a democratized approach to procuring energy solutions that were previously only available to larger scale generators. Since the increase in energy participants creates more competition, it will also lead to lower cost non wires alternatives to traditional asset investment, allowing the savings to be socialized among non-participants as well. The Power.House feasibility study demonstrated that such approaches could create up to $2.7B in societal benefit over time in a single region.
	Environmental Benefits	Blockchain technology has the potential to provide a cost-effective and engaging contract, transaction, and settlement process to fairly compensate DER owners for the services they provide to the electricity system. Therefore, although this project will not directly install GHG reducing technologies such as solar-storage and EVs, it provides incentives for, and reduces a critical barrier to, widespread adoption of DERs.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Distributed Energy Resources (DERs), including solar, energy storage, electric vehicles, and home energy management devices, can contribute to a more efficient, sustainable energy future. However, currently, the tools and processes in place in the industry to securely manage contracts, transactions, and settlements are not positioned to be applied to many small DERs and it would be prohibitively expensive to do so. A mechanism for practically, cost effectively, and securely managing the contracts, transactions, and settlement activities of many DER participants in near-real time is needed in order to enable DERs to contribute to grid services, energy markets, and provide value to consumers.
	Alternative #1	Not applicable
	Alternative #2	Not applicable
	Justification for Recommended Alternative	Not applicable
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Given the early stage nature of the technology, there is potential for budgetary exceedance due to an underestimation of the complexity of certain tasks. Having multiple world-class experts from the blockchain field, as this project does, will greatly reduce the risk of unintended costs and scope creep. Furthermore, establishing consistent project updates and leveraging agile development allows the team to foresee overages well before they happen and the team will be prepared to address such problems accordingly. Financial services is a highly regulated industry, and the rules around generating tokens and exchanging them for goods are currently under development. There is a risk that financial regulators would create additional roadblocks for the long term implementation of the system that will take time to be overcome. Since this is an early stage demonstration of the technology platform, the team has identified several contingency measures that would allow the same functionality to be demonstrated but with intermediary steps that would fit within today's regulatory guidelines.
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable
	Description of Incorporation of Advanced Technology, if applicable	This project represents a major technological advancement in an extremely promising field that is currently generating worldwide attention. The primary benefit that the technology can deliver within 5 years is unlocking the full potential that DERs can provide by facilitating their ability to provide grid support and GHG reduction services. It also bridges an important gap for customer engagement, by facilitating new ways to incentivize customers and connect them directly to merchants who wish to align themselves with the most valued members of their consumer base. Currently, LDCs are lacking a foundational architecture to manage a localized grid services market. This technology will provide Alectra and utilities across Canada with a mechanism that greatly increases the efficiency by which these services can be managed by integrating procurement, contracting, settlement and verification functions all within a common fabric. This effectively allows existing market intermediaries to eliminate a significant amount of internal overhead to solve some of their most challenging problems. The technology will also pre-empt the challenges associated with increased EV and renewable penetration on the electricity network – an eventuality that increases in likelihood as the popularity of these technologies continues to rise. Blockchain's architecture offers energy markets the level of flexibility that is required to adapt to the ever changing conditions that will characterize the grid of the future.
	Identify any reliability, efficiency, safety or coordination benefits	On site solar and storage provides customers with a level of outage protection in the case of a loss of electrical supply. The proposed project increases the affordability of these technologies, making them more accessible to customers to protect against systemic uncertainties such as adverse weather events or network equipment malfunction. Increasing visibility and insight into customer sited assets creates unique opportunities to improve system efficiency. Furthermore, this project focuses on the mechanisms required to settle and verify transactions that improve grid efficiency by dispatching DERs to reduce peak demand - which, at scale, has the potential to allow distribution, transmission, and generation investments to be deferred.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $3,042,901	$603,000	$346,905	$353,924	$573,140	$579,666	$586,266
Actuals: $0	$0	$0	$0	$0	$0	$0

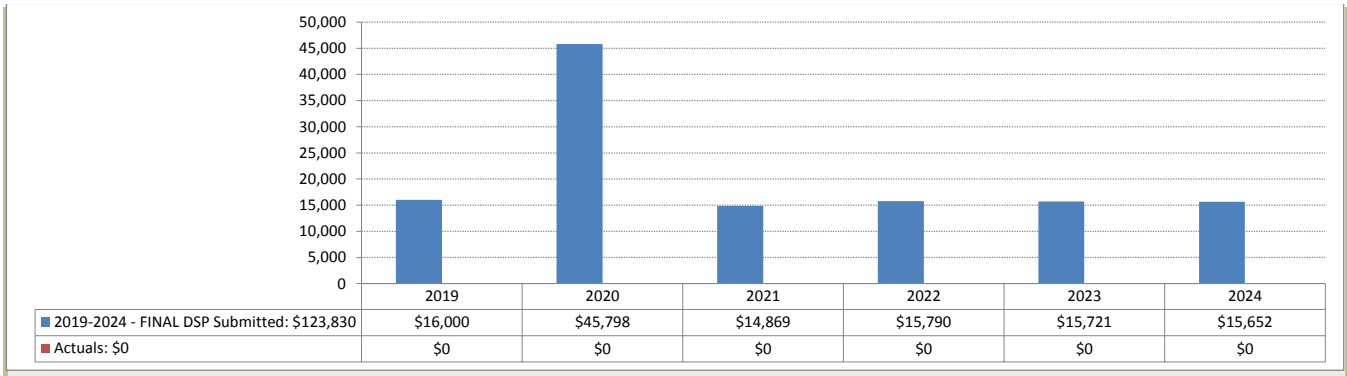
Currency scale is in literal

OEB Multi-Project Report

Project Code	150694
Project Name	Cityview microgrid enhancements
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	The Cityview microgrid project is an initiative to understand how microgrids can be integrated into the distribution grid in a safe and reliable manner. The planned investment will enhance and test Alectra's microgrid - located in Alectra's Vaughan office. The microgrid is used to evaluate integration and connection to the distribution grid while reducing the building's load, greenhouse gas emissions, and increasing its resiliency to grid outages.
	Main Driver - System Service	System Efficiency
	Priority and Reasons for Priority	The microgrid allows Alectra to test the use of a Distributed Energy Resource Management System (DERMS) deployed in the microgrid for the control of distributed energy resources (DERs). The monitoring and control and DERs will become increasingly important for Alectra and other LDCs as customer-owned DERs gain widespread adoption, and the microgrid serves as a cost efficient and low risk method of testing how these distributed resources can be accommodated in the distribution system in a reliable and cost-effective manner before deploying them at a larger scale.
	Customer Attachment / Load (KVA)	N/A
	Safety	N/A
	Cyber-Security, Privacy	N/A
	Coordination, Interoperability	The DERMS platform allows Alectra to coordinate and control individual DERs in the microgrid - including solar PV, battery storage, a micro-wind turbine , and electric vehicle chargers. In the future, the interoperability of assets - either deployed behind a customer's meter or at scale throughout the network - is an important requirement for DERs in order to maximize their economic potential, and prevent them from having reliability, safety, and capacity impacts to distribution networks.
	Economic Development	N/A
	Environmental Benefits	The microgrid facilitates the widespread adoption of low-CO_2 emission energy technologies, such as solar PV, battery storage, electric vehicles, and micro-wind turbines.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do nothing
	Alternative #1	N/A
	Alternative #2	N/A
	Justification for Recommended Alternative	N/A
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	N/A
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	N/A
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	N/A
	Description of Incorporation of Advanced Technology, if applicable	N/A
	Identify any reliability, efficiency, safety or coordination benefits	N/A



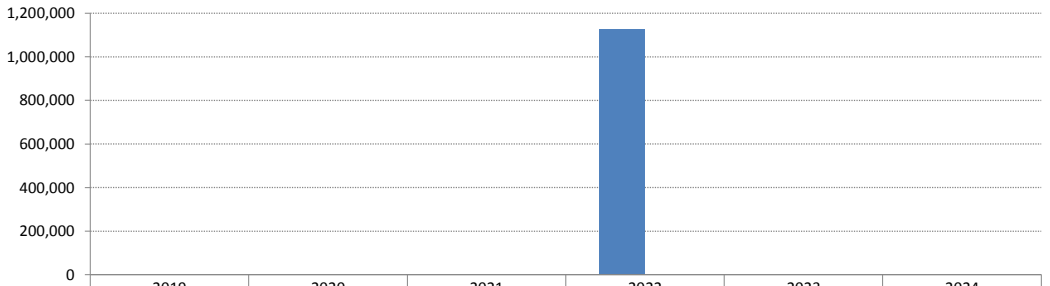
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $123,830	$16,000	$45,798	$14,869	$15,790	$15,721	$15,652
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150716	
Project Name	New build - 42M69 Feeder Extension Williams Pkwy - Main St to Kennedy Rd, Brampton	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Brampton
	Location	Switch Gear Site 428, west of Main St. along Williams Pkwy to Kennedy Rd.
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	27.6kV UG Feeder Extension along Williams Pkwy from Main St to Kennedy Rd OH. Extension currently stops at Switch Gear Site 428 Switch 20-2139, west of Main St. Contingent on road widening of Williams Pkwy.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	This Lines Capacity investment is driven primarily by the rapid expansion of urban development into historically rural greenfield regions.
	Customer Attachment / Load (KVA)	42M69 to be extended. Directly connected to future circuit. 42M47 (247A Peak) Connected through ties on 42M47 42M46 (148A Peak) 42M13 (330A Peak)
	Safety	Alectra Utilities is required to ensure its distribution system can support projected load growth while maintaining reliability and quality of service for customers on both a short-term and long-term basis, as required by the Distribution System Code (DSC). Alectra Utilities must also connect new customers within the timelines prescribed by the OEB's service quality standards without adversely affecting the quality and safety of service to existing customers.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	To maximize the efficiency of the planned work, the Lines Capacity investments are coordinated with other infrastructure projects planned by local authorities. By coordinating Alectra Utilities' expansion and renewal plans with municipal and regional authorities' projects, Alectra Utilities can take advantage of other construction and share infrastructure with other utilities, such as telecommunications providers. Coordination of capital projects also ensures that work can be completed before construction moratoriums are placed on locations by municipal road authorities which would prevent Alectra Utilities from disturbing recently completed roads and streetscapes. Contingent on road widening of Williams Pkwy.
	Economic Development	Investments in Lines Capacity provide Alectra Utilities the ability to support connection of new developments, expedite restoration of outages as well as capability to safely and reliably integrate DER, PV and battery systems.
	Environmental Benefits	Operating feeders within planning criteria maximizes asset life, reduces line losses and ensures required power quality levels.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Status Quo These are new development, if new overhead lines are not constructed, it will be physically impossible for Alectra Utilities to connect new customers to the grid. For the reasons stated above, Alectra Utilities rejected the status quo or do-nothing approach.
	Alternative #1	Non-Wires Alternatives For this project these options have not been considered as new feeders are needed to connect the customers to grid. This is not the recommended alternative.
	Alternative #2	Construct New Feeders Execution of this investment will alleviate capacity constraints and as well as ensure the availability of sufficient capacity to efficiently connect customers to Alectra Utilities's distribution system. It will allow Alectra Utilities to maintain supply to customers during contingency events and operation flexibility during maintenance and other capital work. This option will help Alectra Utilities maintain service quality and reliability standards for the existing customers as additional load is added to the system. Alectra Utilities plans to construct and configure feeders to present day technical standards to ensure customer choice for integrating distributed generation, electric vehicles and energy storage solutions. This is the recommended alternative.
	Justification for Recommended Alternative	Construction of new feeders is the only option that allows Alectra Utilities to reliably meet forecast connection requirements, and it forms the basis of the planned Lines Capacity investments.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable

	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Alectra Utilities has identified each proposed Lines Capacity project as required in the proposed timeline and determined that each investment is required to meet the pace of development in each service area to ensure sufficient capacity and reliable service for Alectra Utilities customers. Since larger projects require greater capital investment and take multiple years to build, Alectra Utilities plans to construct large projects in a phased manner to minimize the impact on rates and resources.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
	Description of Incorporation of Advanced Technology, if applicable	Not Applicable
	Identify any reliability, efficiency, safety or coordination benefits	The amount of investment required each year is paced to match timing of known development, considering available capacity, and expected load growth, net of conservation and demand side management. Alectra Utilities designs and plans projects using a phased approach based on feeder loading, funding availability and customer development progress, which allows the utility to pace investments just-in-time for connecting new developments while ensuring stable rates and maintenance of reliability for existing customers in the area.



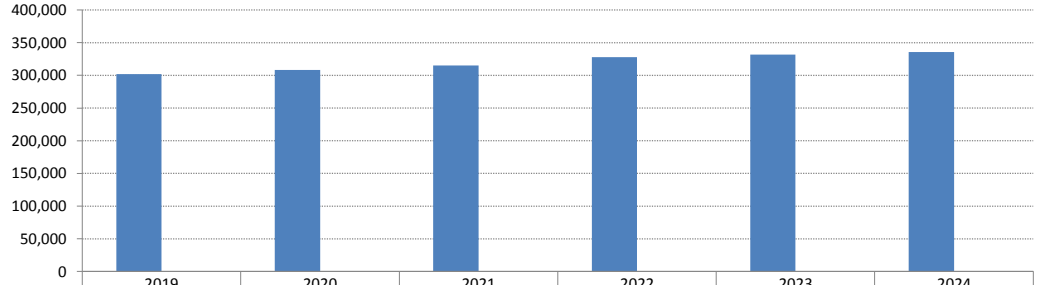
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,127,730	$0	$0	$0	$1,127,730	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150747	
Project Name	Net Zero Energy Emissions	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	
	Units	
	Project Class	No Burden
	Project Includes R&D	Yes
	Technology Project or has Technology Component	Yes
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Distributed Energy Resources (DER)
	Alectra Subcategory	Line Capacity Projs & Add Circ
4. Evaluation Criteria (OEB)	Project Summary	The objective of the DER Control Platform project is to integrate DERs with Alectra Utilities' traditional distribution operation technology systems. It will enable Alectra Utilities to build capabilities that could predict the grid operational impacts of DERs, help mitigate power quality issues associated with DERs and reduce peak demand. These capabilities will be built as part of the overall DER Control Platform, also known as Distributed Energy Resource Management System (DERMS), further enabling a Virtual Power Plant (VPP) with integrated controls and real time signals in order to operationalize DERs as an aggregated source of capacity and storage. The focus of Alectra Utilities' DER Control Platform project is to aggregate, integrate, control and optimize concentrated and dispersed DER, as a source of virtually aggregated deployment, in order to reduce system capacity demand necessary for system optimization and load balancing. Without Alectra Utilities' Control Platform, Alectra Utilities will not be able to realize the full potential of DER integration and also its promise to deliver an efficient and reliable DER integration solution.
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	Without Alectra Utilities' Control Platform, Alectra Utilities will not be able to realize the full potential of DER integration and also its promise to deliver an efficient and reliable DER integration solution. The optimization of household electricity consumption proposed by this project minimizes the impacts of electrification on distribution, transmission, and generation infrastructure and creates a pathway for widespread adoption of DERs in an affordable and efficient manner, without increasing rates and compromising grid stability.
	Customer Attachment / Load (KVA)	Not applicable
	Safety	Not applicable
	Cyber-Security, Privacy	Security will be designed into every aspect of the platform and the networks it creates, and lasting security is sustained through ongoing diligence and maintenance. Alectra ensures the security of its networks using best practices, which include the following provisions: All entities (human interaction and computing nodes) connected to the network will be uniquely authenticated. All traffic will be armored, as follows: •Traffic will be protected from eavesdropping, tampering and recording. •Traffic will be authenticated, assuring it is only delivered from/to the intended source/recipient. •Traffic will be encrypted; decrypted traffic is never visible to an unintended party. •Traffic will be checked for integrity—no traffic can be injected, re-routed, delayed, duplicated or corrupted without being detected. •All authentication, encryption and integrity checks will be protected by industry-recognized, robust cryptographic algorithms with no known weaknesses. •End-customer data will be owned by the end-customer •All data will be backed up continuously in real-time to secured backup systems
	Coordination, Interoperability	The project is intended to enable the integration of DERMS with Alectra Utilities system control and operational systems, including Supervisory Control And Data Acquisition (SCADA), Geographical Information System (GIS), Outage Management System (OMS) and Network Simulation Software (such asCYMDIST). The project is leading edge and innovative and will create a pathway for widespread adoption of DERs in an affordable and efficient manner, without increasing rates and compromising grid stability. The project will allow for the widespread and economically-efficient adoption of DERs across Canada. For example, the project requires new coordination between ITs system to optimize and integrate into the grid, allowing for the real-time management of energy generation, distribution and consumption.

	Economic Development	The project will have a direct and positive economic benefit in the community it serves, primarily by reducing electricity costs for households. In turn, this will contribute to the long-term financial stability and prosperity of the community. The project reduces energy costs by allowing for individual's real-time management of their energy consumption. It enables consumers to sell power back to the grid, further offsetting costs. The project will contribute to economic growth and job creation through broadly supporting Canadian innovation, while also providing more access for Distributed Energy Resources. The most central economic benefit this project is that it will help shape and inform future consumer-facing smart grid offerings, and will serve as a useful guide to both industry and government regarding our collective understanding of the barriers that exist with respect to widespread adoption of these technologies including the economic gap, in retail terms, that confronts the enlightened consumer who is interested in pursuing these approaches.
	Environmental Benefits	The project expects to reduce GHG emissions from the DERs included in the pilot by 1,190 Tonnes to the end of 2030. A further 18,600,000 Tonnes of indirect GHG emissions are projected in Ontario from the subsequent adoption of this technology integration that occurs through subsequent market replication of this comprehensive technology integration.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do nothing. See priority.
	Alternative #1	Not applicable
	Alternative #2	Not applicable
	Justification for Recommended Alternative	Not applicable
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The technologies won't work as intended or the control architecture won't optimize. Mitigation strategy: begin with small-scale integration work before proceeding with entire suite of DERs. It will be difficult to identify participants to volunteer to have their DERs participate in the demonstration project. Mitigation strategy: Work with corporate communications activities to solicit customer interest; work with project technology partners to identify potential customers.
	Comparative Information on Equivalent Historical Projects (if any)	The current project builds on the Power.House pilot project launched by a key Alectra Utilities legacy company, PowerStream, in 2015. This pilot enabled the deployment of 20 Power.House units – an integrated home power plant of rooftop solar panels, a lithium-ion energy storage battery, a two-way smart meter and a cloud-based energy management system. The pilot resulted in customers from the City of Barrie, City of Vaughan and City of Markham saving on their monthly bills, while Alectra Utilities gained key insights from the integration of usage data.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Customers who participate will have their consumption optimized to use their customer-sited DERs in a way that provides them with a benefit while also providing a benefit to the grid. In the Power.House project, customers were able to re-coup their initial investment in less than 5 years. A second type of benefit is that provided to all ratepayers through making better use of existing infrastructure rather than requiring early maintenance or repair due to excess use.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Where practicable, DERs included in the project will be located in areas that have been identified as requiring future investment. This will provide an early start towards potentially using DERs more in the future to offset infrastructure investments.
	Description of Incorporation of Advanced Technology, if applicable	The DER Control Platform project provides an integration backbone for DERs, including hardware and software services, to be controlled and managed through Alectra Utilities' core operational and control platforms. It will allow Alectra Utilities to assess the integration and operation of its platform before it is used at a larger scale to provide benefits to the distribution system as a whole.
	Identify any reliability, efficiency, safety or coordination benefits	As more DERs are connected to Alectra Utilities' system, the DER Control Platform will allow Alectra Utilities to optimize DER operations to prevent power quality issues and reduce peak demand in real time, in addition to providing valuable data for improving Alectra Utilities' forecast of DER uptake and operation based on customer adoption that can be used for utility planning purposes. The project is expected to enable the integration of DERMS with Alectra Utilities' system control and operational systems, including Supervisory Control And Data Acquisition (SCADA), Geographical Information System (GIS), Outage Management System (OMS) and Network Simulation Software (such asCYMDIST).



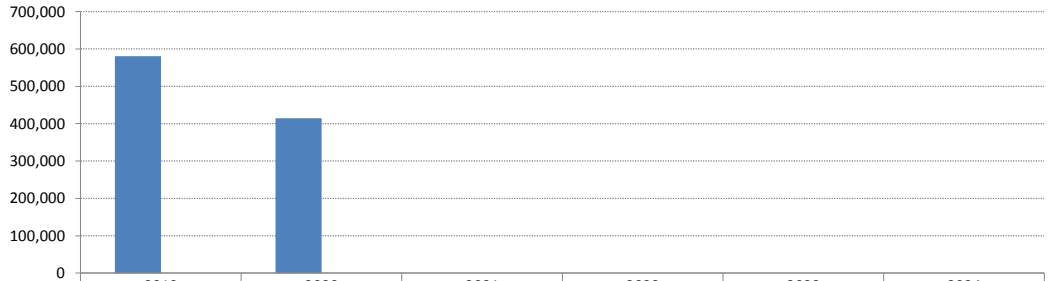
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,920,628	$302,000	$308,473	$315,054	$327,952	$331,686	$335,463
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150749	
Project Name	New WiMAX Communication Network - Central South	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	Locations within the Central South Service Territory
	Units	100
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	Yes
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	System Control, Comm'ns & Performance
	Alectra Subcategory	Scada & Scada Communications N
4. Evaluation Criteria (OEB)	Project Summary	The goal of this project is to install a high speed, broadband, cybersecure, wireless communications network, in the 1.8GHZ spectrum, spanning the boundaries of the City of Mississauga. It is anticipated 3 towers will be constructed at Municipal Substations and be equipped with a 3 sector WiMAX wireless system. A fourth 3 sector WiMAX wireless system would be deployed at the existing radio site on Kaneff Tower. This wireless network will enable effective data communications between the SCADA System and Alectra owned Distribution System assets, including: •Municipal Substations (MS) •SCADA Controllable devices •Customer owned generators •Feed-in Tariff (FIT) sites The project would have the following components: - applications to federal and and municipal governing bodies for construction of 150' communications towers at selected municipal substations in Central South; - application for licensed frequencies from ISED; - completion of geotechnical studies for tower foundations; - construction of towers; - purchase and installation of supporting communication buildings to house supporting Ethernet equipment, WiMAX power Supplies, etc.; - purchase and installation of WiMAX Base Radios, antennae and associated cabling; - purchase and installation of premise communication equipment at the remote ends; MS, field devices, FIT Generators.
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	This project should be considered a High priority. Justifications for classifying the priority of this project as high are as follows: - major reduction in OM&A costs: existing cost for SCADA communication to Central South Municipal Substations is presently in excess of $570,000. Annual licensing costs for an Alectra owned WiMAX system providing a higher capacity service to the same MSs would be ~$10,000; - Complete Control of Communications Channel: Alectra would full control of this channel, and able to segment, encrypt and segregate the channel meet varios stakeholder needs: - Highly Cyber Secure: the channel is able to be encrypted to the AES256 standard. Highly critical sensitive Network Operations' data could not be compromised. The channel is completely in the Alectra Domain. Data does not flow over 3rd party segments; - Completely Scalable: ISED, the federal body overseeing the public radio spectrum, has allocated the 1.8GHz frequency band to utility clients such as Alectra. Alectra will have full use of the frequency and can add as many remote connections as required. The system has ample bandwidth; - Continuation of Existing Strategy: there is an existing strategy in place to bring WiMAX to Central South. Preliminary discussions were held with the equipment provider and prominent educational institutions to deploy a WiMAX Communications System in Central South. Feasibility studies were completed. A pilot was begun. A detailed path profile analysis is being completed. The project being proposed would build on the accomplishments of this strategy and the findings of the path analysis.
	Customer Attachment / Load (KVA)	There are about 2000 customers on a typical 5000kVA substation.
	Safety	This project has a marginal safety component. The new WiMAX node will provide a more effective means to communicate to SCADA controllable devices in Alectra's Mississauga service territory. Information will flow more quickly from devices on the grid to SCADA, enabling System Control to have a greater awareness of the happenings on the grid. Decisions to resolve issues can be made more quickly. WiMAX can transport peer to peer protocols such as GOOSE, enabling deployment of autonomous, automatic fault isolation and service restoration schemes. Such schemes quickly isolate the faulted line section and brings power back into those still healthy segments, ensuring devices critical to public safety such as traffic lights and street lights remain in service.
	Cyber-Security, Privacy	WiMAX has inherent cyber security features. Only those devices configured in the WiMAX Base Station radio access list are allowed to connect. All communication is encrypted to AES 256 standard.
	Coordination, Interoperability	There are currently 7 WiMAX nodes in the Alectra East, providing communication to a number of Alectra substations and field devices. Alectra P&C Staff have a wealth of experience supporting and maintaining the WiMAX Communication platform. Alectra has a good inventory of WiMAX Base Station critical spares.
	Economic Development	Not Applicable

	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do Nothing. Continue to exist with the present situation. Continue to use costly 3rd party providers for SCADA communications to Municipal Substations in Central South. This is unacceptable for the following reasons: - the existing SCADA communications service, provided by a 3rd party, is excessively expensive; - the existing SCADA communications is not controllable by Alectra and flows over non-Alectra owned and controlled segments;; - the existing communication service is not configurable by Alectra. Alectra cannot tailor the channel to accommodate other services, nor segregate these services; - Alectra is expected to monitor and trip FIT Generators. Rules and regulations expect FIT generators to be monitored and to be removed from the distribution grid in the event of issue on the connected feeder. Alectra's standard is for 1.8GHz WiMAX to be the transport mechanism for these channels. - existing Alectra owned, serial, licensed wireless channels are becoming congested. There is risk that new "SMART" devices slated to be installed on the grid will not be able to communicate to SCADA. ISED, the governing body for the public radio spectrum, will no longer grant utilities licenses for 400MHz or 900MHz frequencies; - existing Alectra owned serial licensed wireless do not support high speed peer to peer protocols such as GOOSE, so devices such as overhead reclosers or pad mounted switchgears will not be able to participate in autonomous, automatic, fault isolation and restoration schemes.
	Alternative #1	It is recommended to move forward with this project and deploy a fully functional WiMAX Communication System in Central South, providing full coverage of the area.
	Alternative #2	Another alternative would be to engage a different 3rd party to provide communications services, such as HCE Telecom, Rogers or HydroOne Telecom. All have provided proposals. HCE Telecom's proposal was deemed to be of the most value. However, should HCE Telecom be chosen, the cost will still be ~$250,000.00/year, and we are still not on a fully Alectra owned and controlled system. Alectra would still be constrained as to what could be put on the channel.
	Justification for Recommended Alternative	It is therefore recommended to move forward with this project and implement a 1.8GHz WiMAX Communication System in the Central South service area. The following are the justifications for moving forward with this project: 1) Substantial OM&A Cost Reductions: Alectra will save ~$570,000/year, the amount Alectra is presently pays for the existing SCADA communications service in Central South, provided by a 3rd party; 2) Complete Control and Ownership of Critical Communications System: Alectra will have full ownership and control of the communications system that provides remote monitoring and control of the distribution grid in Central South . Alectra will be able to configure each channel to meet the unique needs of each remote end. SCADA Communication can be given a higher priority than streaming surveillance video. Confidential and critical Network Operations data will flow on Alectra owned infrastructure and remain within Alectra owned channels. Data will not be exposed to untrusted segments. 3) High Bandwidth Channel: WiMAX is broadband. Typical bandwidth for a WiMAX channel is 10Mbps, scalable to meet existing and future needs. The channel is future proof. It is capable of supporting multiple, simultaneous, but completely separated data flows. Such high bandwidth, segregated channels can be used for services such as peer to peer communications, to support distribution automation; 4) Aligns with Government Directives: ISED, the federal body in charge of the radio spectrum, has allocated 1.8GHZ for utility communication. They have mandated that this is the frequency utilities must use. ISED will not provide frequencies in the legacy 400MHz or 900MHz frequency bands, so they are no longer available for utility communication needs.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The following could be risks to project completion, and the mitigations to reduce risk: RISK: refusal of license application for tower construction; MITIGATION: towers will only be built in industrial locations RISK: effective signal is not available at all MSs; MITIGATION: other topologies will be used to extend the signal range.
	Comparative Information on Equivalent Historical Projects (if any)	Alectra has already constructed 7 WiMAX nodes in Alectra East. P&C has managed projects to construct 2 new towers and to rebuild 2 other towers.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	This project will result in substantial OM&A savings to Alectra. Existing communication services cost ~$570,000/year.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
	Description of Incorporation of Advanced Technology, if applicable	WiMAX is a 4G wireless, broadband communications service. It is scalable. It has a high bandwidth. it able to be encrypted. The channel can be segmented into individual data components.
	Identify any reliability, efficiency, safety or coordination benefits	Licensed 1.8GHZ WiMAX is an inherently more reliable broadband communications methodology than unlicensed 900MHz. It has a greater throughput than unlicensed 900MHz and narrowband licensed 900MHz and 400 MHz channels.



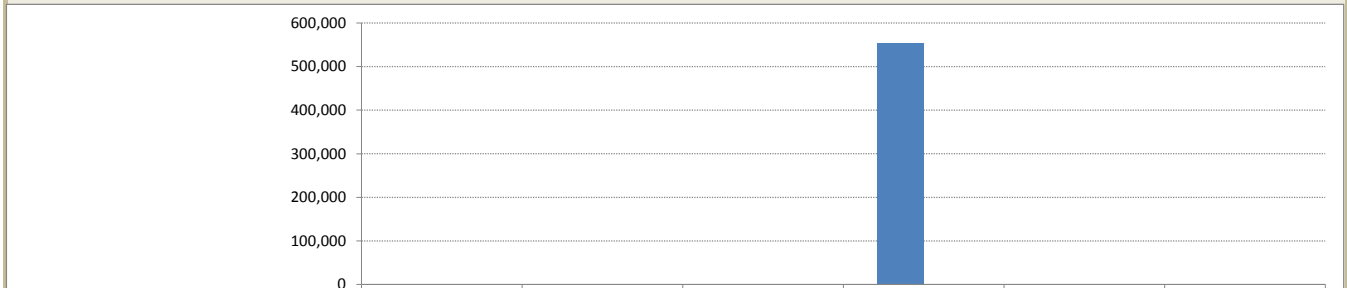
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $995,200	$580,737	$414,463	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150758	
Project Name	Facilities_Reno_Staff Relocation from Jane St	
Major Category	General Plant	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Brampton
	Location	Various locations
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Facilities Management
	Alectra Subcategory	Buildings
4. Evaluation Criteria (OEB)	Project Summary	The objectives of this project planned for 2022 are to create space in Alectra Utilities current owned facilities for employees moving from the Jane St location. This includes creating space capacity for current and future needs, reduce safety risks, remove any hazardous materials that may be present, and improve the use of existing space in Alectra owned facilities while reducing operational expenditures. Other expected objectives and outcomes include: . •Increased flexibility in space for future growth •Operational savings from lease •Improved productivity •Removal of all demolition materials •Build new offices, install new workstations and wall colours to Alectra standards •Update to OBC •Maintain minimal disruptions to staff •Increased collaboration •Improved employee morale and culture •Maximized space utilization in Alectra owned facilities
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Termination of lease at the Jane St office 2022. Create a better work environment for employees, maximize use of current space in existing facilities. Move and renovation plan to be ready for lease termination.
	Customer Attachment / Load (KVA)	N/A
	Safety	Health and Safety will be maintained by the General contractor hired for the project and will act as the constructor. Contractor to follow Alectra health and safety policies. Alectra will maintain owner status. Increased security/safety for staff . Update where needed to OBC. Update where needed to AODA.
	Cyber-Security, Privacy	Move to 100% Alectra Utilities owed and managed facilities unlike Jane St.
	Coordination, Interoperability	Build to AODA standards. Update renovated spaces to meet current OBC building and fire codes. Build office spaces to the new Alectra standards.
	Economic Development	Many tradespersons, engineers, suppliers, consultants and internal employees are employed for these renovation projects.
	Environmental Benefits	Removal of any hazardous substances if applicable. Separation of demolition materials for disposal where applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	High cost of lease. Need to make use of Alectra owed underutilized facilities.
	Alternative #1	Many staff currently reside in the leased Jane St office. This is at the east end of the Alectra territory. The lease at the Jane St office is finished in 2022 and provides us the opportunity to relocate all staff to various Alectra Utilities owned facilities making use of the available vacant space reducing operational lease costs.
	Alternative #2	N/A
	Justification for Recommended Alternative	N/A
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Budget needs to be worthy of a cost effective and efficient work space renovation. Engineering, design, and permits to be obtained for completion in current fiscal year. Schedule timing. Construction agreements to be in place.
	Comparative Information on Equivalent Historical Projects (if any)	Costing estimates are in line with the many previous office space renovation Alectra and legacy utilities have completed over the last 5 years.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0

7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Creating departmental cohesive teams by increased collaboration. Staff moral and culture improvements will reflect positively to better serve internal and external customers. Central locations where feasible.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $554,588	$0	$0	$0	$554,588	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

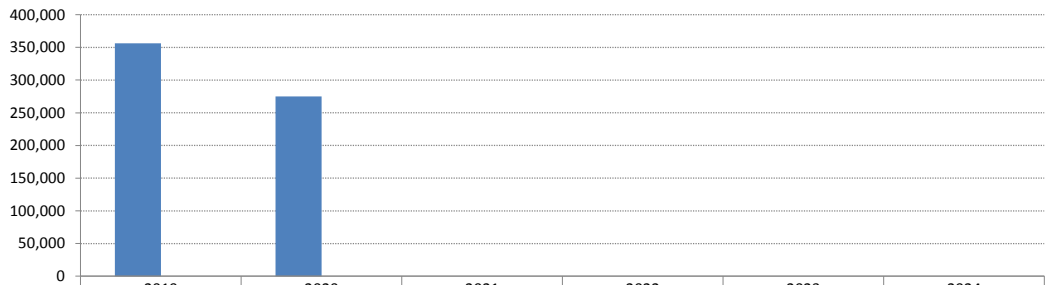
Project Code	150773
Project Name	New WiMAX Communications System - Central North
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Brampton
	Location	Locations within Central North Service Territory
	Units	50
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	Yes
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	System Control, Comm'ns & Performance
	Alectra Subcategory	Scada & Scada Communications N
4. Evaluation Criteria (OEB)	Project Summary	The goal of this project is to install a high speed, broadband, cybersecure, wireless communications network, in the 1.8GHZ spectrum, spanning the boundaries of the City of Brampton. It is anticipated 1 tower will be constructed at James Yarrow Transformer Station and be equipped with a 3 sector WiMAX wireless system. A second 3 sector WiMAX wireless system would be deployed at another site in Central North, location tbd. In year 2, if another sector is required, another 150' tower will be constructed at a suitable location and a 3 sector WiMAX node be constructed on it. This wireless network will enable effective data communications between the SCADA System and Alectra owned Distribution System assets, including: •Municipal Substations (MS) •SCADA Controllable devices •Customer owned generators •Feed-in Tariff (FIT) sites The project would have the following components: - applications to federal and and municipal governing bodies for construction of a 150' communications tower at James Yarrow Transformer Station in Central North; - application for licensed frequencies from ISED; - completion of geotechnical study for tower foundation; - construction of the tower; - purchase and installation of supporting communication buildings to house supporting Ethernet equipment, WiMAX power Supplies, etc .if required; - purchase and installation of WiMAX Base Radios, antennae and associated cabling; - purchase and installation of premise communication equipment at the remote ends; MS, field devices, FIT Generators.
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	This project should be considered a High priority. Justifications for classifying the priority of this project as high are as follows: - Reduction in OM&A costs: existing cost for SCADA communication to Central North Municipal Substations is presently in excess of $40,000/year. Another ~$20,000 is paid to Bell for legacy 4 wire leased circuits. Annual licensing costs for an Alectra owned WiMAX system providing a higher capacity service to the same MSs would be ~$1600; - Highly Reliable Communications Channel: the existing communications to the ~250 remote controllable devices on Central North's distribution grid is extremely unreliable. It is based on unlicensed 900MHz. WiMAX is a high power, licensed, wireless communication channel. Devices will always be available to System Control; - Complete Control of Communications Channel: Alectra would full control of this channel, and able to segment, encrypt and segregate the channel meet varios stakeholder needs: - Highly Cyber Secure: the channel is able to be encrypted to the AES256 standard. Highly critical sensitive Network Operations' data could not be compromised. The channel is completely in the Alectra Domain. Data does not flow over 3rd party segments; - Completely Scalable: ISED, the federal body overseeing the public radio spectrum, has allocated the 1.8GHz frequency band to utility clients such as Alectra. Alectra will have full use of the frequency and can add as many remote connections as required. The system has ample bandwidth; - Removal of Existing Capacity Constraints: the existing strategy of deploying unlicensed 900MHz nodes on random poles is in contravention of NAVCAN regulations and is no longer employed. Applications need to be submitted for communication structures, even if they are only 100' poles. Also, Alectra policy states communication devices cannot be installed above energized conductors. So there is a pressing need for this 1.8GHz service. The new Central North WiMAX System, with its overarching strategy of coverage extension, will alleviate the existing constraint; - Continuation of Existing Strategy: there is an existing strategy in place to bring WiMAX to Central North. Preliminary discussions were held with the equipment provider and prominent educational institutions to deploy a WiMAX Communications System in Central North. Feasibility studies were completed. A pilot was begun. A detailed path profile analysis is being completed. The project being proposed would build on the accomplishments of this strategy and the findings of the path analysis.
	Customer Attachment / Load (KVA)	There are about 2000 customers on a typical 5000kVA substation.

	Safety	This project has a marginal safety component. The new WiMAX node will provide a more effective means to communicate to SCADA controllable devices in Alectra's Brampton service territory. The existing system relying on unlicensed 900MHz is prone to failures. With the new WiMAX System, information will flow more quickly from devices on the grid to SCADA, enabling System Control to have a greater awareness of the happenings on the grid. Decisions to resolve issues can be made more quickly. WiMAX can transport peer to peer protocols such as GOOSE, enabling deployment of autonomous, automatic fault isolation and service restoration schemes. Such schemes quickly isolate the faulted line section and brings power back into those still healthy segments, ensuring devices critical to public safety such as traffic lights and street lights remain in service.
	Cyber-Security, Privacy	WiMAX has inherent cyber security features. Only those devices configured in the WiMAX Base Station radio access list are allowed to connect. All communication is encrypted to AES 256 standard.
	Coordination, Interoperability	There are currently 7 WiMAX nodes in the Alectra East, providing communication to a number of Alectra substations and field devices. Alectra P&C Staff have a wealth of experience supporting and maintaining the WiMAX Communication platform. Alectra has a good inventory of WiMAX Base Station critical spares.
	Economic Development	Not Applicable
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do Nothing. Continue to exist with the present situation. Continue to use 3rd party providers and unlicensed 900MHz for SCADA communications to Municipal Substations, FITS, SCADA controllable devices and fault indicators, in Central North. This is unacceptable for the following reasons: - the existing SCADA communications service, provided by 3rd parties, is expensive; - the existing SCADA communications is not controllable by Alectra and flows over non-Alectra owned and controlled segments;; - the existing communication service is not configurable by Alectra. Alectra cannot tailor the channel to accommodate other services, nor segregate these services; - the existing services to SCADA controllable devices is highly unreliable. There is a high rate of communication failures to the devices; - Alectra is expected to monitor and trip FIT Generators. Rules and regulations expect FIT generators to be monitored and to be removed from the distribution grid in the event of issue on the connected feeder. Alectra's standard is for 1.8GHz WiMAX to be the transport mechanism for these channels. - existing channels cannot supply service to those areas of Central North in need of Distribution Automation. Central North has no licensed 400 or 900MHz channels. There is risk that new "SMART" devices slated to be installed on the grid will not be able to communicate to SCADA. ISED, the governing body for the public radio spectrum, will no longer grant utilities licenses for 400MHz or 900MHz frequencies; - there are no wireless services in Central North to support high speed peer to peer protocols such as GOOSE, so devices such as overhead reclosers or pad mounted switchgears will not be able to participate in autonomous, automatic, fault isolation and restoration schemes.
	Alternative #1	It is recommended to move forward with this project and deploy a new 1.8GHZ WiMAX, wireless, broadband communications system in Central North.
	Alternative #2	Another alternative would be to engage a different 3rd party to provide communications services. Public safety is rolling out a 700MHz LTE service that may be made available to Tier 2 Public safety organizations such as Alectra. Cellular from Rogers or Bell is an option. HCE has provided such services to the City of Halton for their Drinking Water System. This is not recommended as Alectra would still not control the system, and continue to pay high costs for communications to devices on the distribution grid.
	Justification for Recommended Alternative	It is therefore recommended to move forward with this project and implement a 1.8GHz WiMAX Communication System in the Central North Service area. The following are the justifications for moving forward with this project: 1) Substantial OM&A Cost Reductions: Alectra will save ~$80/year, the amount Alectra is presently pays for the existing SCADA communications service in Central North, provided by a 3rd party; 2) Complete Control and Ownership of Critical Communications System: Alectra will have full ownership and control of the communications system that provides remote monitoring and control of the distribution grid in Central North. Alectra will be able to configure each channel to meet the unique needs of each remote end. SCADA Communication can be given a higher priority than streaming surveillance video. Confidential and critical Network Operations data will flow on Alectra owned infrastructure and remain within Alectra owned channels. Data will not be exposed to untrusted segments. 3) High Bandwidth Channel: WiMAX is broadband. Typical bandwidth for a WiMAX channel is 10Mbps, scalable to meet existing and future needs. The channel is future proof. It is capable of supporting multiple, simultaneous, but completely separated data flows. Such high bandwidth, segregated channels can be used for services such as peer to peer communications, to support distribution automation; 4) Aligns with Government Directives: ISED, the federal body in charge of the radio spectrum, has allocated 1.8GHZ for utility communication. They have mandated that this is the frequency utilities must use. ISED will not provide frequencies in the legacy 400MHz or 900MHz frequency bands, so they are no longer available for utility communication needs. 5) Increased Reliability: the existing communication to SCADA controllable devices on the Central North Distribution grid is unreliable. It is based on 900MHz unlicensed communication. Devices have a high number of communication failures. 1.8GHz is a high powered licensed wireless communication system. It will have very high performance. It is anticipated that communication failures such have decrease by a factor of 10.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The following could be risks to project completion, and the mitigations to reduce risk: RISK: refusal of license application for tower construction; MITIGATION: tower will be built on the property of James Yarrow Transformer Station RISK: effective signal is not available at all devices on the distribution grid; MITIGATION: other topologies will be used to extend the signal range.
	Comparative Information on Equivalent Historical Projects (if any)	Alectra has constructed and upgraded 7 WiMAX nodes in the East Service Territory. Alectra P&C has extensive experience with the construction of towers, deployment of nodes and with the maintenance and administration of WiMAX communication networks.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0

7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	This project will result in OM&A savings to Alectra. Existing communication services cost ~$60,000/year.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
	Description of Incorporation of Advanced Technology, if applicable	WiMAX is a 4G wireless, broadband communications service. It is scalable. It has a high bandwidth. it able to be encrypted. The channel can be segmented into individual data components.
	Identify any reliability, efficiency, safety or coordination benefits	Licensed 1.8GHZ WiMAX is an inherently more reliable broadband communications methodology than unlicensed 900MHz. It has a greater throughput than unlicensed 900MHz and narrowband licensed 900MHz and 400 MHz channels.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $631,224	$356,249	$274,975	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

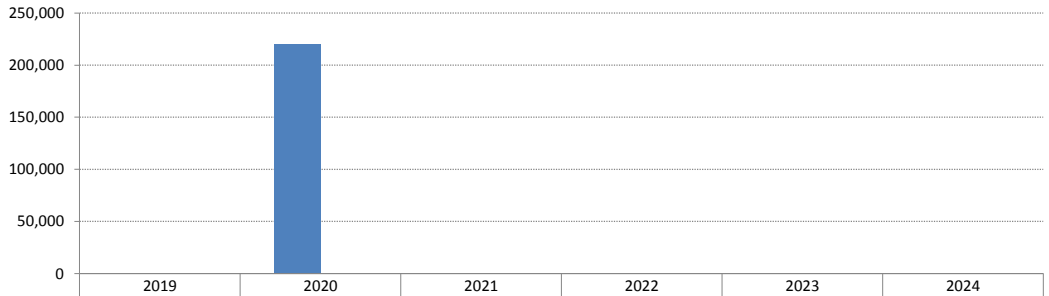
OEB Multi-Project Report

Project Code	150782
Project Name	Fleet_Central South Vehicle Replacement-Step Van
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Unit 311-08 will be a projected 12 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $220,000	$0	$220,000	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150785
Project Name	New WiMAX Communications System - West
Major Category	System Service
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Hamilton
	Location	Various locations in the West Service Territory
	Units	120
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	Yes
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	System Control, Comm'ns & Performance
	Alectra Subcategory	Scada & Scada Communications N
4. Evaluation Criteria (OEB)	Project Summary	The goal of this project is to install a high speed, broadband, cybersecure, wireless communications network, in the 1.8GHZ spectrum, spanning the boundaries of the Cities of Hamilton and St. Catherines. Over the 2 year duration of the project, it is anticipated 1 tower will be constructed at Nebo Road Operations Center and be equipped with a 3 sector WiMAX wireless system. Two additional 3 sector WiMAX wireless systems would be deployed at 2 other sites in Hamilton, location tbd. A fourth node would be deployed at the Vansickle Operations Center in St Catherines on the existing communications tower located there. Appropriate measures would be taken to strengthen the tower should the existing structure be deemed undersized. This wireless network will enable effective data communications between the SCADA System and Alectra owned Distribution System assets, including: •Municipal Substations (MS) •SCADA Controllable devices •Customer owned generators •Feed-in Tariff (FIT) sites The project would have the following components: - applications to federal and and municipal governing bodies for construction of a 150' communications tower at the Nebo Road Operations Center and possibly one more location; - application for licensed frequencies from ISED; - completion of geotechnical studies for tower foundations; - construction of towers; - purchase and installation of supporting communication buildings to house supporting Ethernet equipment, WiMAX power Supplies, etc .if required; - purchase and installation of WiMAX Base Radios, antennae and associated cabling; - purchase and installation of premise communication equipment at the remote ends; MS, field devices, FIT Generators.
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	This project should be considered a High priority. Justifications for classifying the priority of this project as high are as follows: - Reduction in OM&A costs: existing costs for SCADA communication to West Substations and SCADA Controllable devices on the West's Distribution Grid is presently in excess of $75,000/year. Annual licensing costs for an Alectra owned WiMAX system providing a higher capacity service to the same MSs would be ~$11,500; - Complete Control of Communications Channel: Alectra would full control of this channel, and able to segment, encrypt and segregate the channel meet varios stakeholder needs: - Highly Cyber Secure: the channel is able to be encrypted to the AES256 standard. Highly critical sensitive Network Operations' data could not be compromised. The channel is completely in the Alectra Domain. Data does not flow over 3rd party segments; - Completely Scalable: ISED, the federal body overseeing the public radio spectrum, has allocated the 1.8GHz frequency band to utility clients such as Alectra. Alectra will have full use of the frequency and can add as many remote connections as required. The system has ample bandwidth; - Guaranteed Throughputs: As Alectra would have full ownership and administration of this crucial data backhaul system, data is guaranteed to be transported during times of extreme emergency, the time when System Control most needs instantaneous knowledge of the grid. Alectra will not be competing for access to cell towers with civilians posting photos or using apps such as Facetime. The existing system utilizes 3rd party cellular data services. Such systems are prone to constraints and congestion in times of emergency, due to civilian and other commercial traffic on cell towers. At times of emergency, civilian users devour available cellular data bandwidth. Critical data, such as that from grid connected devices, would not get to System Control, severely hampering their ability to administer the West's Distribution Grid in a time of crisis. - Continuation of Existing Strategy: there is an existing strategy in place to bring WiMAX to West. Preliminary discussions were held with the equipment provider and prominent educational institutions to deploy a WiMAX Communications System in West. Feasibility studies were completed. A pilot was begun. A detailed path profile analysis is being completed. The project being proposed would build on the accomplishments of this strategy and the findings of the path analysis.
	Customer Attachment / Load (KVA)	There are about 2000 customers on a typical 5000kVA substation.

	Safety	This project has a marginal safety component. The new WiMAX node will provide a more effective means to communicate to SCADA controllable devices in Alectra's Hamilton and St Catherines service territory. The existing system relies on 3rd party cellular data services and is prone to constraints due to cell tower congestion, and communication outages due to poor signal. With the new WiMAX System, information will flow more quickly from devices on the grid to SCADA, enabling System Control to have a greater awareness of the happenings on the grid. Decisions to resolve issues can be made more quickly. WiMAX can transport peer to peer protocols such as GOOSE, enabling deployment of autonomous, automatic fault isolation and service restoration schemes. Such schemes quickly isolate the faulted line section and brings power back into those still healthy segments, ensuring devices critical to public safety such as traffic lights and street lights remain in service.
	Cyber-Security, Privacy	WiMAX has inherent cyber security features. Only those devices configured in the WiMAX Base Station radio access list are allowed to connect. All communication is encrypted to AES 256 standard.
	Coordination, Interoperability	There are currently 7 WiMAX nodes in the Alectra East, providing communication to a number of Alectra substations and field devices. Alectra P&C Staff have a wealth of experience supporting and maintaining the WiMAX Communication platform. Alectra has a good inventory of WiMAX Base Station critical spares.
	Economic Development	Not Applicable
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do Nothing. Continue to exist with the present situation. Continue to use 3rd party providers for terrestrial data circuits and cellular data for SCADA communications to Municipal Substations, FITS, SCADA controllable devices and fault indicators, in West. This is unacceptable for the following reasons: - the existing SCADA communications service, provided by 3rd parties, is expensive; - the existing SCADA communications is not controllable by Alectra and flows over non-Alectra owned and controlled segments. Alectra has to compete with every other cellular data user for bandwidth on a cell tower; - the existing communication service is not configurable by Alectra. Alectra cannot tailor the channel to accommodate other services, nor segregate these services; - the existing services to SCADA controllable devices is highly unreliable. There is a high rate of communication failures to the devices; - for those SCADA controllable devices on the West distribution grid, there is no guarantee of data throughput. Alectra's devices compete for access to a cell tower just like any other cellular data user. We are at risk of loss of communications in times of emergencies, when everyone is trying to post. - Alectra is expected to monitor and trip FIT Generators. Rules and regulations expect FIT generators to be monitored and to be removed from the distribution grid in the event of issue on the connected feeder. Alectra's standard is for 1.8GHz WiMAX to be the transport mechanism for these channels. - there is not always a guarantee of reliable cellular service to every "SMART" device slated to be added to West's Distribution Grid. There is risk that new "SMART" devices slated to be installed on the grid will not be able to communicate to SCADA. ISED, the governing body for the public radio spectrum, will no longer grant utilities licenses for 400MHz or 900MHz frequencies. 1.8 GHZ is the frequency allocated for Utility communication; - there are no wireless services in West to support high speed peer to peer protocols such as GOOSE, so devices such as overhead reclosers or pad mounted switchgears will not be able to participate in autonomous, automatic, fault isolation and restoration schemes.
	Alternative #1	It is recommended to move forward with this project and implement a WiMAX communication system in Alectras's West service territory.
	Alternative #2	Another alternative would be to engage a different 3rd party to provide communications services. Public safety is rolling out a 700MHz LTE service that may be made available to Tier 2 Public safety organizations such as Alectra. Cellular from Rogers or Bell is an option. HCE has provided such services to the City of Halton for their Drinking Water System. This is not recommended as Alectra would still not control the system, and continue to pay high costs for communications to devices on the distribution grid.
	Justification for Recommended Alternative	It is therefore recommended to move forward with this project and implement a 1.8GHz WiMAX Communication System in the West Service area. The following are the justifications for moving forward with this project: 1) Substantial OM&A Cost Reductions: Alectra will save ~$75000/year, the amount Alectra is presently pays for the existing SCADA communications service in West, provided by 3rd parties; 2) Complete Control and Ownership of Critical Communications System: Alectra will have full ownership and control of the communications system that provides remote monitoring and control of the distribution grid in West. Alectra will be able to configure each channel to meet the unique needs of each remote end. SCADA Communication can be given a higher priority than streaming surveillance video. Confidential and critical Network Operations data will flow on Alectra owned infrastructure and remain within Alectra owned channels. Data will not be exposed to untrusted segments. 3) High Bandwidth Channel: WiMAX is broadband. Typical bandwidth for a WiMAX channel is 10Mbps, scalable to meet existing and future needs. The channel is future proof. It is capable of supporting multiple, simultaneous, but completely separated data flows. Such high bandwidth, segregated channels can be used for services such as peer to peer communications, to support distribution automation; 4) Aligns with Government Directives: ISED, the federal body in charge of the radio spectrum, has allocated 1.8GHZ for utility communication. They have mandated that this is the frequency utilities must use. ISED will not provide frequencies in the legacy 400MHz or 900MHz frequency bands, so they are no longer available for utility communication needs. 5) Increased Reliability: the existing communication to SCADA controllable devices on the West Distribution Grid is unreliable. It is based on cellular data. Devices have a high number of communication failures and need to complete for access to cellular towers with other commercial and civilian users. This is exacerbated in a time of emergency, when civilian use of cellular data increases exponentially. It has been proven that in times of emergency, civilians need to post, or access information from websites or remain in contact with family. Access to cellular data bandwidth on cell towers becomes extremely difficult. There is a high risk that System Control will not be receiving information from grid connected devices, or be able to control remote switching equipment, at the most critical time when the service is needed. 1.8GHz is a high powered licensed wireless communication system. It will have very high performance. It is anticipated that communication failures such have decrease by a factor of 10. Access to SCADA controllable devices installed on the West's distribution grid will be guaranteed.

6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	The following could be risks to project completion, and the mitigations to reduce risk: RISK: refusal of license application for tower construction; MITIGATION: tower will be built on the property of Nebo Rd Operations Center. It is also hoped that another tower can be constructed at the Stoney Creek Operations center, or adjacent to that property, in the industrial area.. A 3rd would be housed at the Dundas Water Tower RISK: effective signal is not available at all devices on the distribution grid; MITIGATION: other topologies will be used to extend the signal range.
	Comparative Information on Equivalent Historical Projects (if any)	Alectra has constructed and upgraded 7 WiMAX nodes in the East Service Territory. Alectra P&C has extensive experience with the construction of towers, deployment of nodes and with the maintenance and administration of WiMAX communication networks.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	This project will result in OM&A savings to Alectra. Existing communication services cost ~$75,000/year.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not Applicable
	Description of Incorporation of Advanced Technology, if applicable	WiMAX is a 4G wireless, broadband communications service. It is scalable. It has a high bandwidth. it able to be encrypted. The channel can be segmented into individual data components.
	Identify any reliability, efficiency, safety or coordination benefits	Licensed 1.8GHZ WiMAX is an inherently more reliable broadband communications methodology than unlicensed 900MHz. It has a greater throughput than unlicensed 900MHz and narrowband licensed 900MHz and 400 MHz channels.

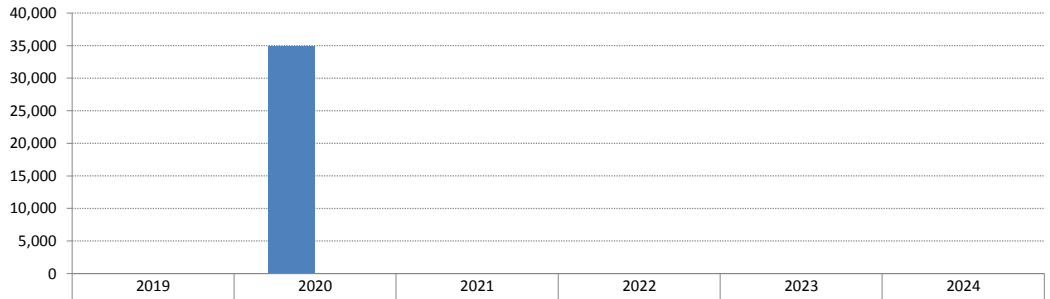
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $967,923	$480,883	$487,040	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150786	
Project Name	Fleet_Central South Vehicle Replacement-SUV	
Major Category	General Plant	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 515-12 will be a projected 8 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	Operational improvements
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



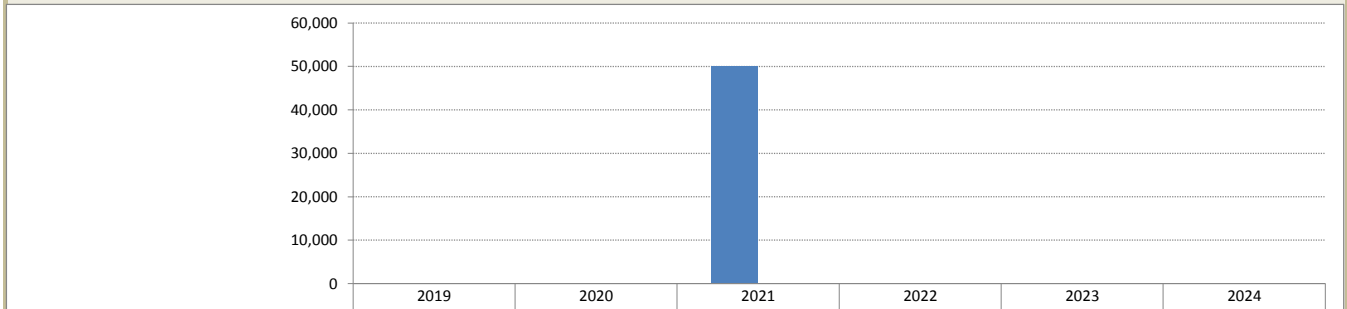
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $35,000	$0	$35,000	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150787	
Project Name	Fleet_Central South Vehicle Replacement- Van	
Major Category	General Plant	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 1-370, 503-09, 509-09, 520-04 will be a projected 10-15 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, 1-370, 503-09, 509-09, 520-04 , will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	N/A
	Justification for Recommended Alternative	N/A
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $50,000	$0	$0	$50,000	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

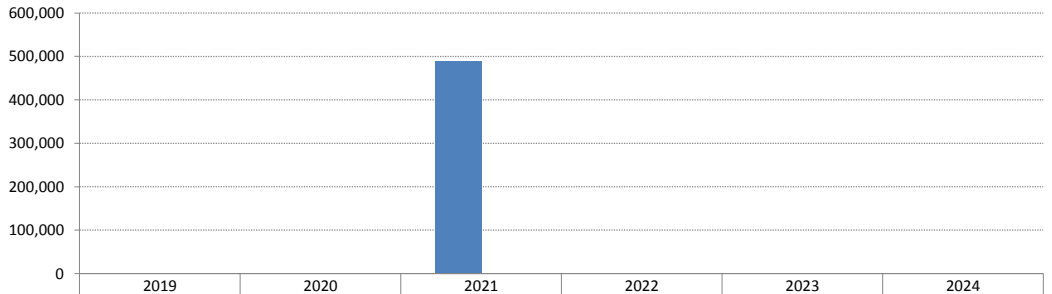
OEB Multi-Project Report

Project Code	150793
Project Name	Fleet_Central South Vehicle Replacement-210-09 S/bucket
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: • Manufacturing Standards • Industry Standards • Non Industry Standards • Vehicle Operational Conditions • Vehicle Age • Vehicle Total Mileage • Highway Traffic Act (“HTA”) • Canadian Motor Vehicle Safety Standards (“CMVSS) • All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment • Motor Vehicle Inspection Station (“MVIS”) requirements • Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable • Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Unit 210-09 will be a projected 12 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	Operational improvements
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



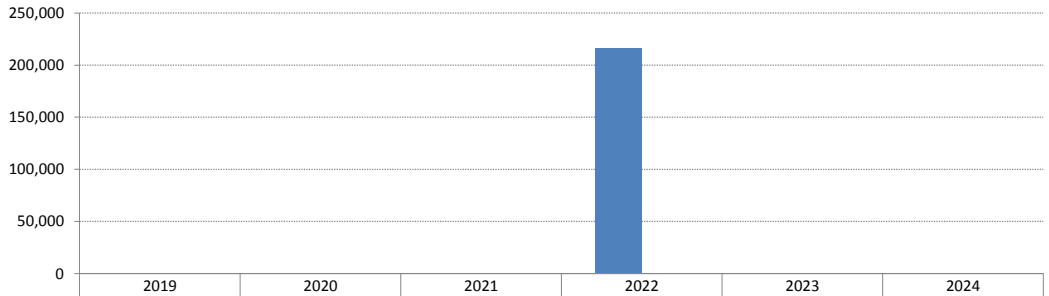
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $490,000	$0	$0	$490,000	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150796	
Project Name	Fleet_Central South Vehicle Replacement- Vans	
Major Category	General Plant	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 511-14,524-13, 525-13, 533-13 will be a projected 7-8 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, 511-14,524-13, 525-13, 533-13 , will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	N/A
	Justification for Recommended Alternative	N/A
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	Operational improvements
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $216,000	$0	$0	$0	$216,000	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

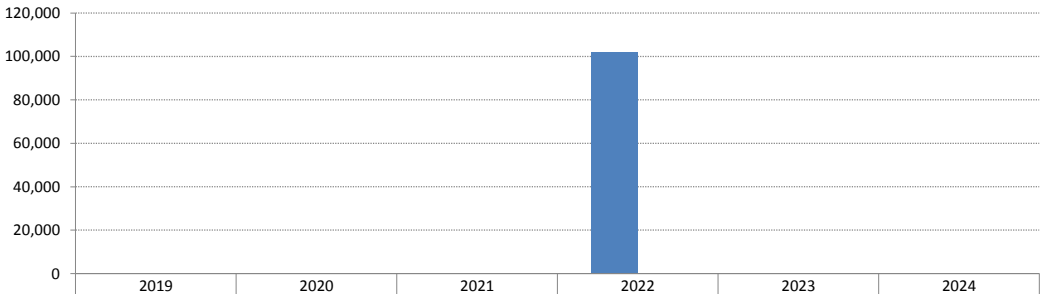
OEB Multi-Project Report

Project Code	150797
Project Name	Fleet_Central South Vehicle Replacement- SUV
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 526-14, 576-14, 582-14 will be a projected 7 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	Operational improvements
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $102,000	$0	$0	$0	$102,000	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

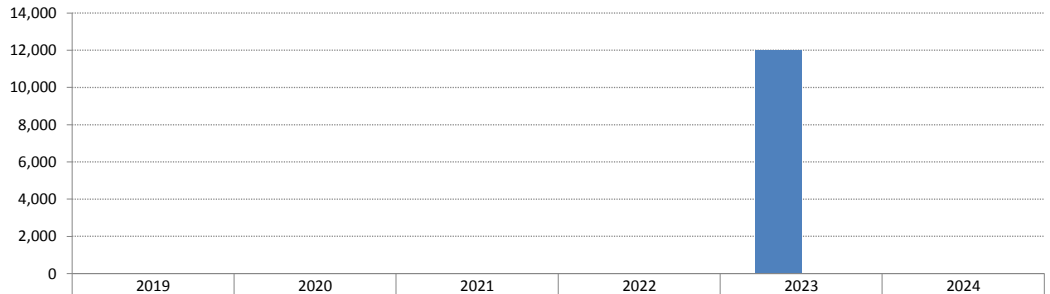
OEB Multi-Project Report

Project Code	150798
Project Name	Fleet_Central South Vehicle Replacement- Arrowboard
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year equipment are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The equipment replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on equipment age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same type of equipment or a completely different type of equipment based on usability. Units 90511 will be a projected 10 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of equipment availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Equipment availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, equipment scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that this equipment be replaced as maintenance and repairs costs have increased and the equipment is no longer operate at full capacity, reducing equipment reliability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of equipment that have surpass there life spend. Regular equipment replacement is necessary to avoid unduedown and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Providing and maintaining a safe and reliable equipment, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Equipment purchases contribute to the economy by supporting the creation and support of jobs at manufacturers, , parts suppliers, and mechanical trade workers.
	Environmental Benefits	N/A
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, equipment scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of types of Alectra equipment should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular equipment replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	Operational improvements
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements and safety



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $12,000	$0	$0	$0	$0	$12,000	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

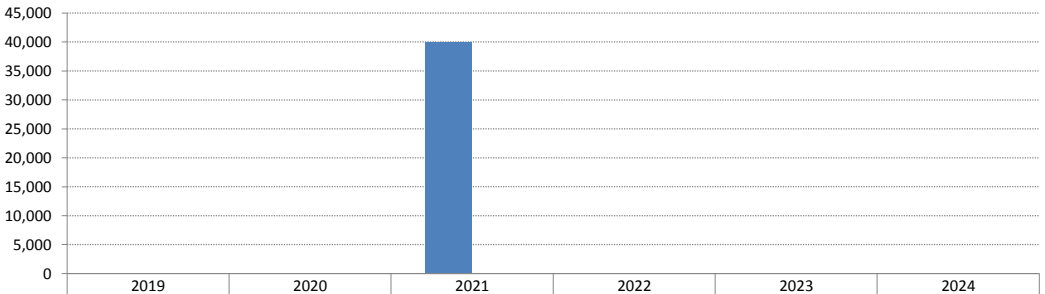
OEB Multi-Project Report

Project Code	150800
Project Name	Fleet_Central South Vehicle Replacement- trailer
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year equipment are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The equipment replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on equipment age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same type of equipment or a completely different type of equipment based on usability. Units 942-06 will be a projected 15 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of equipment availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Equipment availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, equipment scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that this equipment be replaced as maintenance and repairs costs have increased and the equipment is no longer operate at full capacity, reducing equipment reliability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of equipment that have surpass there life spend. Regular equipment replacement is necessary to avoid unduedown and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Providing and maintaining a safe and reliable equipment, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Equipment purchases contribute to the economy by supporting the creation and support of jobs at manufacturers, , parts suppliers, and mechanical trade workers.
	Environmental Benefits	N/A
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, equipment scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of types of Alectra equipment should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular equipment replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	Operational improvements
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements and safety



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $40,000	$0	$0	$40,000	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

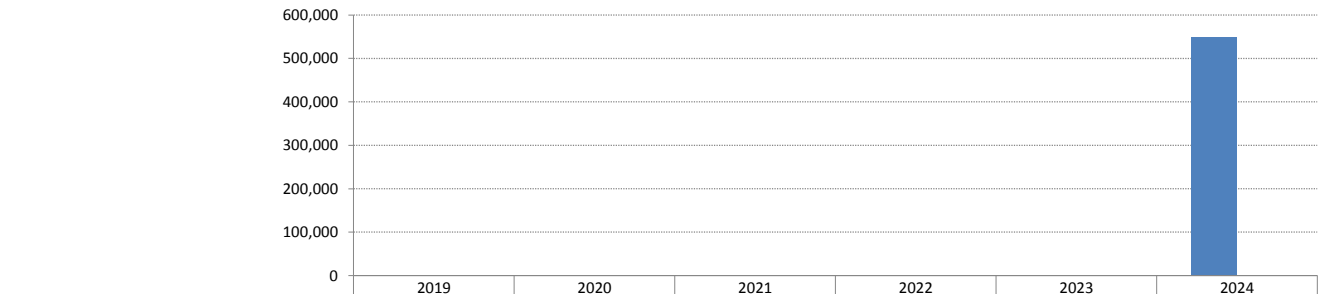
OEB Multi-Project Report

Project Code	150803
Project Name	Fleet_Central South Vehicle Replacement- Material Handler
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: • Manufacturing Standards • Industry Standards • Non Industry Standards • Vehicle Operational Conditions • Vehicle Age • Vehicle Total Mileage • Highway Traffic Act (“HTA”) • Canadian Motor Vehicle Safety Standards (“CMVSS) • All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment • Motor Vehicle Inspection Station (“MVIS”) requirements • Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable • Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Unit 105-09 will be a projected 13 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	Operational improvements
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $550,000	$0	$0	$0	$0	$0	$550,000
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

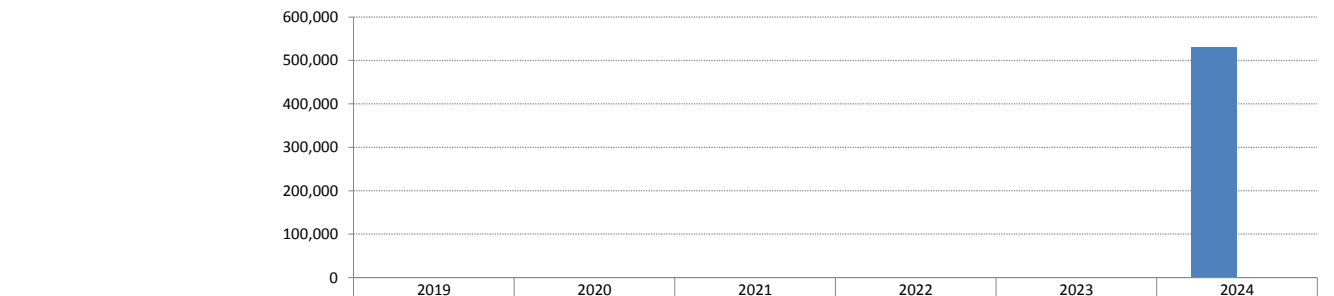
OEB Multi-Project Report

Project Code	150807
Project Name	Fleet_Central South Vehicle Replacement-209-09 S/bucket
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Unit 209-09 will be a projected 13 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



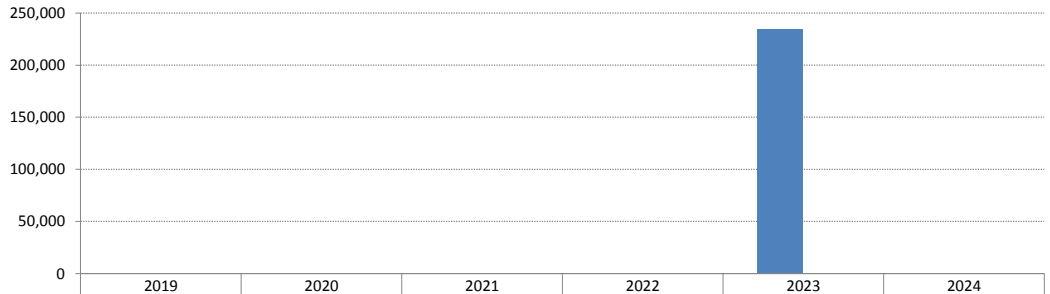
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $530,000	$0	$0	$0	$0	$0	$530,000
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150810	
Project Name	Fleet_Central South Vehicle Replacement-Step Vans	
Major Category	General Plant	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Unit 316-12 will be a projected 10 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $235,000	$0	$0	$0	$0	$235,000	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

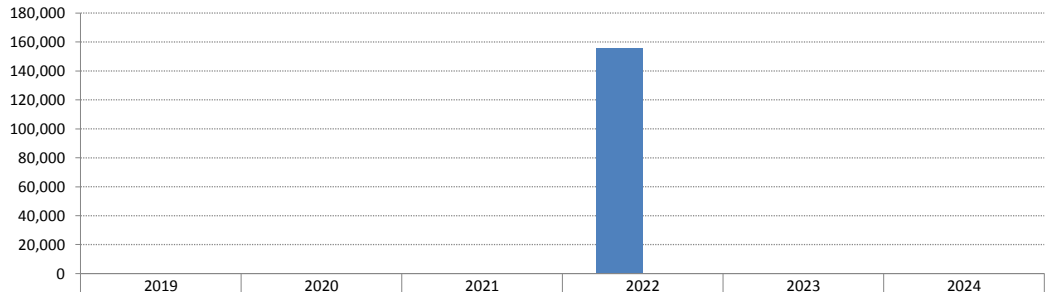
OEB Multi-Project Report

Project Code	150811
Project Name	Fleet_Central South Vehicle Replacement-Pick ups
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: • Manufacturing Standards • Industry Standards • Non Industry Standards • Vehicle Operational Conditions • Vehicle Age • Vehicle Total Mileage • Highway Traffic Act (“HTA”) • Canadian Motor Vehicle Safety Standards (“CMVSS) • All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment • Motor Vehicle Inspection Station (“MVIS”) requirements • Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable • Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 416-14, 421-14, 429-14 will be a projected 7- 8 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $156,000	$0	$0	$0	$156,000	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

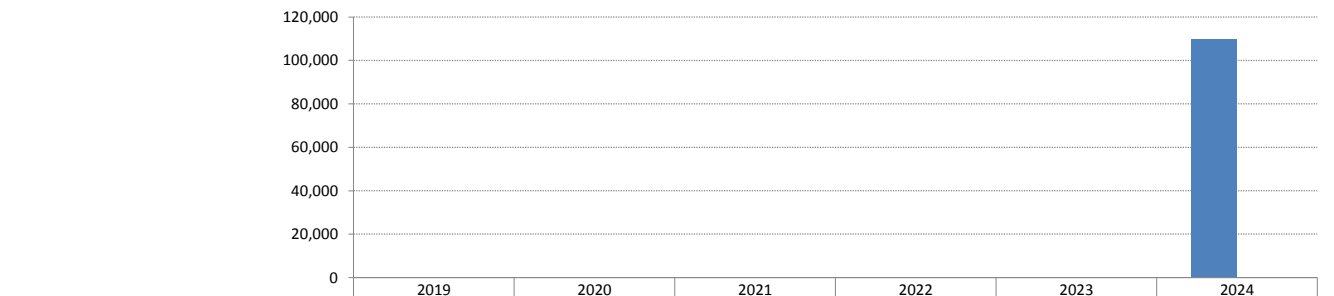
OEB Multi-Project Report

Project Code	150812
Project Name	Fleet_Central South Vehicle Replacement-Vans
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 514-14, 527-15, 539-15 will be a projected 7-8 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, , will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	N/A
	Justification for Recommended Alternative	N/A
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $110,000	$0	$0	$0	$0	$0	$110,000
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

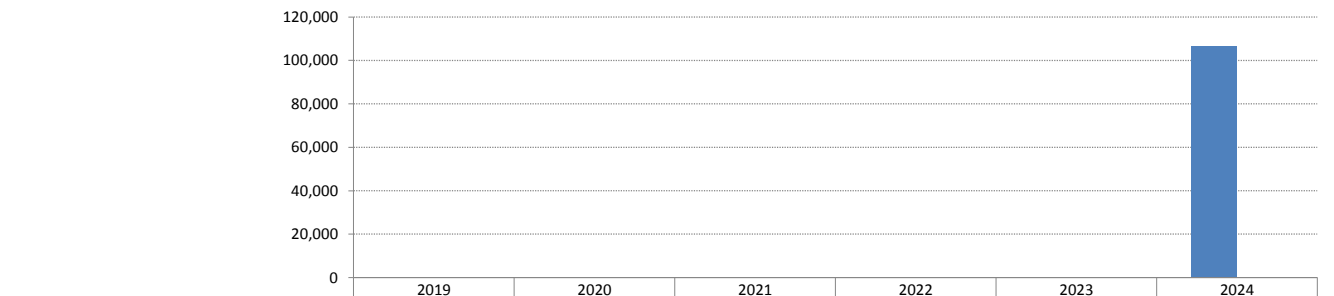
OEB Multi-Project Report

Project Code	150813
Project Name	Fleet_Central South Vehicle Replacement-SUV
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 528-15, 529-15, 530-15 will be a projected 7 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $106,500	$0	$0	$0	$0	$0	$106,500
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

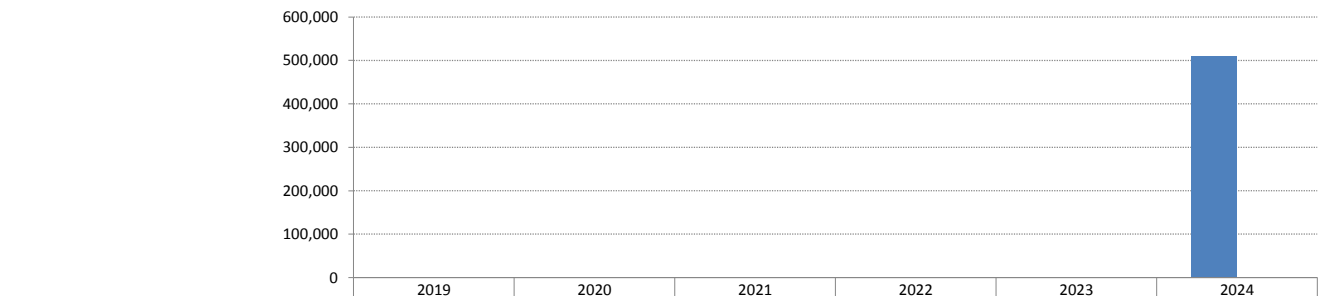
OEB Multi-Project Report

Project Code	150818
Project Name	Fleet_Central South Vehicle Replacement-236-10 S/bucket
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Unit 236-10 will be a projected 13 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $510,000	$0	$0	$0	$0	$0	$510,000
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

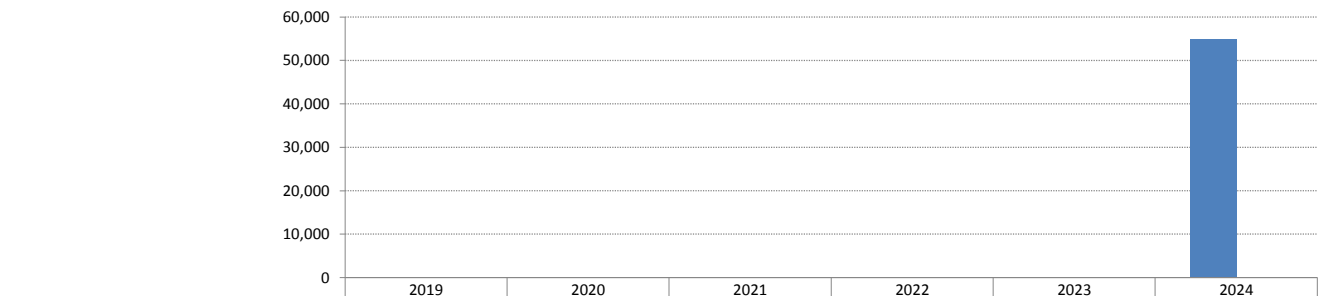
OEB Multi-Project Report

Project Code	150821
Project Name	Fleet_Central South Vehicle Replacement-Van
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 537-16 will be a projected 7 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, 537-16, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	N/A
	Justification for Recommended Alternative	N/A
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $55,000	$0	$0	$0	$0	$0	$55,000
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

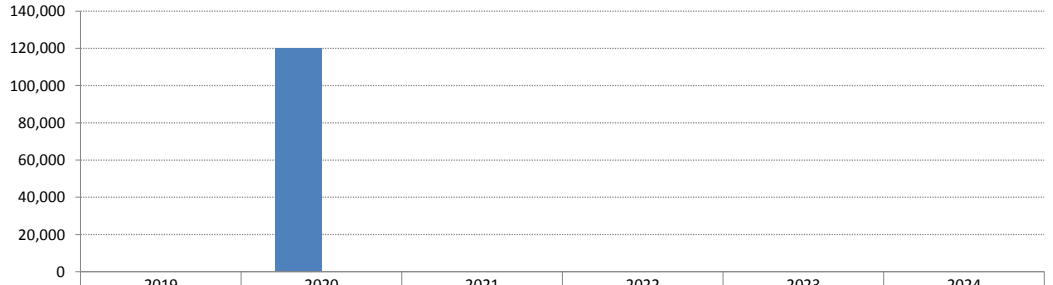
OEB Multi-Project Report

Project Code	150831
Project Name	Fleet_West_Vehicle Replacement_SUVs_1-268,1-226,1-227
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Hamilton
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 1-268, 1-226, 1-227 will be a projected 13 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	Replacement Assessment Criteria - Light Duty Vehicles: Assessed at 7 years and every year after, and/or high mileage (excess of 150,000 km) Replacement schedule: at 7 years, (150,000 km). Medium Duty Vehicles: Assessed at 10 years and every year after, and/or high mileage (excess of 250,000 km) Replacement schedule: at 10 years, (250,000 km). Heavy Duty Vehicles: Assessed at 12-year service, and every year after, and/or high mileage (excess of 500,000 km) High engine hours (excess of 12,000 engine hours)
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/ARFP processed will be followed for best value. Historical spend tracked from all regions
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $120,000	$0	$120,000	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

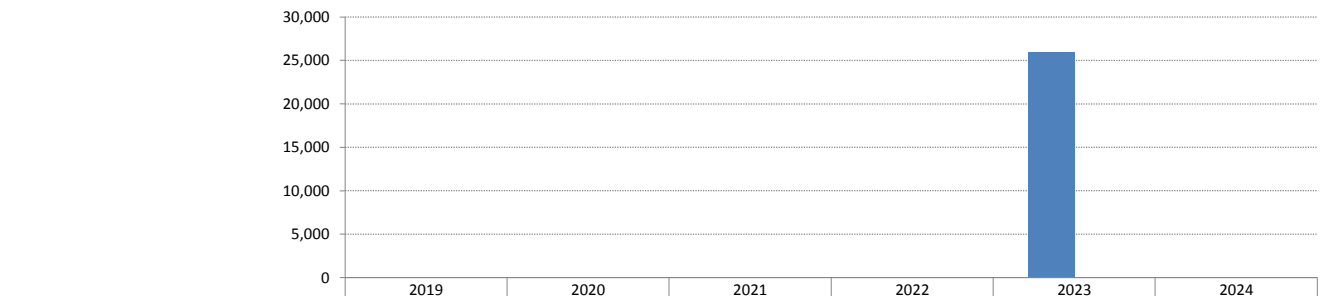
OEB Multi-Project Report

Project Code	150843
Project Name	Fleet_Central South Vehicle Replacement-Bocat
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year equipment are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The equipment replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on equipment age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same type of equipment or a completely different type of equipment based on usability. Units 917-08 will be a projected 15 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of equipment availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Equipment availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, equipment scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that this equipment be replaced as maintenance and repairs costs have increased and the equipment is no longer operate at full capacity, reducing equipment reliability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of equipment that have surpass there life spend. Regular equipment replacement is necessary to avoid unduedown and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Providing and maintaining a safe and reliable equipment, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Equipment purchases contribute to the economy by supporting the creation and support of jobs at manufacturers, , parts suppliers, and mechanical trade workers.
	Environmental Benefits	New equipment reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, equipment scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of types of Alectra equipment should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular equipment replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



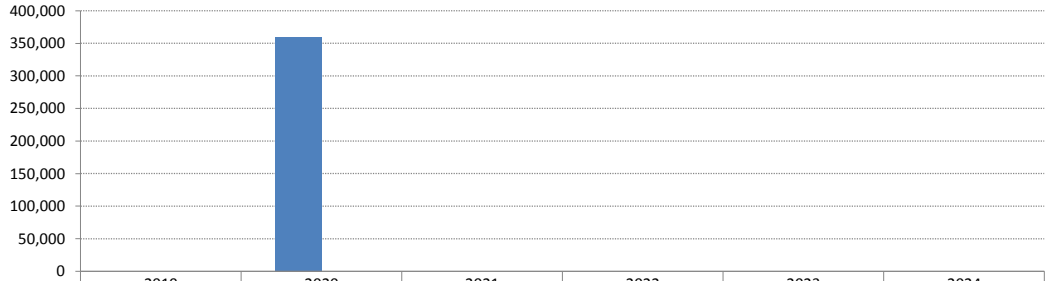
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $26,000	$0	$0	$0	$0	$26,000	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150846	
Project Name	Fleet_West_Vehicle Replacement_Step Vans	
Major Category	General Plant	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Hamilton
	Location	Nebo Rd.
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 1-260, 1-243, 1-371, 1-372 will be a projected 10 to 16 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, 1-260, 1-243, 1-371, 1-372, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	Replacement Assessment Criteria - Light Duty Vehicles: Assessed at 7 years and every year after, and/or high mileage (excess of 150,000 km) Replacement schedule: at 7 years, (150,000 km). Medium Duty Vehicles: Assessed at 10 years and every year after, and/or high mileage (excess of 250,000 km) Replacement schedule: at 10 years, (250,000 km). Heavy Duty Vehicles: Assessed at 12-year service, and every year after, and/or high mileage (excess of 500,000 km) High engine hours (excess of 12,000 engine hours)
	Alternative #2	N/A
	Justification for Recommended Alternative	N/A
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/ARFP processed will be followed for best value. Historical spend tracked from all regions
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $360,000	$0	$360,000	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

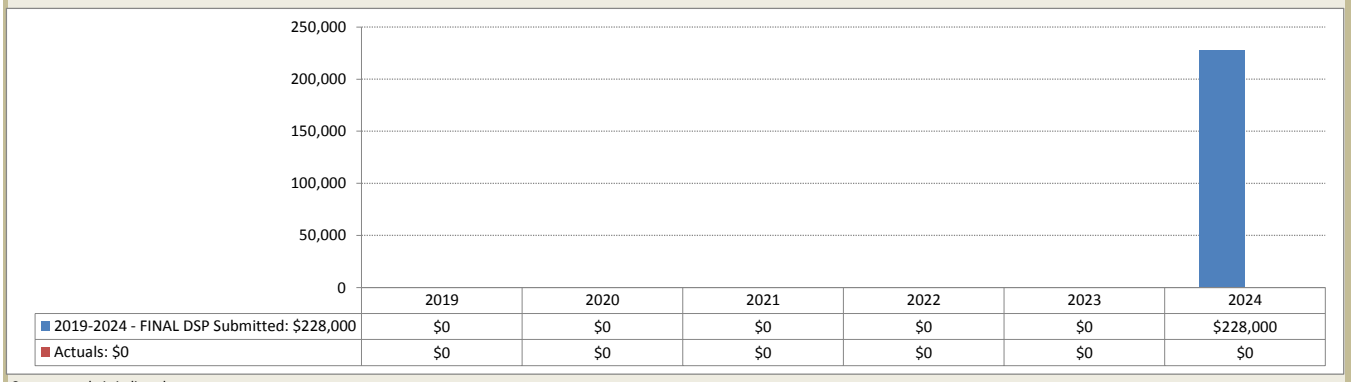
OEB Multi-Project Report

Project Code	150853
Project Name	Fleet_Central South Vehicle Replacement-Vans
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 508-16.510-16.514-16. 537-16 will be a projected 7 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, 537-16, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	N/A
	Justification for Recommended Alternative	N/A
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $228,000	$0	$0	$0	$0	$0	$228,000
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

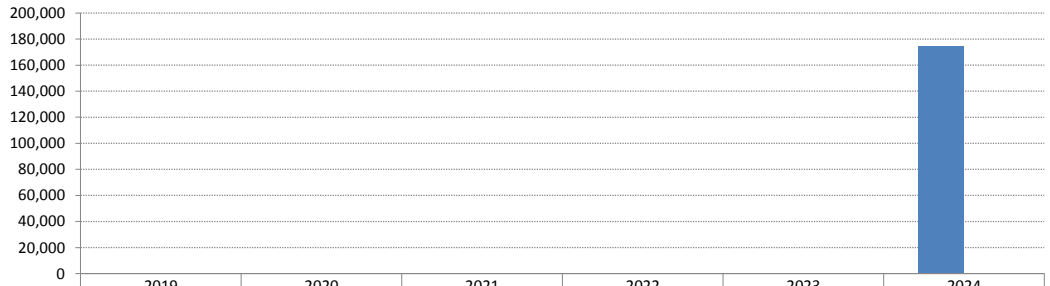
OEB Multi-Project Report

Project Code	150854
Project Name	Fleet_Central South Vehicle Replacement-Trailers
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year equipment are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The equipment replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on equipment age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same type of equipment or a completely different type of equipment based on usability. Units 902-09,, 941-09 will be a projected 15 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of equipment availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Equipment availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, equipment scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that this equipment be replaced as maintenance and repairs costs have increased and the equipment is no longer operate at full capacity, reducing equipment reliability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of equipment that have surpass there life spend. Regular equipment replacement is necessary to avoid unduedown and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Providing and maintaining a safe and reliable equipment, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Equipment purchases contribute to the economy by supporting the creation and support of jobs at manufacturers, , parts suppliers, and mechanical trade workers.
	Environmental Benefits	N/A
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, equipment scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of types of Alectra equipment should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular equipment replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements and safety



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $175,000	$0	$0	$0	$0	$0	$175,000
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

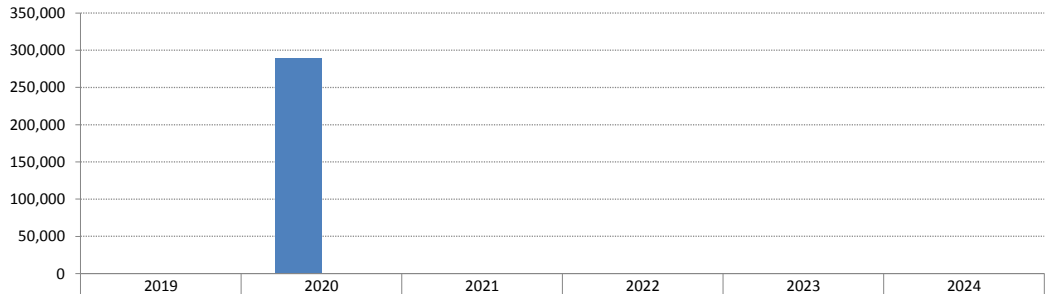
OEB Multi-Project Report

Project Code	150868
Project Name	Fleet_Central North Vehicle Replacement-180 Loader
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year equipment are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The equipment replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on equipment age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same type of equipment or a completely different type of equipment based on usability. Units 180 will be a projected 15 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of equipment availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Equipment availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, equipment scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that this equipment be replaced as maintenance and repairs costs have increased and the equipment is no longer operate at full capacity, reducing equipment reliability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of equipment that have surpass there life spend. Regular equipment replacement is necessary to avoid unduedown and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Providing and maintaining a safe and reliable equipment, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Equipment purchases contribute to the economy by supporting the creation and support of jobs at manufacturers, , parts suppliers, and mechanical trade workers.
	Environmental Benefits	New equipment reduce emissions, gas consumption as replacement will be fully electrical
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, equipment scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of types of Alectra equipment should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular equipment replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements and safety



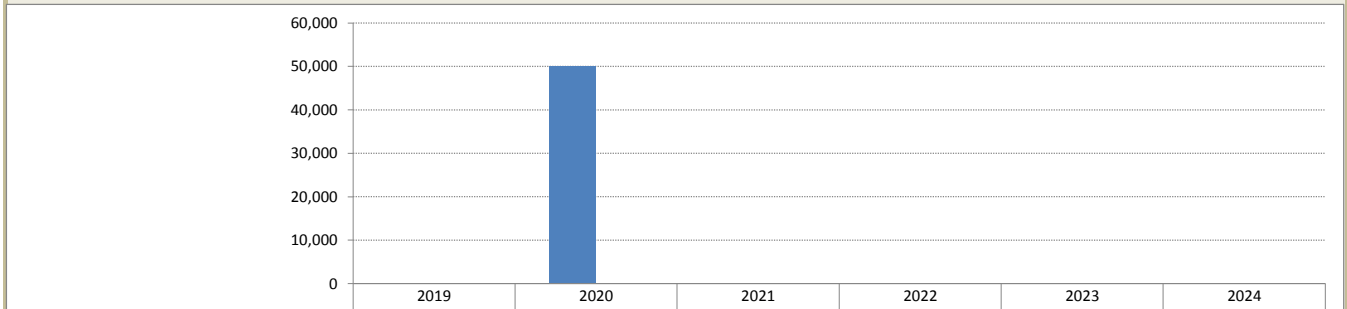
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $290,000	$0	$290,000	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code		150870
Project Name		Fleet_Central North Vehicle Replacement-Van 5910
Major Category		General Plant
Scenario		2019-2024 - FINAL DSP Submitted
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 5910 will be a projected 10 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units,
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	N/A
	Justification for Recommended Alternative	N/A
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $50,000	$0	$50,000	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

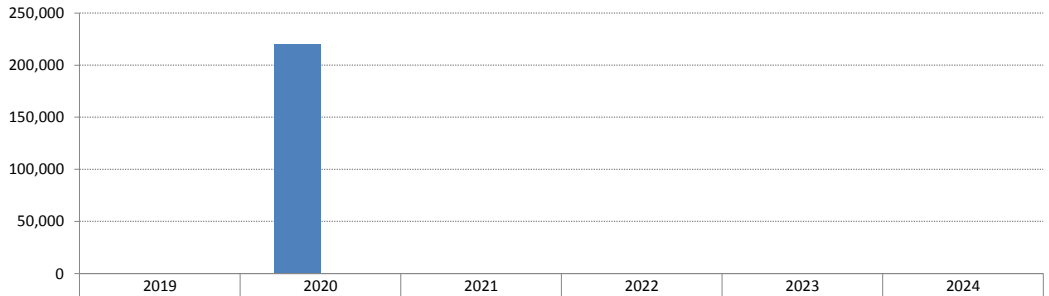
OEB Multi-Project Report

Project Code	150871
Project Name	Fleet_Central North Vehicle Replacement-Step Van 8108
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Unit 8108 will be a projected 12 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $220,000	$0	$220,000	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

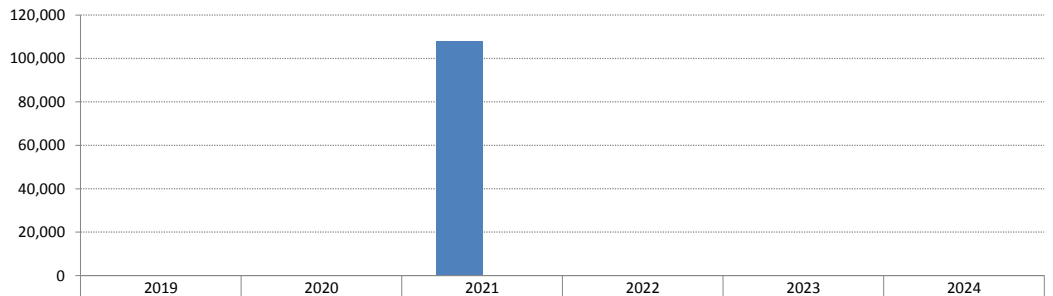
OEB Multi-Project Report

Project Code	150873
Project Name	Fleet_Central North Vehicle Replacement_Vans
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 2912, 5112 will be a projected 7 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, , will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	N/A
	Justification for Recommended Alternative	N/A
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements



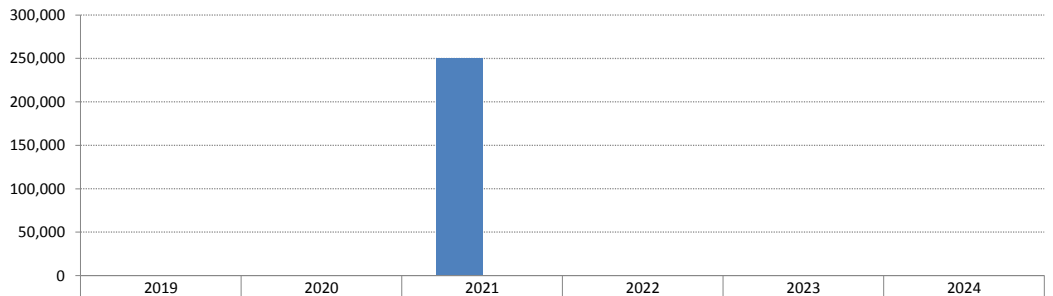
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $108,000	$0	$0	$108,000	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code		150876
Project Name		Fleet_Central North Vehicle Replacement_ Step Vans 6310
Major Category		General Plant
Scenario		2019-2024 - FINAL DSP Submitted
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Unit 6310 will be a projected 11 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $250,000	$0	$0	$250,000	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

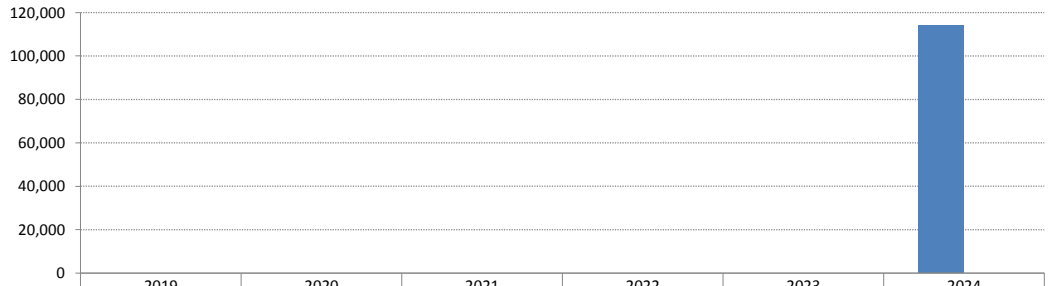
OEB Multi-Project Report

Project Code	150878
Project Name	Bus & Main Breaker Protections Replacement - Jim Yarrow TS
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Brampton
	Location	Brampton J Yarrow
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Substation Renewal
	Alectra Subcategory	Stations Replacement Program/P
4. Evaluation Criteria (OEB)	Project Summary	This project is the third migration of station equipment to the new DNP 3 network. It will follow the initiatives started at Jim Yarrow TS under project 150704 and continued in Project 150825 to migrate the feeder, line, and transformer protections over to DNP network. It is recommended to replace the Back-up Line protections and to migrate the existing A and B transformer protection relays over to the DNP network during a two year period. This will be the second of three phases proposed for the overall migration to DNP network at Jim Yarrow Transformer Station. The proposed local station network will be compatible with every other Altectra Transformer Station and will be able to use the same critical spares in the event of equipment failure. The project scope includes: - replace the A Bus protection relay for Line 1 in year 1 with SEL 421 relay; - replace the back-up line protection relay for Line 2 in year 2 with SEL 421 relay - migrate the transformer A and B protections for T1 in year 1 over to the DNP network; - migrate the transformer A and B protections for T2 in year 2 over to the DNP network; - transition control away from protection IEDS, providing more diversity and correcting a single point of failure; - removal of legacy PLCs and SEL2030s.
	Main Driver - System Renewal	Obsolescence
	Priority and Reasons for Priority	The proposed project is a multiyear project to transfer the protection and control equipment resident on the Modbus Plus network to the new DNP network. The proposed project is very similar to the new DNP network and advanced state of the art equipment that was recently installed at Vaughan TS3 to correct known deficiencies with the legacy Modbus Plus network. As experienced at Vaughan TS3, the existing Modbus Plus network has a number of performance issues and the equipment is experiencing failures.
	Customer Attachment / Load (KVA)	Not applicable
	Safety	There could be a safety component as essential control points such as the 230KV disconnect controls still reside on the Modbus Plus network. There is a risk that these components could fail and prevent prompt isolation of devices. Failure of the ability to remotely control station devices due to a failure of a component of the Modbus Plus network would require to Operators to operate energized equipment locally.
	Cyber-Security, Privacy	There is a cyber security element to this project as this project would retire the existing Modbus Plus/IP connection to the station. Encryption could be more easily implemented on the DNP/IP connection.
	Coordination, Interoperability	Not applicable
	Economic Development	Not applicable
	Environmental Benefits	Not applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do nothing. Do not implement this project and continue to operate with the existing Modbus Plus network in the station and the serial Modbus/IP connection to the station. This is not recommended for the following reasons: - Equipment failure: Programmable Logic Controller (PLC) equipment and protection IEDs on the Modbus Plus network are approaching a service life of 20 years and starting to fail. The proposed project will replace legacy equipment with new robust station grade equipment. The equipment is the same as that installed at other stations; - Lack of control route diversity: control paths for critical devices, such as the 230KV disconnects, originate on protection IEDs connected to the Modbus Plus network. Remote control of these critical elements is impossible should the IED fail. This project would migrate these critical control paths to the robust and reliable SEL DPAC platforms; - Control latency; Modbus Plus is inherently less efficient for control and status data transfer; - Potential for loss of data; Modbus Plus is a real-time, snapshot data-type protocol. Status point changes can be missed if the point toggles between scans. This does not happen with DNP, which is an event reporting protocol.
	Alternative #1	Replace the existing Modbus Plus network and PLC system with updated components. This is not recommended due to the following reasons: - Control latency; Modbus Plus is inherently less efficient for control and status data transfer; - Potential for loss of data; Modbus Plus is a real-time, snapshot data-type protocol. Status point changes can be missed if the point toggles between scans. This does not happen with DNP, which is an event reporting protocol.
	Alternative #2	Not applicable

	Justification for Recommended Alternative	The justifications for Alternative #1 implementation of this project have been described above. They include: - installation of robust station grade equipment; a SEL RTAC, SEL DPACS and SEL AXIONS will be installed to replace the PLCs and SEL2032s that are aging and prone-to-failure. This equipment is already employed in other Alectra Stations and has proven to be very robust and reliable; - utilization of existing equipment that can connect to DNP network will be retained; The new SEL DPACs and SEL2414 would be connected to the new SEL RTAC, getting more value and greater utilization from this SEL RTAC; - simplified maintenance of protection IEDs; critical control paths originate from IEDs in the existing Modbus Plus network. Protection IEDs cannot be verified unless major elements such as a Transformer or a bus is taken out of service. With the controls migrated to the new SEL DPACs, protection IEDs can remain in service as control to elements is maintained; - accurate data; Modbus Plus is a snapshot type protocol and status changes could be missed if the status change occurred between scans. DNP is an event driven protocol. all status changes are captured and reported back to the Scada system with millisecond accuracy time-stamping; - adherence to Alectra's Station Standard; this project would bring Jim Yarrow TS completely up to Alectra's Station Equipment Standard. Alectra's Standard includes SEL RTACs, SEL DPACs and SEL2414s to provide control and status connection. This project would complete the connection of all station data points to these devices from the non standard PLCs. - Alectra P&C is trained to use and maintain the DNP Network and associated components. - The Jim Yarrow TS is very similar to the Vaughan TS3 station. They were both built in 2000 by the same engineering company. A three year DNP migration conversion project was successfully completed at Vaughan TS3 in 2015.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	There is some risk that some equipment may not be permitted to be removed from service for the transition to DNP network.
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Not applicable
	Condition of Asset vs. Typical Life Cycle and Performance Record	Not applicable
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	100
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Not applicable
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Not applicable
	Value of Customer Impact	Medium
	Factors Affecting Project Timing, if any	The only factor affecting timing would be non-permission to remove in-service components of the transformer station to perform the transition.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not applicable
	Reliability and Safety Factors	There are safety and reliability factors related to this project. This project would complete the transition of the station data points and electronic IEDs to the new station DNP network. The new DNP system is much more reliable. Data returned is time-stamped with millisecond accuracy. The new DNP network provides separate protection and Scada/HMI control paths to controllable equipment such as the 230Kv Disconnects. The existing system only has one path through devices such as PLCs and older relays. These devices have been in service for 15 years and are starting to fail. In the event of a failure, remote control of these key devices would not be available and the devices would need to be controlled manually at the station. This could put field staff in the vicinity of energized equipment during these manual operations, equipment which could fail catastrophically during these manual operations.
	Analysis for "Like for Like" Renewal Project	Not applicable



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $113,976	$0	$0	$0	$0	$0	$113,976
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

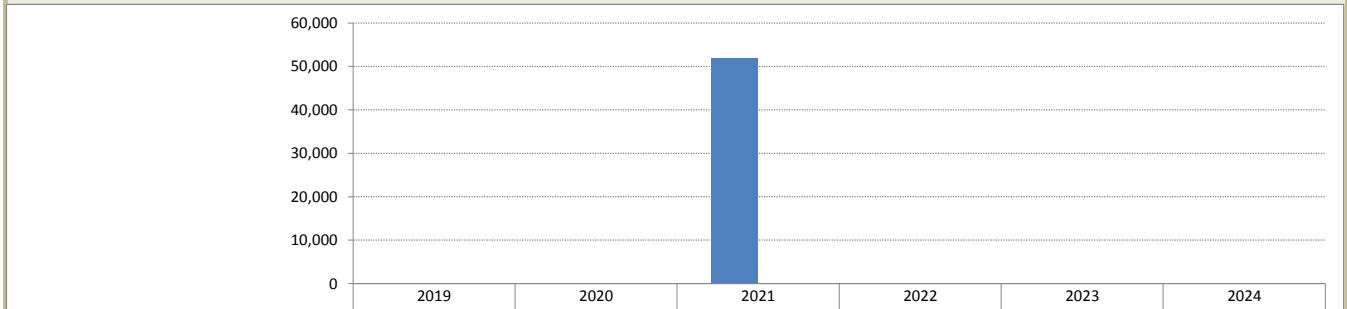
OEB Multi-Project Report

Project Code	150884
Project Name	Fleet_Central North Vehicle Replacement Pick up 9514
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 9514 will be a projected 7 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $52,000	$0	$0	$52,000	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

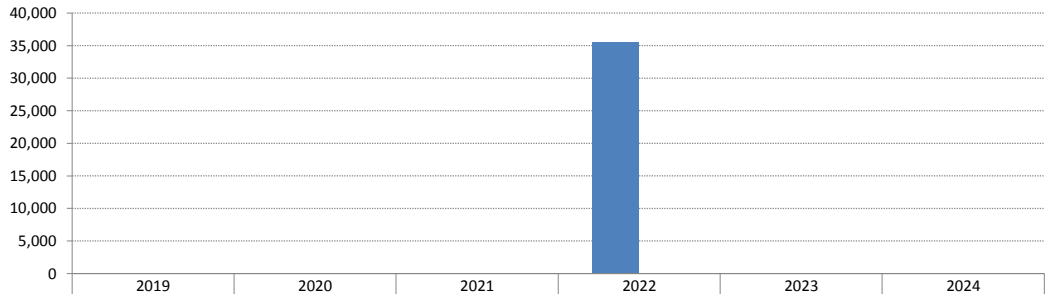
OEB Multi-Project Report

Project Code	150888
Project Name	Fleet_ Central North Vehicle Replacement_SUVs
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 528-15, 529-15, 530-15 will be a projected 7 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $35,500	$0	$0	$0	$35,500	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

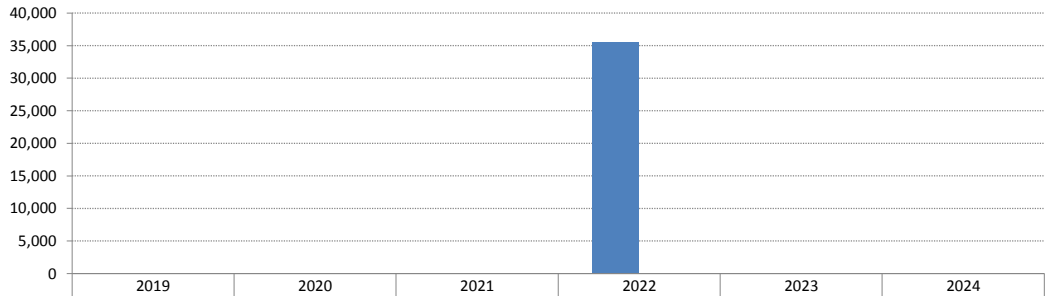
OEB Multi-Project Report

Project Code	150891
Project Name	Fleet_ Central North Vehicle Replacement_Car
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 0715 will be a projected 7 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $35,500	$0	$0	$0	$35,500	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

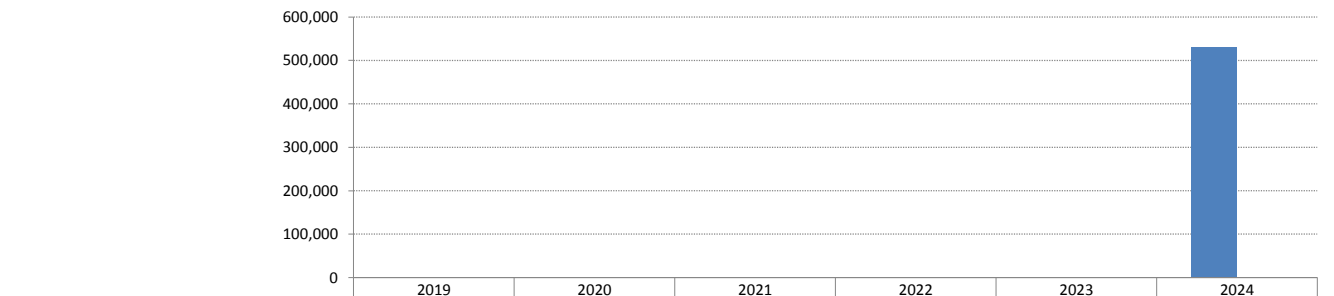
OEB Multi-Project Report

Project Code	150896
Project Name	Fleet_ Central North Vehicle Replacement_S/Bucket 8910
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Unit 8910 will be a projected 12 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $530,000	$0	$0	$0	$0	$0	$530,000
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

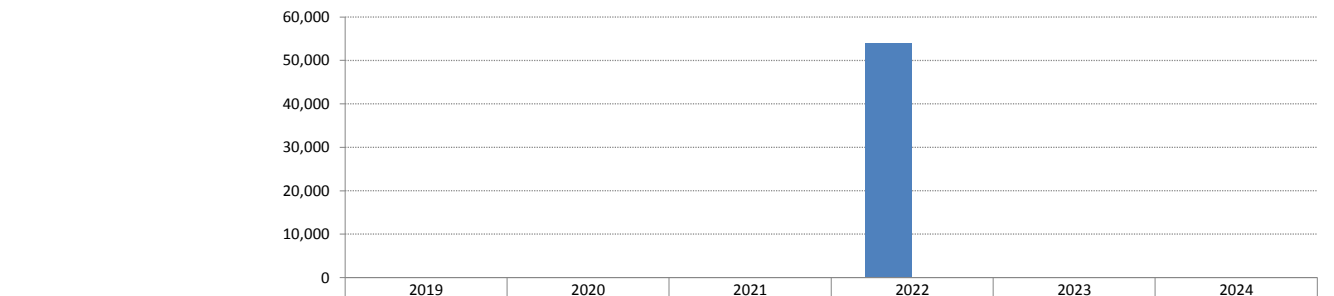
OEB Multi-Project Report

Project Code	150897
Project Name	Fleet_ Central North Vehicle Replacement_pick ups
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 5412, will be a projected 7 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $54,000	$0	$0	$0	$54,000	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

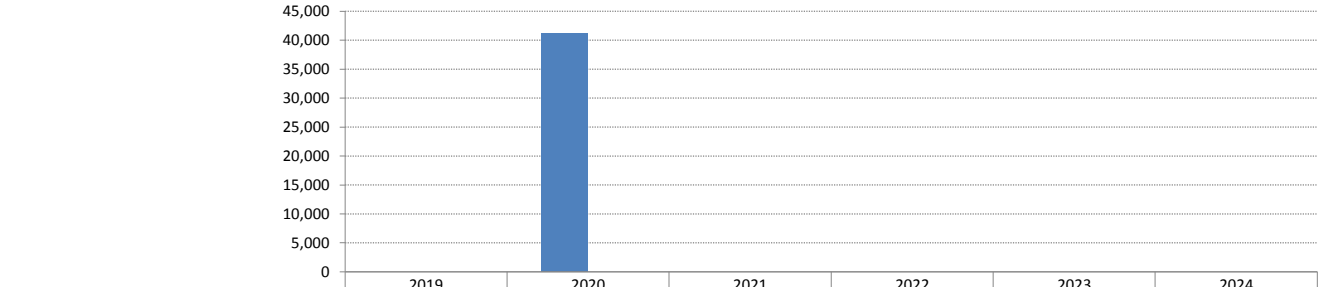
OEB Multi-Project Report

Project Code	150920
Project Name	Fleet East Vehicle addition - Van pool van
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North & South
	Location	
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities' workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities' employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Vehicles are the workplace for over 60% of Alectra Utilities' workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities' employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations. Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	Improvments to engine emmisions with newer models, which could count towards Environmental Benefits. The van pool program allows emplyee's to save on emmisions by car pooling.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	Replacement Assessment Criteria - Light Duty Vehicles: Assessed at 7 years and every year after, and/or high mileage (excess of 150,000 km) Replacement schedule: at 7 years, (150,000 km). Medium Duty Vehicles: Assessed at 10 years and every year after, and/or high mileage (excess of 250,000 km) Replacement schedule: at 10 years, (250,000 km). Heavy Duty Vehicles: Assessed at 12-year service, and every year after, and/or high mileage (excess of 500,000 km) High engine hours (excess of 12,000 engine hours)
	Alternative #2	Not applicable
	Justification for Recommended Alternative	Not applicable
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: • Fleet Management as the initiative lead and accountability • SCM Operations Director reviews and approves replacement recommendations • Key management stakeholder support across the organization to define business requirements • Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. • Corporate Commitment to approved Capital and Operating Budgets required • Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	RFP process will be followed for best value. Historical spend tracked from all regions
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $41,200	$0	$41,200	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

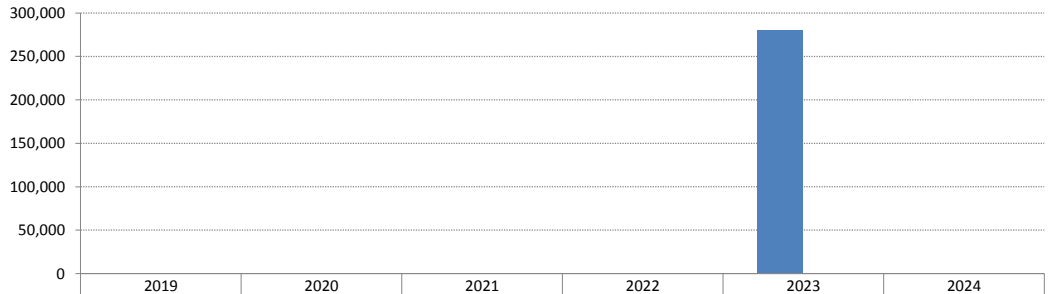
OEB Multi-Project Report

Project Code	150938
Project Name	Fleet_ Central North Vehicle Replacement_Stake Trucks
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 1613, 1713 will be a projected 10 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed the old units will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	N/A
	Justification for Recommended Alternative	N/A
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $280,000	$0	$0	$0	$0	$280,000	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

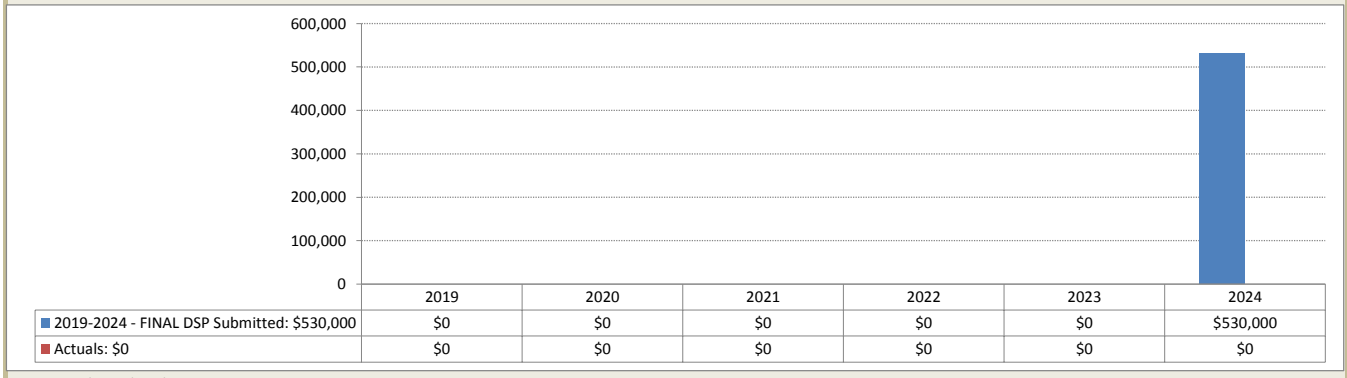
OEB Multi-Project Report

Project Code	150942
Project Name	Fleet_ Central North Vehicle Replacement_S/Bucket
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Unit 7310 will be a projected 13 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	Not applicable
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	Not applicable

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	Not applicable
	Alternative #2	None
	Justification for Recommended Alternative	Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $530,000	$0	$0	$0	$0	$0	$530,000
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

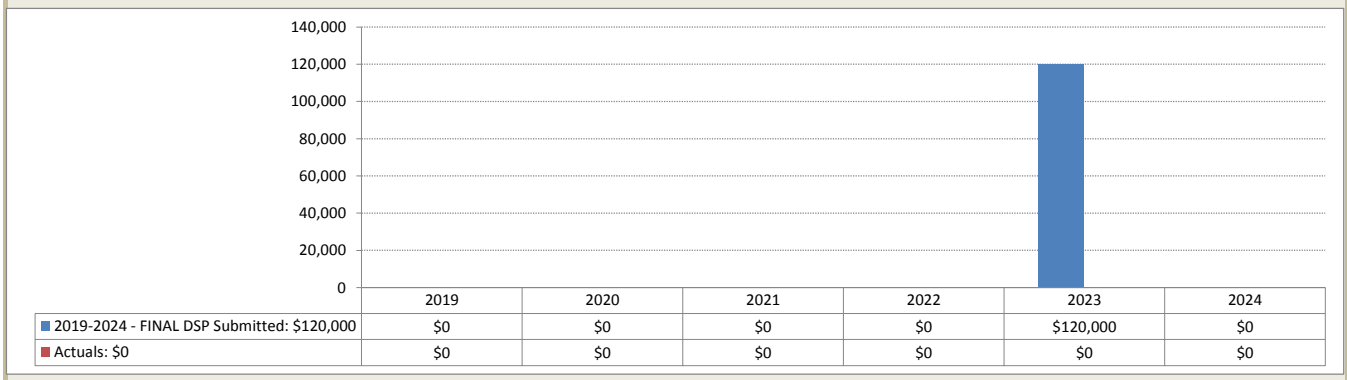
OEB Multi-Project Report

Project Code	150944
Project Name	Fleet_ Central North Vehicle Replacement_Trailer
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year equipment are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The equipment replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on equipment age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same type of equipment or a completely different type of equipment based on usability. Units 18708 will be a projected 15 years in service when decommissioned. Parts availability is low due to the overalll age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of equipment availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Equipment availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, equipment scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that this equipment be replaced as maintenance and repairs costs have increased and the equipment is no longer operate at full capacity, reducing equipment reliability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of equipment that have surpass there life spend. Regular equipment replacement is necessary to avoid unduedown and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Providing and maintaining a safe and reliable equipment, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Equipment purchases contribute to the economy by supporting the creation and support of jobs at manufacturers, , parts suppliers, and mechanical trade workers.
	Environmental Benefits	N/A
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, equipment scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of types of Alectra equipment should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular equipment replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements and safety



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $120,000	$0	$0	$0	$0	$120,000	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

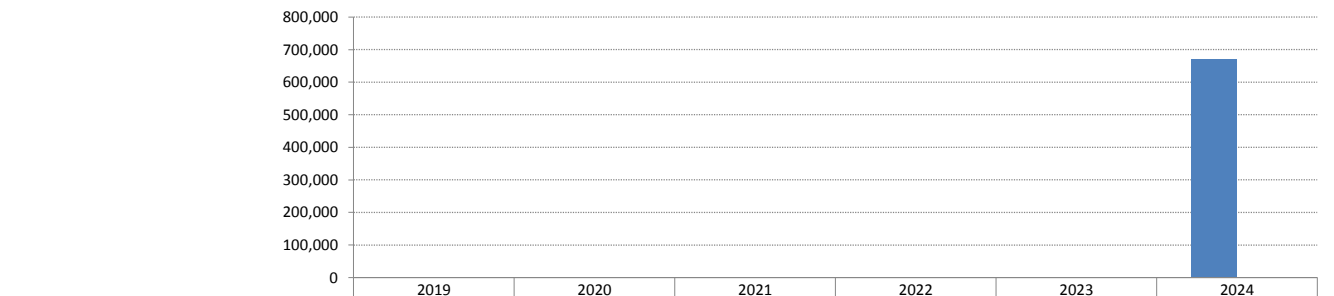
OEB Multi-Project Report

Project Code	150945
Project Name	Fleet_ Central North Vehicle Replacement_Reel Carriers
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year equipment are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The equipment replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on equipment age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same type of equipment or a completely different type of equipment based on usability. Units 19207, 19307 will be a projected 16 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of equipment availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Equipment availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, equipment scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that this equipment be replaced as maintenance and repairs costs have increased and the equipment is no longer operate at full capacity, reducing equipment reliability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of equipment that have surpass there life spend. Regular equipment replacement is necessary to avoid unduedown and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Providing and maintaining a safe and reliable equipment, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Equipment purchases contribute to the economy by supporting the creation and support of jobs at manufacturers, , parts suppliers, and mechanical trade workers.
	Environmental Benefits	New equipment reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, equipment scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of types of Alectra equipment should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular equipment replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



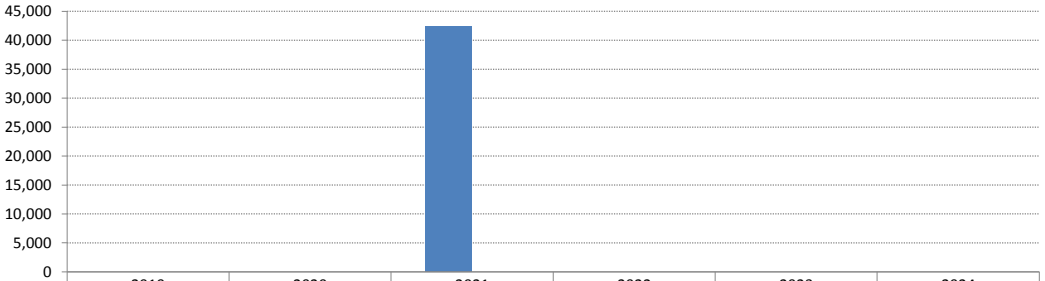
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $670,000	$0	$0	$0	$0	$0	$670,000
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150951	
Project Name	Fleet East Vehicle addition - Van pool van	
Major Category	General Plant	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream North & South
	Location	
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities' workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities' employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Vehicles are the workplace for over 60% of Alectra Utilities' workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities' employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations. Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	Improvments to engine emmisions with newer models, which could count towards Environmental Benefits. The employee van pool program takes multiple vehicles off of the road on a daily basis.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Not applicable
	Alternative #1	Not applicable
	Alternative #2	Not applicable

	Justification for Recommended Alternative	Not applicable
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	RFP process will be followed for best value. Historical spend tracked from all regions
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $42,436	$0	$0	$42,436	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

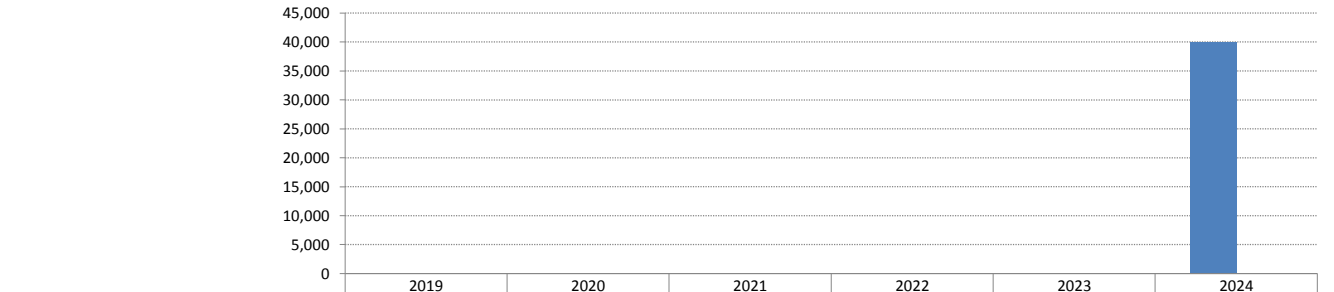
OEB Multi-Project Report

Project Code	150953
Project Name	Fleet_ Central North Vehicle Replacement_Trailer 11510
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year equipment are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The equipment replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on equipment age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same type of equipment or a completely different type of equipment based on usability. Units 902-09,914-09, 941-09 will be a projected 15 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of equipment availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Equipment availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, equipment scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that this equipment be replaced as maintenance and repairs costs have increased and the equipment is no longer operate at full capacity, reducing equipment reliability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of equipment that have surpass there life spend. Regular equipment replacement is necessary to avoid unduedown and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Providing and maintaining a safe and reliable equipment, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Equipment purchases contribute to the economy by supporting the creation and support of jobs at manufacturers, , parts suppliers, and mechanical trade workers.
	Environmental Benefits	N/A
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, equipment scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of types of Alectra equipment should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular equipment replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements and safety



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $40,000	$0	$0	$0	$0	$0	$40,000
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

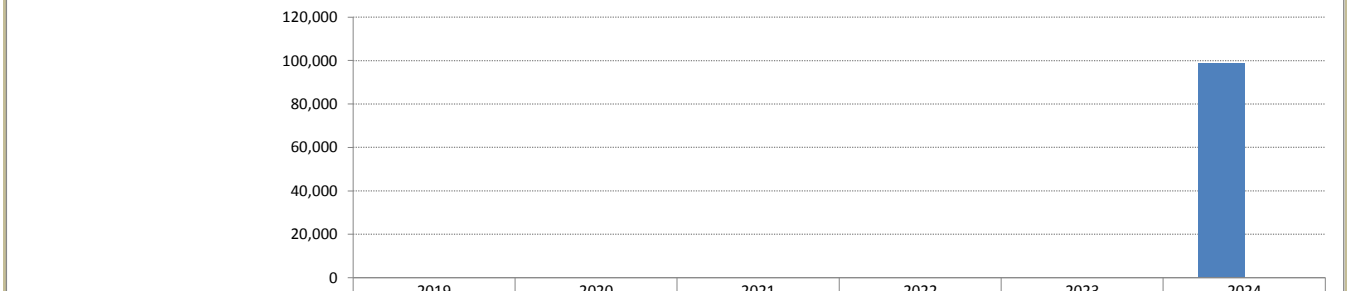
OEB Multi-Project Report

Project Code	150958
Project Name	Fleet_West_Vehicle_Replacement_Forklift
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	St. Catherines
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year equipment are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The equipment replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on equipment age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same type of equipment or a completely different type of equipment based on usability. Unit S1265 will be a projected 29 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of equipment availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Equipment availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, equipment scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that this equipment be replaced as maintenance and repairs costs have increased and the equipment is no longer operate at full capacity, reducing equipment reliability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of equipment that have surpass there life spend. Regular equipment replacement is necessary to avoid unduedown and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Providing and maintaining a safe and reliable equipment, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Equipment purchases contribute to the economy by supporting the creation and support of jobs at manufacturers, , parts suppliers, and mechanical trade workers.
	Environmental Benefits	New equipment reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, equipment scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of types of Alectra equipment should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular equipment replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	Replacement Assessment Criteria - Light Duty Vehicles: Assessed at 7 years and every year after, and/or high mileage (excess of 150,000 km) Replacement schedule: at 7 years, (150,000 km). Medium Duty Vehicles: Assessed at 10 years and every year after, and/or high mileage (excess of 250,000 km) Replacement schedule: at 10 years, (250,000 km). Heavy Duty Vehicles: Assessed at 12-year service, and every year after, and/or high mileage (excess of 500,000 km) High engine hours (excess of 12,000 engine hours)
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/ARFP processed will be followed for best value. Historical spend tracked from all regions
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $99,000	$0	$0	$0	$0	$0	$99,000
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

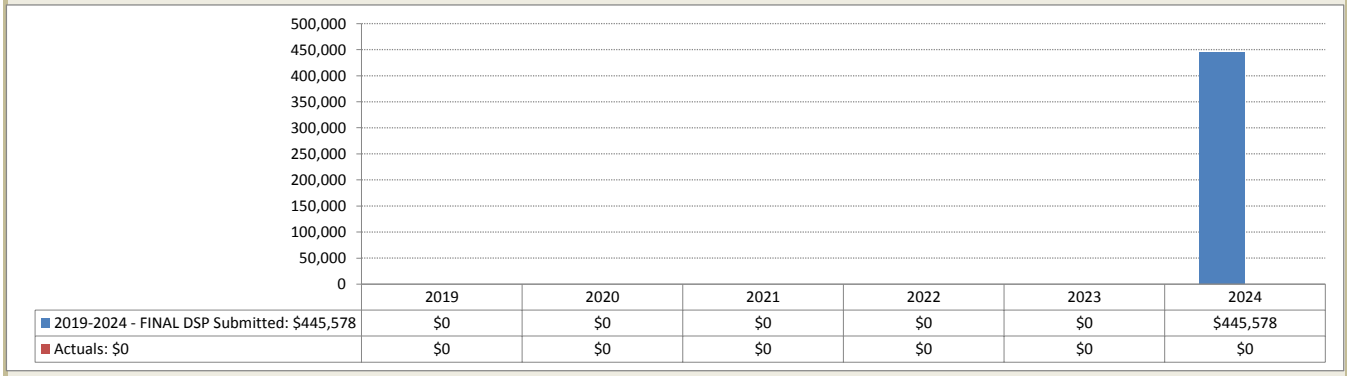
OEB Multi-Project Report

Project Code	150962
Project Name	Fleet East Unit # 61 Digger truck replacement
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North & South
	Location	
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage Replacement of single-bucket truck as per fleet guidelines.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities' workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities' employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	Improvements to engine emissions with newer models, which could count towards Environmental Benefits.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.

	Alternative #1	Replacement Assessment Criteria - Light Duty Vehicles: Assessed at 7 years and every year after, and/or high mileage (excess of 150,000 km) Replacement schedule: at 7 years, (150,000 km). Medium Duty Vehicles: Assessed at 10 years and every year after, and/or high mileage (excess of 250,000 km) Replacement schedule: at 10 years, (250,000 km). Heavy Duty Vehicles: Assessed at 12-year service, and every year after, and/or high mileage (excess of 500,000 km) High engine hours (excess of 12,000 engine hours)
	Alternative #2	Not Applicable
	Justification for Recommended Alternative	Digger Truck, 2007 vintage. As per present annual mileage and hours run this unit has met our threshold for replacement as of 2022.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	RFP process will be followed for best value. Historical spend tracked from all regions
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $445,578	$0	$0	$0	$0	$0	$445,578
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

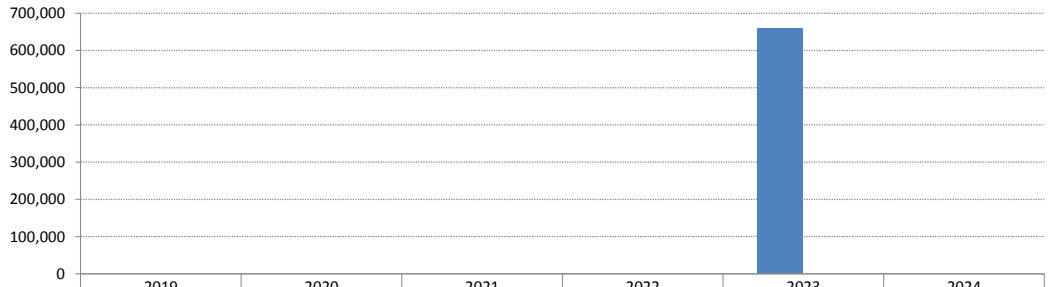
OEB Multi-Project Report

Project Code	150967
Project Name	Fleet East Unit # 125, 83' Double Bucket
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North & South
	Location	
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: • Manufacturing Standards • Industry Standards • Non Industry Standards • Vehicle Operational Conditions • Vehicle Age • Vehicle Total Mileage Replacement of double-bucket truck as per fleet guidelines. Replace Following Truck: 165 165 - 2002 INTERNATIONAL DOUBLE BUCKET 63' - POSI
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities' workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities' employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: • Manufacturing Standards • Industry Standards • Non-Industry Standards • Vehicle Operational Conditions • Vehicle Age • Vehicle Total Mileage • Highway Traffic Act (HTA) • Canadian Motor Vehicle Safety Standards (CMVSS) • All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment • Motor Vehicle Inspection Station (MVIS) requirements • Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable • Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	Improvments to engine emmisions with newer models, which could count towards Environmental Benefits.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	Replacement Assessment Criteria - Light Duty Vehicles: Assessed at 7 years and every year after, and/or high mileage (excess of 150,000 km) Replacement schedule: at 7 years, (150,000 km). Medium Duty Vehicles: Assessed at 10 years and every year after, and/or high mileage (excess of 250,000 km) Replacement schedule: at 10 years, (250,000 km). Heavy Duty Vehicles: Assessed at 12-year service, and every year after, and/or high mileage (excess of 500,000 km) High engine hours (excess of 12,000 engine hours)
	Alternative #2	Not applicable
	Justification for Recommended Alternative	Unit has met the replacement guidelines (mileage, hours, age) by 2020
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	RFP process will be followed for best value. Historical spend tracked from all regions
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $660,970	$0	$0	$0	$0	$660,970	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

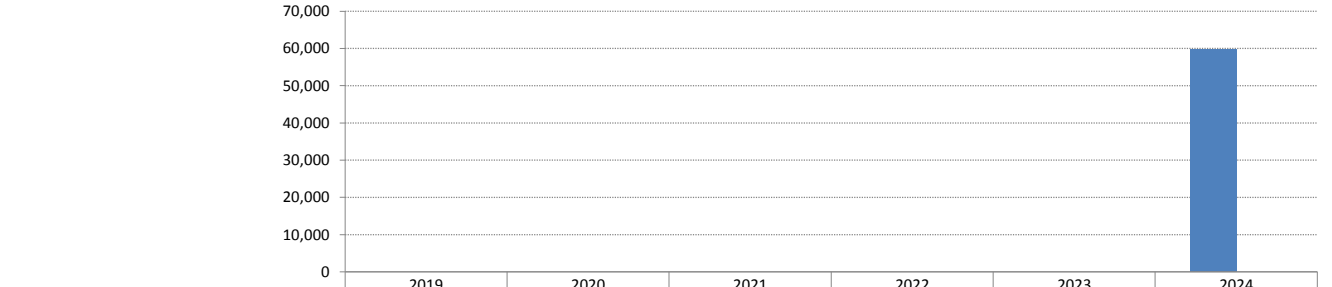
OEB Multi-Project Report

Project Code	150968
Project Name	Fleet East Vehicle replacement Pickup truck 2500
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North & South
	Location	
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities' workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities' employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Vehicles are the workplace for over 60% of Alectra Utilities' workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities' employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations. Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	Improvments to engine emmisions with newer models, which could count towards Environmental Benefits.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	Replacement Assessment Criteria - Light Duty Vehicles: Assessed at 7 years and every year after, and/or high mileage (excess of 150,000 km) Replacement schedule: at 7 years, (150,000 km). Medium Duty Vehicles: Assessed at 10 years and every year after, and/or high mileage (excess of 250,000 km) Replacement schedule: at 10 years, (250,000 km). Heavy Duty Vehicles: Assessed at 12-year service, and every year after, and/or high mileage (excess of 500,000 km) High engine hours (excess of 12,000 engine hours)
	Alternative #2	Not applicable
	Justification for Recommended Alternative	Units have met the replacement guidelines by 2022
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: • Fleet Management as the initiative lead and accountability • SCM Operations Director reviews and approves replacement recommendations • Key management stakeholder support across the organization to define business requirements • Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. • Corporate Commitment to approved Capital and Operating Budgets required • Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	RFP process will be followed for best value. Historical spend tracked from all regions
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $59,701	$0	$0	$0	$0	$0	$59,701
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

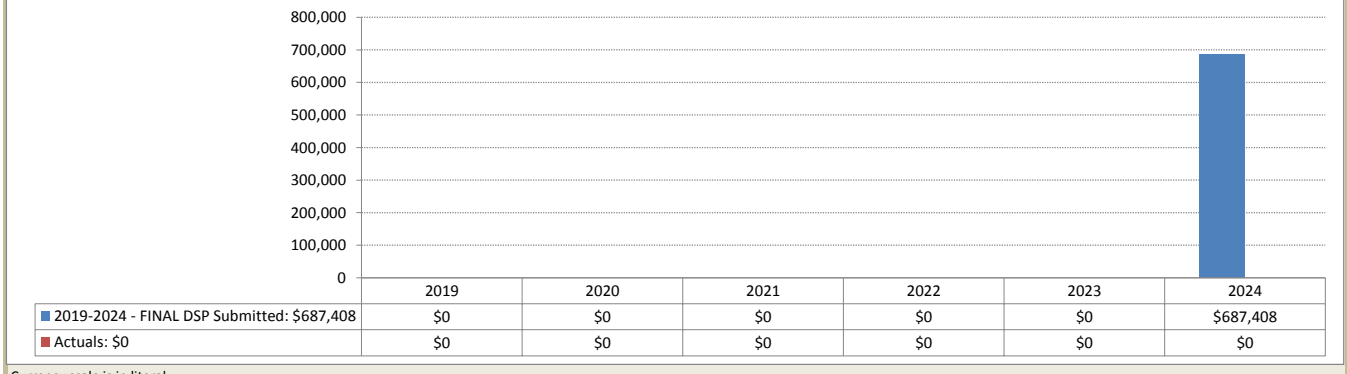
OEB Multi-Project Report

Project Code	150975
Project Name	Fleet East Unit # 75 83' Double Bucket
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North & South
	Location	
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: • Manufacturing Standards • Industry Standards • Non Industry Standards • Vehicle Operational Conditions • Vehicle Age • Vehicle Total Mileage Replacement of double-bucket truck as per fleet guidelines. Replace Following Truck: 165 165 - 2002 INTERNATIONAL DOUBLE BUCKET 63' - POSI
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities' workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities' employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: • Manufacturing Standards • Industry Standards • Non-Industry Standards • Vehicle Operational Conditions • Vehicle Age • Vehicle Total Mileage • Highway Traffic Act (HTA) • Canadian Motor Vehicle Safety Standards (CMVSS) • All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment • Motor Vehicle Inspection Station (MVIS) requirements • Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable • Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	Improvments to engine emmisions with newer models, which could count towards Environmental Benefits.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	Replacement Assessment Criteria - Light Duty Vehicles: Assessed at 7 years and every year after, and/or high mileage (excess of 150,000 km) Replacement schedule: at 7 years, (150,000 km). Medium Duty Vehicles: Assessed at 10 years and every year after, and/or high mileage (excess of 250,000 km) Replacement schedule: at 10 years, (250,000 km). Heavy Duty Vehicles: Assessed at 12-year service, and every year after, and/or high mileage (excess of 500,000 km) High engine hours (excess of 12,000 engine hours)
	Alternative #2	Not applicable
	Justification for Recommended Alternative	Unit has met the replacement guidelines (mileage, hours, age) by 2023
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	RFP process will be followed for best value. Historical spend tracked from all regions
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements



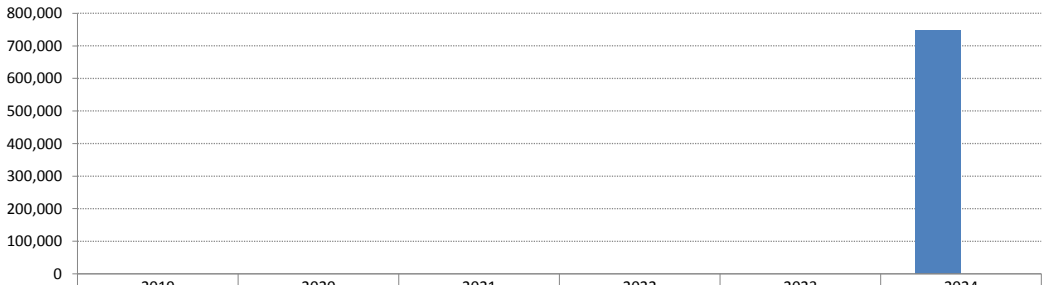
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $687,408	$0	$0	$0	$0	$0	$687,408
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150978	
Project Name	Fleet East Vehicle replacement - Cube Vans	
Major Category	General Plant	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream North & South
	Location	
	Units	3
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities' workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities' employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Vehicles are the workplace for over 60% of Alectra Utilities' workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities' employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations. Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	Improvments to engine emmisions with newer models, which could count towards Environmental Benefits.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	Replacement Assessment Criteria - Light Duty Vehicles: Assessed at 7 years and every year after, and/or high mileage (excess of 150,000 km) Replacement schedule: at 7 years, (150,000 km). Medium Duty Vehicles: Assessed at 10 years and every year after, and/or high mileage (excess of 250,000 km) Replacement schedule: at 10 years, (250,000 km). Heavy Duty Vehicles: Assessed at 12-year service, and every year after, and/or high mileage (excess of 500,000 km) High engine hours (excess of 12,000 engine hours)
	Alternative #2	Not applicable
	Justification for Recommended Alternative	Units have met the replacement guidelines by 2023
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: • Fleet Management as the initiative lead and accountability • SCM Operations Director reviews and approves replacement recommendations • Key management stakeholder support across the organization to define business requirements • Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. • Corporate Commitment to approved Capital and Operating Budgets required • Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	RFP process will be followed for best value. Historical spend tracked from all regions
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $748,304	$0	$0	$0	$0	$0	$748,304
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	150979
Project Name	Fleet East Vehicle replacement - Extended Vans
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North & South
	Location	
	Units	5
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities' workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities' employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Vehicles are the workplace for over 60% of Alectra Utilities' workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities' employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations. Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	Improvments to engine emmisions with newer models, which could count towards Environmental Benefits.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	Replacement Assessment Criteria - Light Duty Vehicles: Assessed at 7 years and every year after, and/or high mileage (excess of 150,000 km) Replacement schedule: at 7 years, (150,000 km). Medium Duty Vehicles: Assessed at 10 years and every year after, and/or high mileage (excess of 250,000 km) Replacement schedule: at 10 years, (250,000 km). Heavy Duty Vehicles: Assessed at 12-year service, and every year after, and/or high mileage (excess of 500,000 km) High engine hours (excess of 12,000 engine hours)
	Alternative #2	Not applicable
	Justification for Recommended Alternative	Units have met the replacement guidelines by 2023
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: • Fleet Management as the initiative lead and accountability • SCM Operations Director reviews and approves replacement recommendations • Key management stakeholder support across the organization to define business requirements • Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. • Corporate Commitment to approved Capital and Operating Budgets required • Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	RFP process will be followed for best value. Historical spend tracked from all regions
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements

	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $238,047	$0	$0	$0	$0	$0	$238,047
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

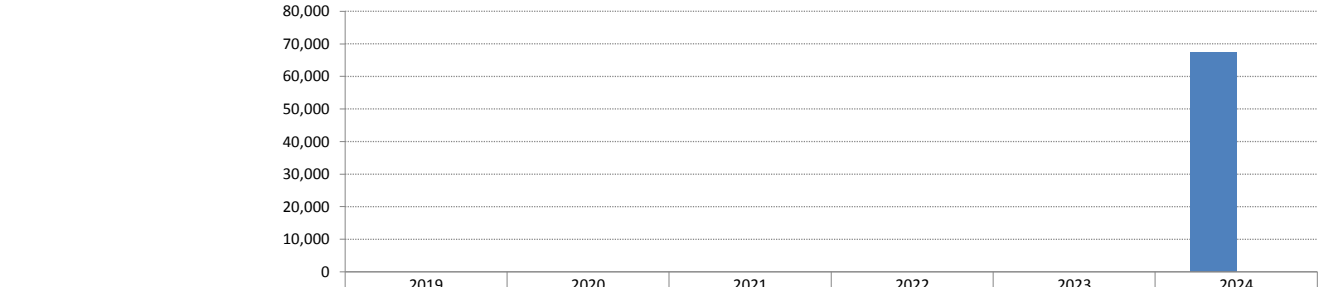
OEB Multi-Project Report

Project Code	150980
Project Name	Fleet East Vehicle replacement - Work Van
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North & South
	Location	
	Units	2
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities' workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities' employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Vehicles are the workplace for over 60% of Alectra Utilities' workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities' employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations. Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	Improvments to engine emmisions with newer models, which could count towards Environmental Benefits.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	Replacement Assessment Criteria - Light Duty Vehicles: Assessed at 7 years and every year after, and/or high mileage (excess of 150,000 km) Replacement schedule: at 7 years, (150,000 km). Medium Duty Vehicles: Assessed at 10 years and every year after, and/or high mileage (excess of 250,000 km) Replacement schedule: at 10 years, (250,000 km). Heavy Duty Vehicles: Assessed at 12-year service, and every year after, and/or high mileage (excess of 500,000 km) High engine hours (excess of 12,000 engine hours)
	Alternative #2	Not applicable
	Justification for Recommended Alternative	Unit has met the replacement guidelines by 2023
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: • Fleet Management as the initiative lead and accountability • SCM Operations Director reviews and approves replacement recommendations • Key management stakeholder support across the organization to define business requirements • Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. • Corporate Commitment to approved Capital and Operating Budgets required • Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	RFP process will be followed for best value. Historical spend tracked from all regions
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $67,528	$0	$0	$0	$0	$0	$67,528
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

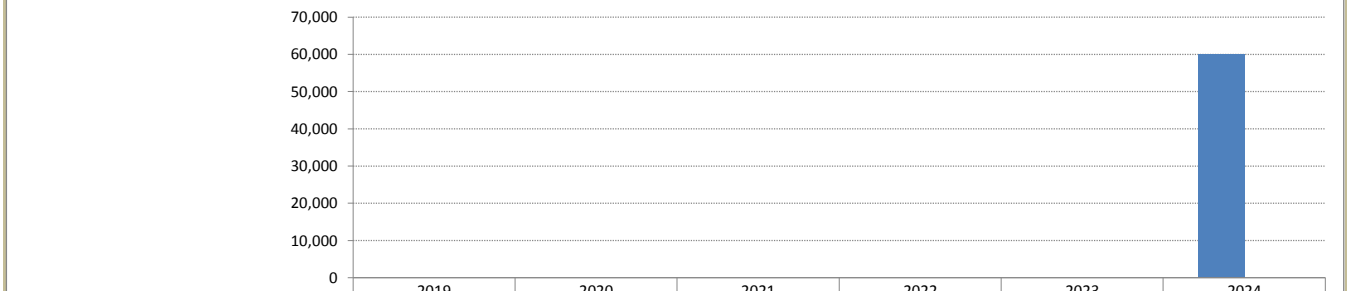
OEB Multi-Project Report

Project Code	151007
Project Name	Fleet_West_Vehicle_Replacement_Trailers
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Hamilton
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 1-433, 1-435, 1-436, 1-437, 1-439, 1-440, 1-441, 1-442, 1-444 will be a projected 12 to 35 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	Replacement Assessment Criteria - Light Duty Vehicles: Assessed at 7 years and every year after, and/or high mileage (excess of 150,000 km) Replacement schedule: at 7 years, (150,000 km). Medium Duty Vehicles: Assessed at 10 years and every year after, and/or high mileage (excess of 250,000 km) Replacement schedule: at 10 years, (250,000 km). Heavy Duty Vehicles: Assessed at 12-year service, and every year after, and/or high mileage (excess of 500,000 km) High engine hours (excess of 12,000 engine hours)
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/ARFP processed will be followed for best value. Historical spend tracked from all regions
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $60,000	$0	$0	$0	$0	$0	$60,000
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

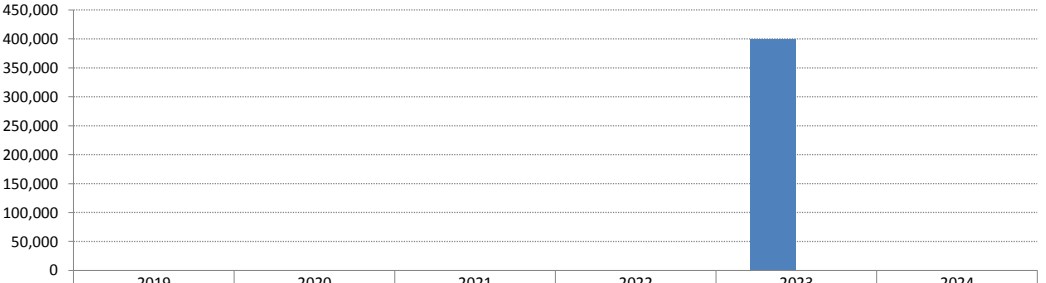
OEB Multi-Project Report

Project Code	151013
Project Name	Fleet_West_Vehicle_Replacement_Bucket Truck_1-354
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Hamilton
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Unit 1-354 will be a projected 17 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old unit, 1-354, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	Replacement Assessment Criteria - Light Duty Vehicles: Assessed at 7 years and every year after, and/or high mileage (excess of 150,000 km) Replacement schedule: at 7 years, (150,000 km). Medium Duty Vehicles: Assessed at 10 years and every year after, and/or high mileage (excess of 250,000 km) Replacement schedule: at 10 years, (250,000 km). Heavy Duty Vehicles: Assessed at 12-year service, and every year after, and/or high mileage (excess of 500,000 km) High engine hours (excess of 12,000 engine hours)
	Alternative #2	N/A
	Justification for Recommended Alternative	N/A
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/ARFP processed will be followed for best value. Historical spend tracked from all regions
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements



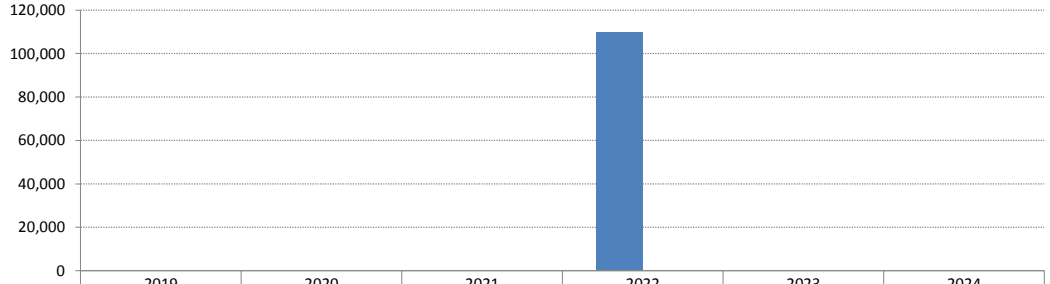
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $400,000	$0	$0	$0	$0	$400,000	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151016	
Project Name	Fleet_West_Vehicle_Replacement_Pickups	
Major Category	General Plant	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Hamilton
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: • Manufacturing Standards • Industry Standards • Non Industry Standards • Vehicle Operational Conditions • Vehicle Age • Vehicle Total Mileage • Highway Traffic Act (“HTA”) • Canadian Motor Vehicle Safety Standards (“CMVSS) • All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment • Motor Vehicle Inspection Station (“MVIS”) requirements • Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable • Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 1-375 & 1-378 will be a projected 12 to 13 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	Replacement Assessment Criteria - Light Duty Vehicles: Assessed at 7 years and every year after, and/or high mileage (excess of 150,000 km) Replacement schedule: at 7 years, (150,000 km). Medium Duty Vehicles: Assessed at 10 years and every year after, and/or high mileage (excess of 250,000 km) Replacement schedule: at 10 years, (250,000 km). Heavy Duty Vehicles: Assessed at 12-year service, and every year after, and/or high mileage (excess of 500,000 km) High engine hours (excess of 12,000 engine hours)
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/ARFP processed will be followed for best value. Historical spend tracked from all regions
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $110,000	$0	$0	$0	$110,000	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

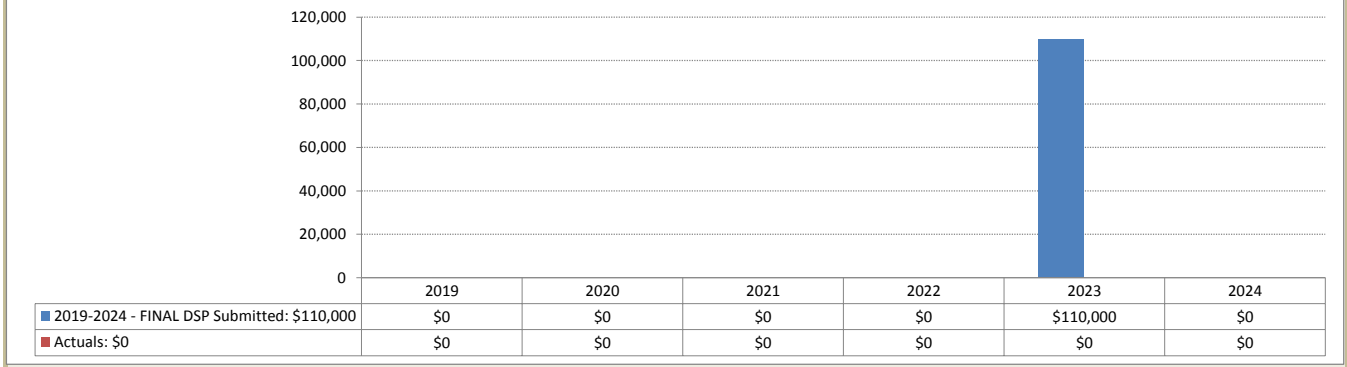
OEB Multi-Project Report

Project Code	151018
Project Name	Fleet_West_Vehicle_Replacement_Trailer
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Hamilton
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Unit 1-414 will be a projected 31 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	Replacement Assessment Criteria - Light Duty Vehicles: Assessed at 7 years and every year after, and/or high mileage (excess of 150,000 km) Replacement schedule: at 7 years, (150,000 km). Medium Duty Vehicles: Assessed at 10 years and every year after, and/or high mileage (excess of 250,000 km) Replacement schedule: at 10 years, (250,000 km). Heavy Duty Vehicles: Assessed at 12-year service, and every year after, and/or high mileage (excess of 500,000 km) High engine hours (excess of 12,000 engine hours)
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	/ARFP processed will be followed for best value. Historical spend tracked from all regions
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



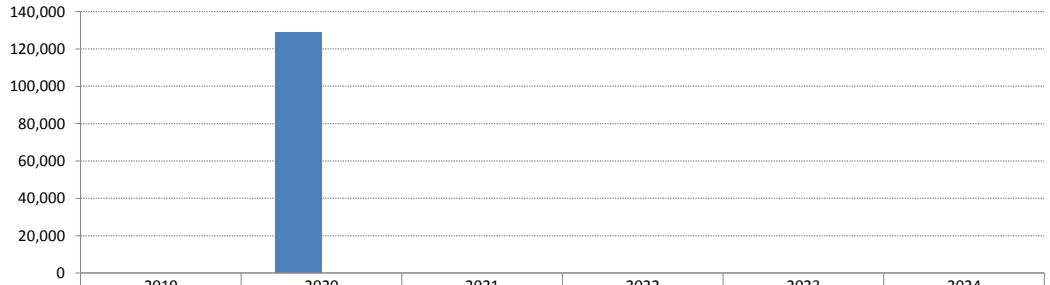
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $110,000	$0	$0	$0	$0	$110,000	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151022	
Project Name	New Three Sector WiMAX Node - MS305	
Major Category	System Service	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	MS305, Essa Road, Barrie
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	Yes
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	System Control, Comm'ns & Performance
	Alectra Subcategory	Scada & Scada Communications N
4. Evaluation Criteria (OEB)	Project Summary	The scope of this project is the implementation of a new WiMAX communications node at MS305. The project will include the following components: - installation of 6 runs of AVA-7 coax cable and cable mamnagement on the tower; - purchase and installation of three antennae on top of the tower and WiMAX radios at the base of the tower; - purchase and installation of an managed RSG2100 Ethernet switch in the communications shelter; - installation of power supplies in the MS The expectation is that this node will provide service to the South Western area of Barrie Note: This project can only be executed if Project 10826 is executed in 2018. The tower is required host the 3 sector WiMAX base Station.
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	This project should have a high priority. This new node is required to accommodate Network Operations' broadband communication needs in the South West part of Barrie. There is no effective, Alectra owned, wireless broadband service in thiThe area around MS305 will continue to develop. The distribution grid around MS305 will receive numerous "SMART" SCADA controllable devices, capable of distribution automation. This new WiMAX node will accommodate the needed SCADA connectivity to these SMART devices, including overhead reclosers and pad-mounted switchgears , distributed energy resources at customer locations and FIT monitoring appliances. The node will supply Transfer Trip capability to FIT generators. The WiMAX new node will also support peer to peer communications, the backhaul protocol for deployment of autonomous, fully automatic distribution automation schemes. Finally, the new WiMAX node can provide broadband connectivity to Ethernet enabled revenue meters should this service be requested by Metering.
	Customer Attachment / Load (KVA)	Current load supplied by MS305 is 20,000 kVA. There are 4000 customers connected to MS305.
	Safety	This project has a marginal safety component. The new WiMAX node will provide a more effective means to communicate to SCADA controllable devices in the this part of Alectra's Service territory. Information will flow more quickly from devices on the grid to SCADA, enabling System Control to have a greater awareness of the happenings on the grid. Decisions to resolve issues can be made more quickly. WiMAX can transport peer to peer protocols such as GOOSE, enabling deployment of autonomous, automatic fault isolation and service restoration schemes. Such schemes quickly isolate the faulted line section and brings power back into those still healthy segments, ensuring devices critical to public safety such as traffic lights and street lights remain in service.
	Cyber-Security, Privacy	WiMAX has inherent cyber security features. Only those devices configured in the WiMAX Base Station radio access list are allowed to connect. All communication is encrypted to AES 256 standard.
	Coordination, Interoperability	There are currently 7 WiMAX nodes in the Alectra East, providing communication to a number of Alectra substations and field devices. Alectra P&C Staff have a wealth of experience supporting and maintaining the WiMAX Communication platform. Alectra has a good inventory of WiMAX Base Station critical spares.
	Economic Development	Not Applicable
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do Nothing. Continue to exist with the present situation. Continue to be unable to connect to devices on the distribution grid via WiMAX in this part of the Alectra Service territory. This is unacceptable for the following reasons: - Alectra is expected to monitor and trip FIT Generators. Rules and regulations expect FIT generators to be monitored and to be removed from the distribution grid in the event of issue on the connected feeder. Alectra's standard is for 1.8GHz WiMAX to be the transport mechanism for these channels. FIT generators in areas of South West Barrie are unable to connect to existing WiMAX Base Stations due to terrain. These locations are too far from the MS407 WiMAX Base. A number of upcoming FITs in South Barrie are unable to be connected to SCADA due to lack of effective signal. - there are no WiMAX communication services in this area to support high speed peer to peer protocols such as GOOSE, so devices such as overhead reclosers or pad mounted switchgears will not be able to participate in autonomous, automatic, fault isolation and restoration schemes.

	Alternative #1	It is recommended to proceed with this project, and implement a new three sector WiMAX node at MS305. This aligns with ISED regulations for utility data communications.
	Alternative #2	Another alternative would be to use a 3rd party cellular service to provide SCADA connectivity to devices such as reclosers, FIT generators and SMART Fault Indicators. This is not a recommended solution for the following reasons: - Alectra would incur an ever increasing, ongoing monthly cost. - Service could be compromised at times of adverse weather or and energy due to the fact we would be competing with other cellular data users for data service from the nearest cell tower; - Alectra would not be in control of the service. We could not configure the service to optimize service for a particular class of device. For instance, a recloser participating in an automatic restoration scheme should be given a higher priority class of service then a video service from a vault; - the cellular service wouldn't support peer to peer communications, required for autonomous, automatic distribution automation schemes.
	Justification for Recommended Alternative	It is recommended to proceed with Alternative #1, and to put in place a new, three sector WiMAX node at MS305. Justifications for this are as follows: - service requirement expectations will be met: Network Operations' communication needs for connectivity to "SMART" devices in the South West part of Barrie will be with a new three sector node in service at MS305; - we have experience: there are a number of existing 1.8GHz WiMAX nodes in service at Alectra. WiMAX has been proven to be an effective service for the communication needs of Alectra's Network Operations. It is fully configurable, highly secure, fully controllable, robust, licensed wireless service with high throughputs and excellent tolerance to extreme environmental interference, whether electromagnetic or environmental; - we retain control: Alectra will lose control of the wireless service if we chose to use a 3rd party provider such as cellular. We will have a greater chance of compromise as our critical Operations data will be flowing over non Alectra owned and controlled segments; - increased costs: Alectra needs to continue to provide SCADA connectivity to "SMART" devices installed on the distribution grid in South West Barrie. If there is no WiMAX service available, a 3rd party service with its high monthly OM&A type costs will be required. ISED there are no more licensed 400MHz or 900MHz frequencies available; - utilization of existing resources: the main expenditures to implement a three sector node in this part of Alectra's service territory have already been completed under previous 2018 Capital Projects: - a strong, all weld, 150' tower capable of expansion to 200' is already installed at MS305; - there are no other licensed services available: ISED, the federal government body in charge of the public radio spectrum, has allotted the 1.8GHz band to utilities for their Operations communications needs. The licensed 400MHz and 900MHz spectrum is already fully utilized and there is very limited frequencies available. ISED has mandated that utilities such as Alectra, are to use 1.8GHZ. So we are following ISED directives.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	P&C anticipates no risk to project completion. P&C has much experience implementing WiMAX Base Station nodes.
	Comparative Information on Equivalent Historical Projects (if any)	P&C has much experience deploying WiMAX nodes in Alectra.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not applicable
	Identify any reliability, efficiency, safety or coordination benefits	Licensed 1.8GHZ WiMAX is an inherently more reliable broadband communications methodology than unlicensed 900MHz. It is therefore more reliable for SCADA communication and for transfer trips..



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $128,696	$0	$128,696	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

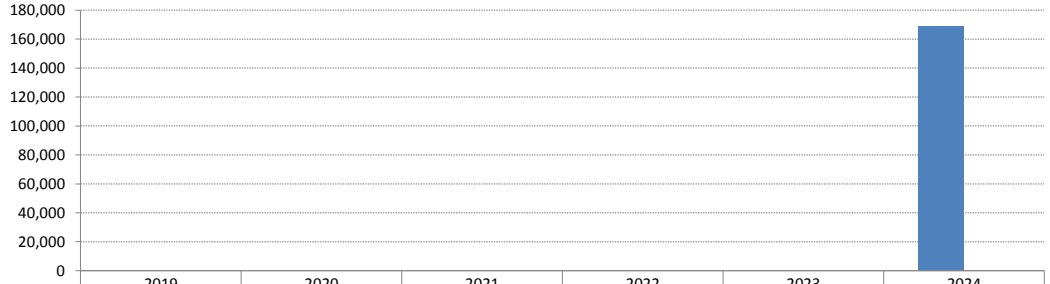
OEB Multi-Project Report

Project Code	151029
Project Name	Fleet_West_Vehicle_Replacement_Pickups
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Hamilton
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 1-397, 1-133, 1-394, 1-395, 1-311, 1-312, 1-391 will be a projected 7 to 13 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	Replacement Assessment Criteria - Light Duty Vehicles: Assessed at 7 years and every year after, and/or high mileage (excess of 150,000 km) Replacement schedule: at 7 years, (150,000 km). Medium Duty Vehicles: Assessed at 10 years and every year after, and/or high mileage (excess of 250,000 km) Replacement schedule: at 10 years, (250,000 km). Heavy Duty Vehicles: Assessed at 12-year service, and every year after, and/or high mileage (excess of 500,000 km) High engine hours (excess of 12,000 engine hours)
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/ARFP processed will be followed for best value. Historical spend tracked from all regions
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $169,000	$0	$0	$0	$0	$0	$169,000
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

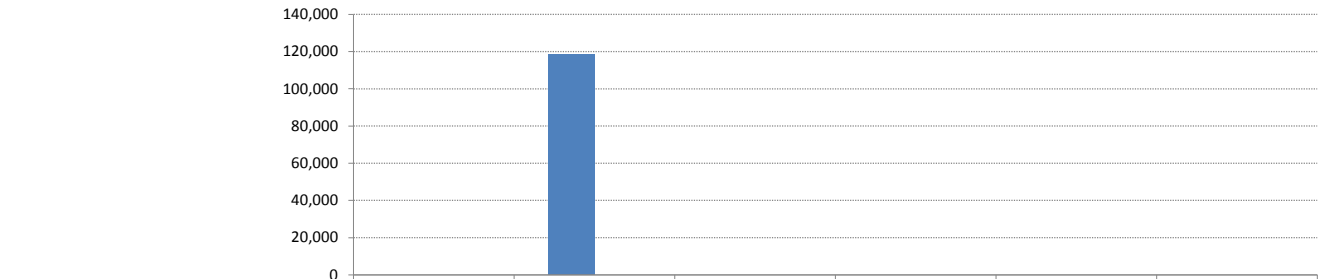
OEB Multi-Project Report

Project Code	151072
Project Name	Station Service Transfer Upgrade - Vaughan TS#3
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	Vaughan TS3, 6531 Rutherford Road, Vaughan
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Substation Renewal
	Alectra Subcategory	Scada & Scada Communications R
4. Evaluation Criteria (OEB)	Project Summary	Upgrade the station service transfer scheme by replacing the manual transfer switches with an automatic transfer switch as used in other Alectra transformer stations.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	A station blackout occurred on March 24, 2016 when a fault on the M3 feeder interrupted one of the station service supplies. Since there is a manual transfer scheme at VTS3, the alternate station service supply could not provide instantaneous backup. At the same time, the battery bank was unknowingly compromised due to a loose battery link. The 125V DC system at VTS3 lost power and caused the entire station to trip off line. An automatic transfer scheme would have helped the station ride through the fault.
	Customer Attachment / Load (KVA)	Not applicable
	Safety	Not applicable
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	If station service and DC supply are lost simultaneously, then the station could be out of service for three or four hours while crews mobilize, troubleshoot and restore the station service.
	Economic Development	Not applicable
	Environmental Benefits	Not applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do nothing. Leave the station service manual transfer scheme as is. The status quo is not recommended because the existing risk of interruption to the station service and at the same time, the battery bank could be in a compromised state leaving the station with DC power leading to a complete black out at the station.
	Alternative #1	Upgrade the station service transfer scheme by replacing the manual transfer switches with an automatic transfer switch as used in other Alectra transformer stations. There are costs involved.
	Alternative #2	Not applicable
	Justification for Recommended Alternative	A station blackout occurred on March 24, 2016 when a fault on the M3 feeder interrupted one of the station service supplies. Since there is a manual transfer scheme at VTS3, the alternate station service supply could not provide instantaneous backup. At the same time, the battery bank was unknowingly compromised due to a loose battery link. The 125V DC system at VTS3 lost power and caused the entire station to trip off line. An automatic transfer scheme would have helped the station ride through the fault conditions. Upgrading to an automated station service transfer scheme is one of the recommendations stemming from the attached report.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	There are some risks due to; - AC power will be lost while the station service transfer scheme is upgraded with an automated transfer switch.
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Not applicable
	Condition of Asset vs. Typical Life Cycle and Performance Record	Not applicable
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	36000
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	There is low risk that the AC supply and the battery bank will be lost at the same time.
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Due to the rare occurrence, customer satisfaction and customer migration are not likely to be affected significantly.
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	This project is one year project.. Due to the risk exposure, it is recommended to complete this project as soon as resources and approvals are available.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not applicable
	Reliability and Safety Factors	Not applicable

Analysis for "Like for Like" Renewal Project Not applicable



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $118,496	$0	$118,496	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

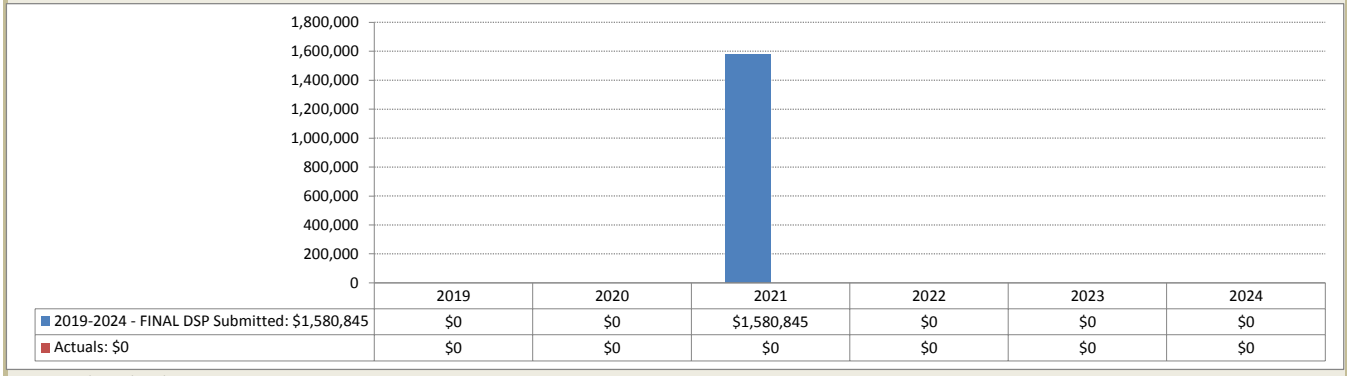
Currency scale is in literal

OEB Multi-Project Report

Project Code	151117
Project Name	Vansickle TS True-up Payment (CCRA), St.Catharines
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	St. Catherines
	Location	
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Connection & Cost Recovery Agreements
	Alectra Subcategory	CCRA Payments
4. Evaluation Criteria (OEB)	Project Summary	Alectra (former Horizon Utilities) is party to a Connection and Cost Recovery Agreement (CCRA) with Hydro One Networks Inc. ("HONI") dated May 2008. This agreement provided for the upgrade of the Vansickle Transformer Station (TS) on behalf of Hydro One Networks Inc. for the purpose of meeting anticipated electricity load growth in St.Catharines. A need for new transformation capacity was identified to meet existing and future demand growth in the South-West area of St.Catharines. The proposed station expansion was designed to offload Carlton TS T5/T6 that was exceeding transformation capacity as well as existing Vansickle TS facilities nearing capacity. Under the Transmission System Code ("TSC"), and consequently the CCRA, Alectra was required to provide HONI with an initial capital contribution ("Initial Capital Contribution") based on the difference (the "Difference") between the total capital cost of constructing the TS and a projection of transformation revenue (the "HONI Revenue") earned on the conveyance of electricity through the TS. The Difference represents a contingent debt obligation of Alectra based on the extent that historical actual and forecast HONI Revenue during the CCRA term is less than the amount of HONI revenue projected as a basis for the determination of the Initial Capital Contribution. Conversely, Alectra is entitled to a rebate of the Capital Contribution based on the extent that historical actual and forecast HONI Revenue during the CCRA term is greater than the amount of HONI Revenue projected as a basis for the determination of the Initial Capital Contribution. As per the TSC, and consequently CCRA for low risk connections, HONI is required to complete a true-up on the five, ten and if applicable, fifteen year anniversaries to settle for demand forecast excesses or shortfalls. Based on a review of the CCRA with HONI for Vansickle TS capacity upgrade of T5/T6 on the ten year anniversary, Alectra and HONI determined a shortfall of revenue to HONI versus the forecasted Initial Capital Contribution. The ten-year anniversary true-up for Vansickle TS expansion is due in 2021. Alectra estimates a shortfall of revenue to HONI versus the forecasted Initial Capital Contribution. Request for financial settlement is anticipated from HONI in 2021, in the amount of TBD, with the final amount and payment terms negotiated between HONI and Alectra at that time. The revenue shortfall is largely due to government-driven conservation initiatives, natural conservation and an impact of slower ancillary growth occurring around Niagara Regional Hospital, which have resulted in actual load being lower than forecasted load.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	As a distributor Alectra has to comply by the TSC and is required to pay contribution amounts per the CCRA.
	Customer Attachment / Load (KVA)	7841 customers and 89,367 connected KVA
	Safety	Not applicable
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Not applicable.
	Alternative #1	Payment of true-up amount will be determined by Hydro One as part of the signed CCRA agreement. There is only one option that can be considered with this investment as Alectra is obligated to comply with TSC requirements and provide cost recovery to HONI as required.
	Alternative #2	Not applicable.
	Justification for Recommended Alternative	Signed contract between legacy Horizon and Hydro One.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Pleasant TS CCRA true-up in 2018, in the amount of $6.8 MM.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Not applicable.

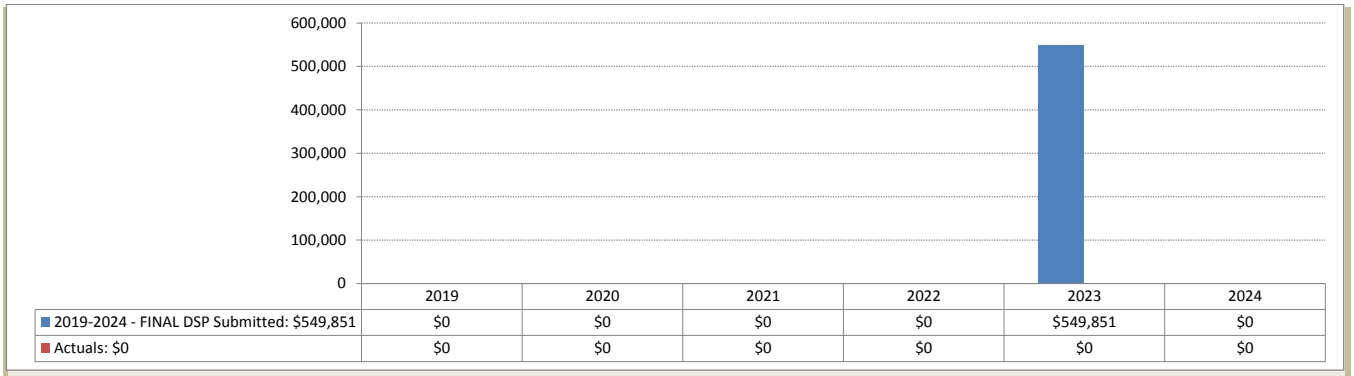


	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,580,845	$0	$0	$1,580,845	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151118	
Project Name	Nebo TS 27.6kV True-up Payment (CCRA)	
Major Category	General Plant	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Hamilton
	Location	
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Connection & Cost Recovery Agreements
	Alectra Subcategory	CCRA Payments
4. Evaluation Criteria (OEB)	Project Summary	Alectra (former Horizon Utilities) is party to a Connection and Cost Recovery Agreement (CCRA) with Hydro One Networks Inc. ("HONI") dated April 2012. This agreement provided for the upgrade of the Nebo Transformer Station (TS) on behalf of Hydro One Networks Inc. for the purpose of meeting anticipated electricity load growth in Hamilton. A need for new transformation capacity was identified to meet existing and future demand growth in the Stoney Creek mountain area of Hamilton. The proposed station expansion was designed to increase available capacity allocated to Alectra in conjunction with Hydro One Distribution who were also seeking an increase in capacity at the facility. Under the Transmission System Code ("TSC"), and consequently the CCRA, Alectra was required to provide HONI with an initial capital contribution ("Initial Capital Contribution") based on the difference (the "Difference") between the total capital cost of constructing the TS and a projection of transformation revenue (the "HONI Revenue") earned on the conveyance of electricity through the TS. The Difference represents a contingent debt obligation of Alectra based on the extent that historical actual and forecast HONI Revenue during the CCRA term is less than the amount of HONI revenue projected as a basis for the determination of the Initial Capital Contribution. Conversely, Alectra is entitled to a rebate of the Capital Contribution based on the extent that historical actual and forecast HONI Revenue during the CCRA term is greater than the amount of HONI Revenue projected as a basis for the determination of the Initial Capital Contribution. As per the TSC, and consequently CCRA for low risk connections, HONI is required to complete a true-up on the five, ten and if applicable, fifteen year anniversaries to settle for demand forecast excesses or shortfalls. Based on a review of the CCRA with HONI for Nebo TS capacity upgrade of T1/T2 on the ten year anniversary, Alectra and HONI determined a shortfall of revenue to HONI versus the forecasted Initial Capital Contribution. The ten-year anniversary true-up for Nebo TS expansion is due in 2023. Alectra estimates a shortfall of revenue to HONI versus the forecasted Initial Capital Contribution. Request for financial settlement is anticipated from HONI in 2023, in the amount of TBD, with the final amount and payment terms negotiated between HONI and Alectra at that time. The revenue shortfall will be largely due to government-driven conservation initiatives, natural conservation and an impact of slower growth occurring in the area, which have resulted in actual load being lower than forecasted load.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	As a distributor Alectra has to comply by the TSC and is required to pay contribution amounts per the CCRA.
	Customer Attachment / Load (KVA)	12,313 customers and 127,222 connected KVA
	Safety	Not applicable
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Not applicable.
	Alternative #1	Payment of true-up amount determined by Hydro One as part of the signed CCRA agreement.
	Alternative #2	Not applicable.
	Justification for Recommended Alternative	Signed contract between legacy Horizon and Hydro One.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable.
	Comparative Information on Equivalent Historical Projects (if any)	Pleasant TS CCRA true-up in 2018, in the amount of $6.8 MM.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Not applicable.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $549,851	$0	$0	$0	$0	$549,851	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151124	
Project Name	Goreway TS Expansion (CCRA) - 10 Yr True-Up Payment, Brampton	
Major Category	General Plant	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Brampton
	Location	Goreway TS Brampton 9513 Goreway Dr. Between Queen St and Castlemore Rd
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Connection & Cost Recovery Agreements
	Alectra Subcategory	CCRA Payments
4. Evaluation Criteria (OEB)	Project Summary	For the 10th year true up due in 2020, it is expected that Hydro One True-up calculation will show that Alectra actual load and updated load forecast is lower than the load in the initial load forecast and does not generate the initial forecast connection rate revenues. To account for the shortfall, Hydro One will require Alectra to make a payment in lump sum payment (plus applicable taxes) in 2020. This cost is adjusted appropriately to reflect the time value of money and accounts for any previous True-up payments you have already made. The 5th year True-Up in 2015 was $681k. The lump sum is estimated to be $5.5M in 2020.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	High In 2010, the construction of Goreway TS Expansion was completed and was put into service. Under the Transmission System Code ("TSC"), and consequently the CCRA, Alectra was required to provide HONI with an initial capital contribution ("Initial Capital Contribution") based on the difference (the "Difference") between the total capital cost of constructing the TS and a projection of transformation revenue (the "HONI Revenue") earned on the conveyance of electricity through the TS. The Difference represents a contingent debt obligation of Alectra based on the extent that historical actual and forecast HONI Revenue during the CCRA term is less than the amount of HONI revenue projected as a basis for the determination of the Initial Capital Contribution. Conversely, Alectra is entitled to a rebate of the Capital Contribution based on the extent that historical actual and forecast HONI Revenue during the CCRA term is greater than the amount of HONI Revenue projected as a basis for the determination of the Initial Capital Contribution. As per the TSC, and consequently CCRA for low risk connections, HONI is required to complete a true-up on the five, ten and if applicable, fifteen year anniversaries to settle for demand forecast excesses or shortfalls. Based on a review of the CCRA with HONI for Pleasant TS on the five year anniversary, Alectra and HONI determined a shortfall of revenue to HONI versus the forecasted Initial Capital Contribution. The 5 year true-up CCRA shortfall payment in accordance of the CCRA for the Goreway TS Expansion was completed in 2015 in the amount of $681k. The ten-year true-up revenue shortfall was largely due to the government-driven conservation initiatives, natural conservation and economic downturn that occurred in 2008 that have resulted in historical actual load being lower than forecasted load. The 10-year anniversary true-up for Goreway TS Expansion is due in 2020. Alectra estimates a shortfall of revenue to HONI versus the forecasted Initial Capital Contribution and the five-year true-up settlement. Request for financial settlement is anticipated from HONI in 2020, with the final amount and payment terms negotiated between HONI and Alectra at that time. The revenue shortfall continues largely due to government-driven conservation initiatives, natural conservation and an impact of economic downturn that occurred in 2008 (and which has not been overcome) which have resulted in historical actual load being lower than forecasted load.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Not Applicable
	Economic Development	Not Applicable
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The peak demand for Pleasant TS continues to be lower than forecasted before it was constructed. This will result in revenue shortfall for HONI. The revenue shortfall continues largely due to government-driven conservation initiatives, natural conservation and an impact of economic downturn that occurred in 2008 (and which has not been overcome) which have resulted in historical actual load being lower than forecasted load.
	Alternative #1	Not Applicable
	Alternative #2	Not Applicable

	Justification for Recommended Alternative	For the 10th year true up due in 2018, Hydro One True-up calculation shows that Alectra actual load and updated load forecast is lower than the load in the initial load forecast and does not generate the initial forecast connection rate revenues. To account for the shortfall, Hydro One required Alectra to make a payment in the amount of $681k in 2015. This cost is adjusted appropriately to reflect the time value of money and accounts for any previous True-up payments you have already made. For the 10th year true up due in 2020, it is expected that Hydro One True-up calculation will show that Alectra actual load and updated load forecast is lower than the load in the initial load forecast and does not generate the initial forecast connection rate revenues. To account for the shortfall, Hydro One will require Alectra to make a payment in lump sum payment (plus applicable taxes) in 2020. This cost is adjusted appropriately to reflect the time value of money and accounts for any previous True-up payments you have already made. The lump sum is estimated to be $5.5M.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	True Up Payment

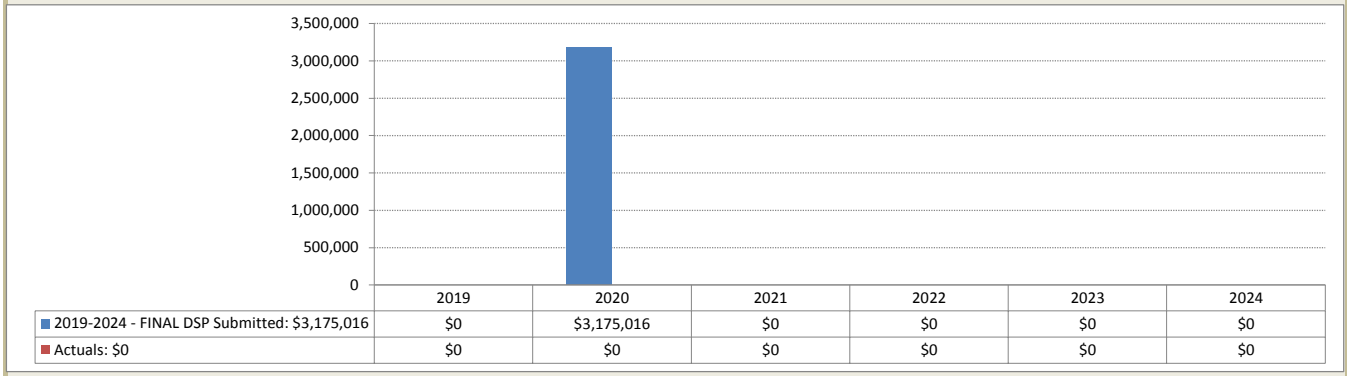
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $5,562,624	$0	$5,562,624	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151125	
Project Name	Connection Cost Recovery Agreement (CCRA) – Midhurst TS – 15th Anniversary True-up	
Major Category	General Plant	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream North
	Location	Barrie
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Connection & Cost Recovery Agreements
	Alectra Subcategory	CCRA Payments
4. Evaluation Criteria (OEB)	Project Summary	For the 15th year true up covering the period up to December 31st 2019, it is expected that Hydro One true-up calculation will show that Alectra actual load and updated load forecast is lower than the load in the initial load forecast and does not generate the initial forecast connection rate revenues. To account for the shortfall, Hydro One will require Alectra to make a payment in lump sum payment (plus applicable taxes). This cost is adjusted appropriately to reflect the time value of money and accounts for any previous true-up payments already made.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	High priority. In 2004, the construction of Midhurst TS T3/T4 was completed and was put into service. Under the Transmission System Code ("TSC"), and consequently the CCRA, Alectra was required to provide HONI with an initial capital contribution ("Initial Capital Contribution") based on the difference (the "Difference") between the total capital cost of constructing Midhurst TS T3/T4 and a projection of transformation revenue (the "HONI Revenue") earned on the conveyance of electricity through the TS. The Difference represents a contingent debt obligation of Alectra based on the extent that historical actual and forecast HONI Revenue during the CCRA term is less than the amount of HONI revenue projected as a basis for the determination of the Initial Capital Contribution. Conversely, Alectra is entitled to a rebate of the Capital Contribution based on the extent that historical actual and forecast HONI Revenue during the CCRA term is greater than the amount of HONI Revenue projected as a basis for the determination of the Initial Capital Contribution. As per the TSC, and consequently CCRA for low risk connections, HONI is required to complete a true-up on the five, ten, fifteen, twenty, and twenty-five year anniversaries to settle for demand forecast excesses or shortfalls. The fifteen-year anniversary true-up for Midhurst TS T3/T4 covers the period up to December 31st 2019. Alectra estimates a shortfall of revenue to HONI versus the forecasted initial capital contribution. Request for financial settlement is anticipated from HONI in 2020 with the final amount and payment terms negotiated between HONI and Alectra at that time. The revenue shortfall continues largely due to government-driven conservation initiatives, natural conservation and an impact of economic downturn that occurred in 2008 (and which has not been overcome) which have resulted in historical actual load being lower than forecasted load.
	Customer Attachment / Load (KVA)	Not applicable
	Safety	Not applicable
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	Not applicable
	Economic Development	Not applicable
	Environmental Benefits	Not applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The peak demand in Barrie continues to be lower than forecasted before Midhurst TS T3/T4 was constructed. This will result in revenue shortfall for HONI. The revenue shortfall continues largely due to government-driven conservation initiatives, natural conservation, and an impact of economic downturn that occurred in 2008 (and which has not been overcome) which have resulted in historical actual load being lower than forecasted load.
	Alternative #1	There is only one option that can be considered with this investment as Alectra is obligated to comply with TSC requirements and provide cost recovery to HONI as required.
	Alternative #2	Not applicable
	Justification for Recommended Alternative	For the 15th year true up covering the period up to December 31st 2019, it is expected that Hydro One true-up calculation will show that Alectra actual load and updated load forecast is lower than the load in the initial load forecast and does not generate the initial forecast connection rate revenues. To account for the shortfall, Hydro One will require Alectra to make a payment in lump sum payment (plus applicable taxes). This cost is adjusted appropriately to reflect the time value of money and accounts for any previous true-up payments already made.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0

7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Not applicable



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $3,175,016	$0	$3,175,016	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

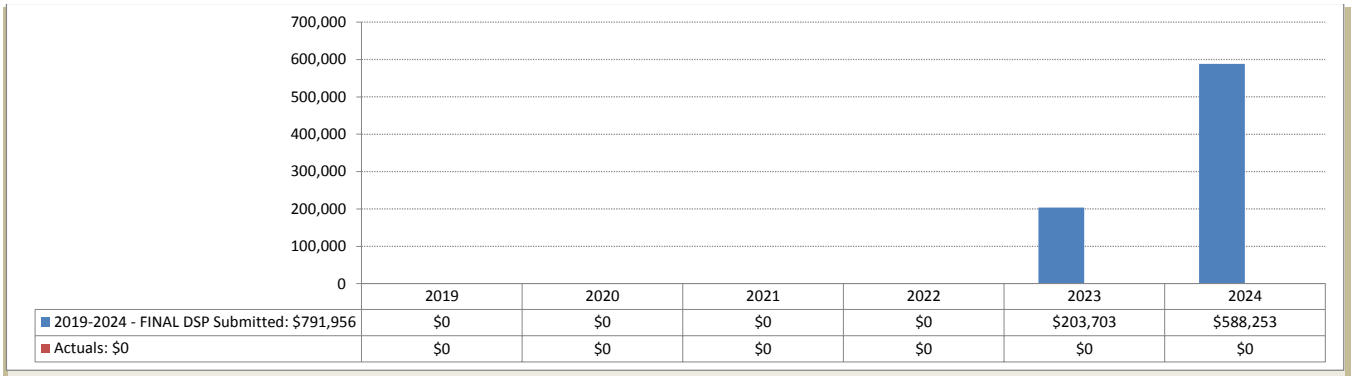
OEB Multi-Project Report

Project Code	151128
Project Name	MS Transformer & HV Switchgear Replacement - Western MS36 T1 & HV1
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North
	Location	Western MS in Mississauga.
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Substation Renewal
	Alectra Subcategory	Stations Replacement Program/P
4. Evaluation Criteria (OEB)	Project Summary	Municipal substation assets are integral to the performance of the Alectra - Central distribution system. They are used to step down sub-transmission voltages to lower distribution voltages, specifically from 44 kV to 13.8 KV, 44 kV to 27.6 kV and 27.6 kV to 4.16 kV. The municipal substation equipment (power transformers and metal clad / metal enclosed switchgear units) are considered critical and some of the most significant assets to the sustainability of the organization. As such, Alectra utilizes a replacement strategy to proactively replace their substation assets before they fail or if they are no longer supported by the manufacturer, hence technically obsolescent, approaching end of life or displaying failures. This can help to avoid a major failure which would have a major impact on customer outage frequency and duration, the environment, safety, and Alectra's reputation. The major power equipment installed at Western MS (27.6 kV-to-4.16 kV) consists of one obsolete conventional low voltage switchgear lineups (LV1), one 10 MVA power transformer, and one high voltage switched fuse disconnect. The equipment details at Western MS are as follows: Low Voltage (4.16 kV) metal clad switchgear (not arc resistant) • Manufacturer (LV1) – Fed Pioneer • Circuit Breaker Type – DST2-5 • Year of Manufacture (LV1) – 1971 Low Voltage protections • Manufacturer – GE and Stromberg • Relay Type - electromechanical and solid dtate • Year of Manufacture – 1971 Power transformer (27.6 kV-to-4.16 kV) • Manufacturer (T1) – Pioneer • Year of Manufacture (T1) – 1972 High Voltage (27.6 kV) switchgear and Protections • Manufacturer (HV1) – S&C Electric •Type - All Duty switched fuse • Year of Manufacture (HV1) – 1971 (Estimated)
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Typical useful life as per Kinectrics report "Asset Amortization Study for the Ontario Energy Board" is 35 to 60 years, with a typical useful life of 45 years. In 2024, this transformer will be reaching 52 years of age, which is approaching what is considered as the "maximum", or upper bound for useful life. - A massive failure in 2016 of the HV fused disconnect resulted in bowing of the cabinet, fuse and switch alignment issues. - H1, H2, and secondary bushings are leaking. The transformer has 11PPM of PCB. If the transformer were re-gasketed. the oil must be disposed of as hazardous waste and the unit must be refilled with new oil; this would be costly. - Recent Doble testing has indicated possible mechanical damage to the windings. Something has changed with the windings compared to previous testing.
	Customer Attachment / Load (KVA)	Peak load supplied by this transformer in 2017 was 3.3 MVA
	Safety	A catastrophic failure could result in fire or explosion posing risk to personnel and to residents adjacent to the station.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	The replacement of this end-of-life transformer with a new unit will help modernize the system and facilitate Control Room operations in managing the system and in monitoring condition and coordination of maintenance activities.
	Economic Development	Not applicable.
	Environmental Benefits	A catastrophic failure of the existing transformer could lead to oil leaking into the environment or fire and explosion resulting in contaminants released in to the atmosphere. Replacing this end-of-life transformer would mitigate these risks.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	An alternative is to do nothing, allowing for random failure-related issues with the end-of-life equipment and replacing with a spare unit, if available, under emergency situations. However, this approach is not recommended because it will have a severe negative impact on numerous customers and on system reliability. Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted funding requirements and could result in lengthy customer interruptions. Replacement of failed equipment is expected to be more costly than proactive replacement. The impact of a catastrophic failure involving fire or explosion would have even greater impact on costs and customer outages. Impact on customers can be minimized with proactive replacement. Also, with an aging transformer population, the likelihood of multiple transformer failures within a period increases and, as a result, there may be no spare readily available, hence significantly increasing customer impact.
	Alternative #1	Plan for replacement of the transformer as the age approaches 60 years. In the meantime, monitor the condition of this transformer through annual Asset Condition Assessment and adjust scheduling of replacement as appropriate. If the transformer shows no signs of deteriorating condition in the coming years, postponing replacement may be considered.
	Alternative #2	Not applicable.
	Justification for Recommended Alternative	By 2024, this transformer will be 52 years old and approaching what is considered to be the maximum useful life for a power transformer. UPDATE THIS SECTION There are 16 in-service transformers of this capacity and voltage rating. By 2021, ten, or 63% of these transformers will be 45 years of age or older with an average age of 45 years. This is considered as the typical useful life for a power transformer. There is only one spare of this capacity and voltage rating and it will be 34 years old in 2021. In terms of the total population of municipal station power transformer, by 2021 twenty-three, or 37% of the sixty-two in-service units will be 45 years of age or older with an average age of nearly 36 years. With an aging population, the likelihood of multiple failures and that the spare may be unavailable increases. The result could be extended power outages and operating the system at a higher level of risk.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	This equipment has a long lead time, but this will be mitigated by placing the equipment order in 2023 for replacement in 2024.
	Comparative Information on Equivalent Historical Projects (if any)	Similar work has been successfully executed.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	From a configuration perspective, this is a like-for-like replacement, however, the proposed replacement equipment would be technologically enhanced as compared with the existing equipment. The new equipment would be designed with improved monitoring capability.
	Condition of Asset vs. Typical Life Cycle and Performance Record	At the time of the proposed replacement, the age of the transformer would be approaching what is considered to be the maximum, or upper bound for the useful life of a power transformer. At the present time, the Asset Condition Health Index for this transformer remains in the "GOOD" category. Condition will be monitored for signs of deterioration.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	747
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	•In the event of a transformer failure, supply to all customers connected to the station would be interrupted until either load transfers to adjacent stations could be completed or the failed equipment replaced. •During peak conditions, it may not be possible to pick up all interrupted load, resulting in rotation load interruptions. •Assume near end-of-life transformer failure rate of 0.05. •Assume near end-of-life transformer catastrophic failure rate of 0.01. •It can take 1 to 6 hours to transfer load to another bus or station following a transformer failure. (Assume 4 hours average) •Replacement time for the transformer is based on the assumption that a spare is available. •It is assumed that it will take two weeks to repair or replace a failed transformer. •A catastrophic failure could result in collateral damage to other assets and/or the requirement for extensive oil spill remediation. •It is assumed that it will take four to six weeks to replace a transformer that has failed catastrophically. (average 5 weeks) •Replacement duration could be significantly longer if a spare becomes unavailable. (At least six months) During this period, the system would be operating at an elevated level of risk.
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Failure of this equipment would negatively impact the electricity supply to many residential and commercial and industrial customers in the area.
	Value of Customer Impact	Medium
	Factors Affecting Project Timing, if any	Condition of the transformer will be monitored and the replacement date will be adjusted as appropriate.
	Consequences for O&M System Costs Including Implications of Not Implementing	Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted funding requirements and could result in lengthy customer interruptions. Replacement of failed equipment is expected to be more costly than proactive replacement. Moreover, in the event of a catastrophic failure involving fire and explosion, there could be significant collateral damage to the station and to surrounding properties.
	Reliability and Safety Factors	This station supplies about 747 customers. In the event of a transformer failure, all of these customers would need to be transferred to other substations. This could be challenging during peak conditions. In the event of a catastrophic failure involving rupture, fire could result, causing significant collateral damage to the station and surrounding property and pose a safety risk to personnel and residents adjacent to the station.
	Analysis for "Like for Like" Renewal Project	From a configuration perspective, this is a like-for-like replacement but the replacement equipment is more technologically advanced, requiring reduced maintenance, improved monitoring and improved safety features.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $791,956	$0	$0	$0	$0	$203,703	$588,253
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

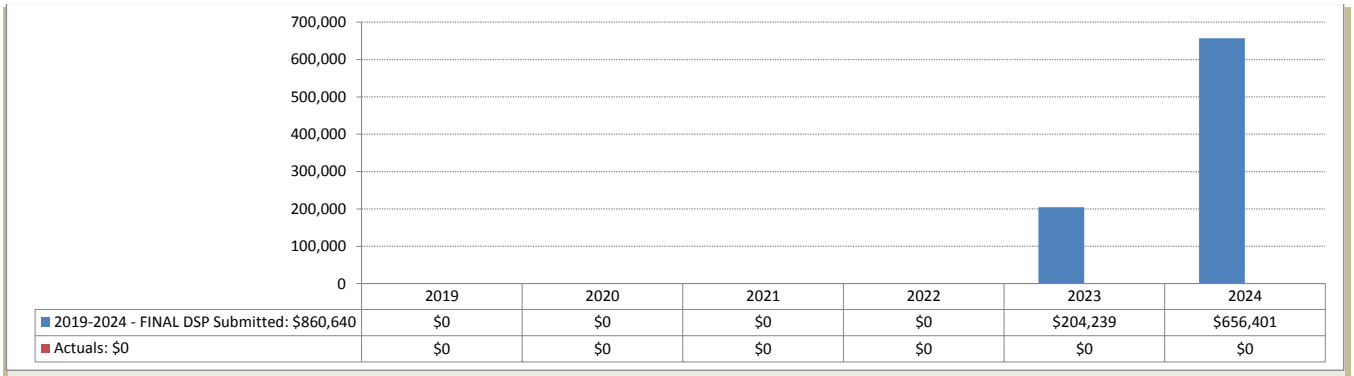
OEB Multi-Project Report

Project Code	151132
Project Name	MS Transformer & HV Switchgear Replacement - Munden MS35 T1 & HV1
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North
	Location	Munden MS in Mississauga
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Substation Renewal
	Alectra Subcategory	Stations Replacement Program/P
4. Evaluation Criteria (OEB)	Project Summary	Municipal substation assets are integral to the performance of the Alectra - Central distribution system. They are used to step down sub-transmission voltages to lower distribution voltages, specifically from 44 kV to 13.8 KV, 44 kV to 27.6 kV and 27.6 kV to 4.16 kV. The municipal substation equipment (power transformers and metal clad / metal enclosed switchgear units) are considered critical and some of the most significant assets to the sustainability of the organization. As such, Alectra utilizes a replacement strategy to proactively replace their substation assets before they fail or if they are no longer supported by the manufacturer, hence technically obsolescent, approaching end of life or displaying failures. This can help to avoid a major failure which would have a major impact on customer outage frequency and duration, the environment, safety, and Alectra's reputation. The major power equipment installed at Munden MS (27.6 kV-to-4.16 kV) consists of one obsolete conventional low voltage switchgear lineup (LV1), one 5 MVA power transformer, and one high voltage (HV) switched fuse. The equipment details at Munden MS are as follows: Low Voltage LV1 (4.16 kV) metal clad switchgear (not arc resistant) and circuit breakers (5 units) • Manufacturer – Federal Pioneer • Circuit Breaker Type –DST2-5 Magnetic Air • Year of Manufacture – 1966 Low Voltage protections • Manufacturer – GE • Relay Type - electromechanical • Year of Manufacture – 1982 Power transformers (27.6 kV-to-4.16 kV) • Manufacturer (T1) – Federal Pioneer • Year of Manufacture (T1) – 1969 High Voltage (44 kV) switchgear and Protections • Manufacturer (CB1) – S&C Electric • Type - S&C switched fuse • Year of Manufacture (CB1) - 1969 (estimated)
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Typical useful life as per Kinectrics report "Asset Amortization Study for the Ontario Energy Board" is 35 to 60 years, with a typical useful life of 45 years. In 2025, this transformer will be reaching 56 years of age, which is approaching what is considered as the "maximum", or upper bound for useful life. - The transformer has small seeping around HV and LV bushings. The transformer has 29 PPM of PCB. If re-gasketed, the oil must be disposed of as hazardous waste and the unit refilled with new oil; this would be costly. - Doble indicates insulation is wet and deteriorated. - The transformer does not have a proper foundation but is sitting on large wood timbers and is starting to lean. - The fused disconnect does not have proper foundation. It is also sitting on large wood timbers. - Raccoons have gotten into the fused disconnect several times causing outage(s).
	Customer Attachment / Load (KVA)	Peak load supplied by this transformer in 2017 was 2.7 MVA
	Safety	A catastrophic failure could result in fire or explosion posing risk to personnel and to residents adjacent to the station.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	The replacement of this end-of-life transformer with a new unit will help modernize the system and facilitate Control Room operations in managing the system and in monitoring condition and coordination of maintenance activities.
	Economic Development	Not applicable.
	Environmental Benefits	A catastrophic failure of the existing transformer could lead to oil leaking into the environment or fire and explosion resulting in contaminants released in to the atmosphere. Replacing this end-of-life transformer would mitigate these risks.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	An alternative is to do nothing, allowing for random failure-related issues with the end-of-life equipment and replacing with a spare unit, if available, under emergency situations. However, this approach is not recommended because it will have a severe negative impact on numerous customers and on system reliability. Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted funding requirements and could result in lengthy customer interruptions. Replacement of failed equipment is expected to be more costly than proactive replacement. The impact of a catastrophic failure involving fire or explosion would have even greater impact on costs and customer outages. Impact on customers can be minimized with proactive replacement. Also, with an aging transformer population, the likelihood of multiple transformer failures within a period increases and, as a result, there may be no spare readily available, hence significantly increasing customer impact.
	Alternative #1	Plan for replacement of the transformer as the age approaches 60 years. In the meantime, monitor the condition of this transformer through annual Asset Condition Assessment and adjust scheduling of replacement as appropriate. If the transformer shows no signs of deteriorating condition in the coming years, postponing replacement may be considered.
	Alternative #2	Not applicable.
	Justification for Recommended Alternative	By 2025, this transformer will be 56 years old and approaching what is considered to be the maximum useful life for a power transformer. UPDATE THIS SECTION There are 16 in-service transformers of this capacity and voltage rating. By 2021, ten, or 63% of these transformers will be 45 years of age or older with an average age of 45 years. This is considered as the typical useful life for a power transformer. There is only one spare of this capacity and voltage rating and it will be 34 years old in 2021. In terms of the total population of municipal station power transformer, by 2021 twenty-three, or 37% of the sixty-two in-service units will be 45 years of age or older with an average age of nearly 36 years. With an aging population, the likelihood of multiple failures and that the spare may be unavailable increases. The result could be extended power outages and operating the system at a higher level of risk.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	This equipment has a long lead time, but this will be mitigated by placing the equipment order in 2024 for replacement in 2025.
	Comparative Information on Equivalent Historical Projects (if any)	Similar work has been successfully executed.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	From a configuration perspective, this is a like-for-like replacement, however, the proposed replacement equipment would be technologically enhanced as compared with the existing equipment. The new equipment would be designed with improved monitoring capability.
	Condition of Asset vs. Typical Life Cycle and Performance Record	At the time of the proposed replacement, the age of the transformer would be approaching what is considered to be the maximum, or upper bound for the useful life of a power transformer. At the present time, the Asset Condition Health Index for this transformer remains in the "GOOD" category. Condition will be monitored for signs of deterioration.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	935
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	•In the event of a transformer failure, supply to all customers connected to the station would be interrupted until either load transfers to adjacent stations could be completed or the failed equipment replaced. •During peak conditions, it may not be possible to pick up all interrupted load, resulting in rotation load interruptions. •Assume near end-of-life transformer failure rate of 0.05. •Assume near end-of-life transformer catastrophic failure rate of 0.01. •It can take 1 to 6 hours to transfer load to another bus or station following a transformer failure. (Assume 4 hours average) •Replacement time for the transformer is based on the assumption that a spare is available. •It is assumed that it will take two weeks to repair or replace a failed transformer. •A catastrophic failure could result in collateral damage to other assets and/or the requirement for extensive oil spill remediation. •It is assumed that it will take four to six weeks to replace a transformer that has failed catastrophically. (average 5 weeks) •Replacement duration could be significantly longer if a spare becomes unavailable. (At least six months) During this period, the system would be operating at an elevated level of risk.
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Failure of this equipment would negatively impact the electricity supply to many residential and commercial and industrial customers in the area.
	Value of Customer Impact	Medium
	Factors Affecting Project Timing, if any	Condition of the transformer will be monitored and the replacement date will be adjusted as appropriate.
	Consequences for O&M System Costs Including Implications of Not Implementing	Failure of the existing equipment would warrant emergency replacement resulting in non-budgeted funding requirements and could result in lengthy customer interruptions. Replacement of failed equipment is expected to be more costly than proactive replacement. Moreover, in the event of a catastrophic failure involving fire and explosion, there could be significant collateral damage to the station and to surrounding properties.
	Reliability and Safety Factors	This station supplies about 935 customers. In the event of a transformer failure, all of these customers would need to be transferred to other substations. This could be challenging during peak conditions. In the event of a catastrophic failure involving rupture, fire could result, causing significant collateral damage to the station and surrounding property and pose a safety risk to personnel and residents adjacent to the station.
	Analysis for "Like for Like" Renewal Project	From a configuration perspective, this is a like-for-like replacement but the replacement equipment is more technologically advanced, requiring reduced maintenance, improved monitoring and improved safety features.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $860,640	$0	$0	$0	$0	$204,239	$656,401
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

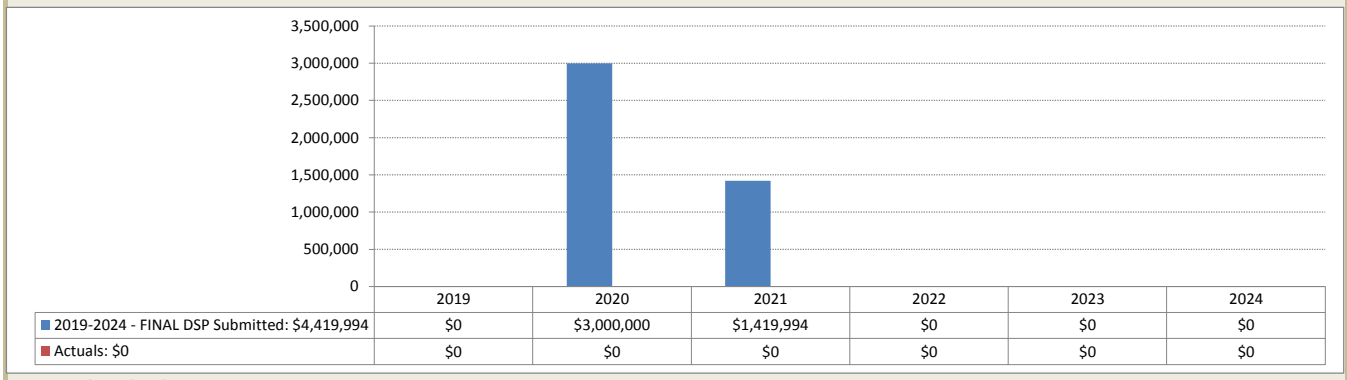
OEB Multi-Project Report

Project Code	151138	
Project Name	Voltage Conversion - MS-2 Church St, Brampton	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Brampton
	Location	2b: Frederick St, Main St S & Clarence St 4: Wellington St E, Chapel St, John St, Mary St & Union St 6: West St, Nelson St W, Denison Ave, Park St & Railroad St 7: Queen St W, Mill St N, Elizabeth St N, Nelson St W & Railroad St 8: Mill St N, David St & Thomas St MS-2 44 Church St W
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Overhead Asset Renewal
	Alectra Subcategory	Voltage Conversion
4. Evaluation Criteria (OEB)	Project Summary	Renewal of assets in the area will incorporate conversion of the 4.16kV voltage level to a 27.6kV level. This conversion will allow for the existing substation to be bypassed and allow for it's decommissioning. 4.16kV to 27.6kV Voltage Conversion. Phase 2b, 4, 6, 7, & 8.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	This project mainly addresses aging assets at the station and on the feeders by performing a renewal of the assets and converting the voltage to a higher class, thereby avoiding any future costs in upgrading the municipal substation and associated equipment. The asset condition assessment indicate that the station transformer is in Poor condition. The priority assets determining the voltage conversion are the substation assets as failure of a critical component can cause a major outage for an extensive timeframe impacting a large number of customers. Furthermore due to system design and construction in the 1950's, feeder redundancy is minimal and loss of a station would result in stranded load and increased cost as generators would be required The legacy substation equipment is •No longer supported by the manufacturer; •Parts are difficult to come by or must be custom made; •Difficult or costly to maintain; •Functional and Operational Obsolesces; (e.g. safety restrictions on operation circuit breakers) •Unable to meet current safety standards (e.g., switchgears that are not arc resistance); •Unable to meet current performance standards Feeder Assets Since there is large population of feeder assets, the condition of feeder assets is diverse. While the overall condition shows the average, as diverse populations masking the impact of deteriorated assets. If the Voltage Conversion projects were not to proceed, significant renewal investments would still be required to renew these deteriorated assets as part of other investments.
	Customer Attachment / Load (KVA)	MS-2 5000kVA 643 Customers
	Safety	Modern equipment reduces safety risks associated with older aging equipment.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Coordination of substation decommissioning must be done with conversion of associated distribution equipment in order to allow for contingency.
	Economic Development	Not Applicable
	Environmental Benefits	Conversion to 27.6kV from 4.16kV will result in less line losses on the circuits.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Status Quo / Run to Failure Under the status quo option, Alectra Utilities would only replace these legacy assets should they fail reactively. Under this scenario, there would be no opportunity to convert these assets to the standardized voltage levels, as assets would have to be replaced in a like-for-like manner. Replacing assets reactively tends to lead to the highest per-unit cost, and greatest impact to customer outage times. Furthermore, the reliability and safety risks associated with this infrastructure would continue to persist. Alectra Utilities would also be required to continue to maintain, and possibly replace or upgrade the legacy substations that supply these lower voltage levels, as many of the breaker assets have reached functional obsolescence and there are no parts available. This is not the recommended alternative.

	Alternative #1	Like-for-like replacement of existing assets with new assets at the same voltage ratings Under the like-for-like replacement option, existing 4.16 kV infrastructure would be replaced with new 4.16 kV infrastructure respectively. This approach is very similar to the status quo option, with the exception that customer outages can be avoided by replacing assets before they fail. By planning ahead to perform the replacements, the added benefit of like-for-like over the status quo is lower per-unit costs given that multiple assets can be addressed at a time. However, by keeping these system voltages intact, the functional obsolescence issues associated with these assets will continue to persist and eventually significant substation investments will be required. Should a future outage occur, it will likely be longer and create a larger customer impact, due to the lack of contingency options available at these voltage levels. This is not the recommended alternative.
	Alternative #2	Full conversion of the lines to new 27.6 kV primary system voltage Renewal investments already would need to be undertaken based on the asset health condition for many of the station assets, poles and distribution transformers. Under this alternative, assets will be aligned to modern standards and practices. Unification of voltage levels across large sections of the system further improves the operability and should lead to reliability gains. Converting to higher-voltages will also create opportunities for Alectra Utilities to reconfigure the grid to add new switching points and automation, and to phase-out trouble areas like rear-lot construction. These improvements will allow Alectra Utilities to improve service to customers by conducting isolation, sectionalizing and restoration activities much faster. This is the recommended alternative.
	Justification for Recommended Alternative	The full conversion option presents the best value long-term by having conversion completed in a planned manner while also avoiding the substation investment costs, as well as benefits to the operability of the system, which ultimately benefits the customers.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable
	Comparative Information on Equivalent Historical Projects (if any)	Decommissioning of MS-8 in Brampton is similar to the nature of this project.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Transformer has high DGA values, Breakers are in Good condition and new , but recently had an issue with the breaker's control card that required the entire station be taken out of service while the cards were replaced. Aging assets increase the risk of unplanned maintenance and system faults, resulting in customer outages. MS-2 is a 1964 Ferranti Packard vintage transformer which currently supplies the it's own feeders and an additional 3 feeders from MS-1. Contingency of the remaining 4.16kV is done merely by MS-12, and a failure in MS-2 will place full contingency dependence on MS-12.
	Condition of Asset vs. Typical Life Cycle and Performance Record	The 4.16kV asset class represents the oldest vintage in the Brampton area. Testing for the connected feeders from MS-1: 1F1 and 1F2 Feeders indicated worse case results in Hi-Pot testing. Poor results indicated as >0.5mA. 1F1 Blue phase tested 16.0mA, and 1F2 White phase tested 8.5mA.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	643
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	MS-2 currently provides supply for the old MS-1 feeders. 643 total customers are connected to the combined MS-1/MS-2 feeders., however this solution is not desired long-term without conversion to 27.6kV. 11 outages 20,372 customer minutes (3 year) 3.67 outages 0.53 hours (per year)
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Aging assets increase the risk of unplanned maintenance and system faults, resulting in customer outages. Previous MS removal as part of the voltage conversion program results in increased contingency risk for the remaining 4.16kV substation transformers. Each substation removal results in further contingency risk until the program ultimately completes.
	Value of Customer Impact	Low
	Factors Affecting Project Timing, if any	Not Applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	Halting voltage conversion would result in the loss of any additional benefits such as: •Reduction in OPEX costs (from eliminated station maintenance); •Increased reliability from feeder ties at 13.8 kV for both 4 kV customers and customers already on 13.8 kV feeders; •Automation (reduction in outage duration) for legacy 4 kV customers and some 13.8 kV customers; •Reduction in reactive costs triggered by asset failure; and •Reduction in line losses. If Alectra were to renew the deteriorated lower-voltage assets without converting to a higher voltage, it would lose the opportunity to economically transition to higher voltage equipment for a long period.
	Reliability and Safety Factors	Since there are a large population of feeder assets, the condition of feeder assets tends to be diverse. While the overall condition shows the average, this can be a case of diverse populations masking the impact of deteriorated assets. If the Voltage Conversion projects were not to proceed, significant renewal investments would still be required to renew these deteriorated assets as part of the Overhead Renewal investment. Even if the assets in the worst condition were replaced, the rest of the system would continue to deteriorate and continue to pose reliability risk and eventually need to be replaced.

Analysis for "Like for Like" Renewal Project

Like-for-like renewal of lower-voltage assets would increase Alectra Utilities' stations capital requirements during the first three years of the DSP period by approximately $22M.
If Alectra Utilities decided to take an opportunistic approach, where only during rebuilds would conversion take place, in a piece-meal style approach, this would actually introduce more risk to customers. Stations in general are normally backed up by one or more stations in the same geographical area. Similarly feeders themselves are also backed up by other feeders in the surrounding geographical area. Removing any feeder as part of a rebuild could create gaps in the resiliency of the network and increase the risk and exposure to the remaining customers to prolonged outages.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $4,419,994	$0	$3,000,000	$1,419,994	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

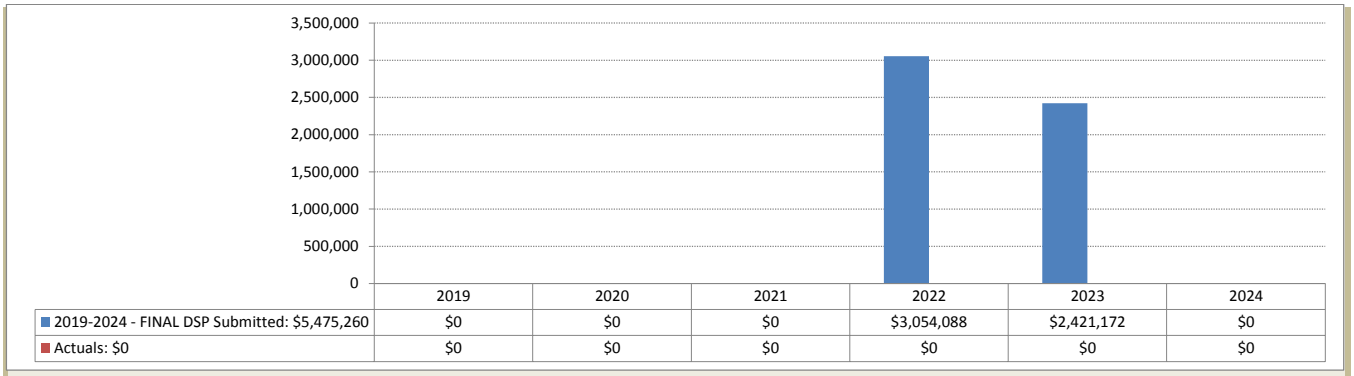
OEB Multi-Project Report

Project Code	151139
Project Name	Voltage Conversion - MS-12 Hansen Rd, Brampton
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Brampton
	Location	Phase 9: Sophia St, Beech St, McCaul St & Woodward Ave Phase 10: Cumberland Dr, Brisco St, McCulla Ave, Edgemont Dr Phase 11: Centre St, Wilson Ave, Lynch St, John St & Queen St E Phase 12: MS12 & MS1 Loop Church St, Market St, Main St N, Vodden St E, Garfield Cres & Kennedy Rd N MS-12 149 Hansen Rd. N
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Overhead Asset Renewal
	Alectra Subcategory	Voltage Conversion
4. Evaluation Criteria (OEB)	Project Summary	4.16kV to 27.6kV Voltage Conversion. Phase 9, 10, 11, & 12. Renewal of assets in the area will incorporate conversion of the 4.16kV voltage level to a 27.6kV level. This conversion will allow for the existing substation to be bypassed and allow for it's decommissioning. This project is part of a continued 4.16kV voltage conversion program in place for the city of Brampton.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	This project mainly addresses aging assets at the station and on the feeders by performing a renewal of the assets and converting the voltage to a higher class, thereby avoiding any future costs in upgrading the municipal substation and associated equipment. The asset condition assessment indicate that the breakers are in Poor condition. The priority assets determining the voltage conversion are the substation assets as failure of a critical component, such as the breaker lineup, can cause a major outage for an extensive timeframe impacting a large number of customers. Furthermore due to system design and construction in the 1950's, feeder redundancy is minimal and loss of a station would result in stranded load and increased cost as generators would be required The legacy substation equipment is •No longer supported by the manufacturer; •Parts are difficult to come by or must be custom made; •Difficult or costly to maintain; •Functional and Operational Obsolesces; (e.g. safety restrictions on operation circuit breakers) •Unable to meet current safety standards (e.g., switchgears that are not arc resistance); •Unable to meet current performance standards Feeder Assets Since there is large population of feeder assets, the condition of feeder assets is diverse. While the overall condition shows the average, as diverse populations masking the impact of deteriorated assets. If the Voltage Conversion projects were not to proceed, significant renewal investments would still be required to renew these deteriorated assets as part of the Overhead Renewal investment.
	Customer Attachment / Load (KVA)	MS-12 15,000kVA
	Safety	Modern equipment reduces safety risks associated with older aging equipment.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Coordination of substation decommissioning must be done with conversion of associated distribution equipment in order to allow for contingency.
	Economic Development	Not Applicable
	Environmental Benefits	Conversion to 27.6kV from 4.16kV will result in less line losses on the circuits.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Status Quo / Run to Failure Under the status quo option, Alectra Utilities would only replace these legacy assets should they fail reactively. Under this scenario, there would be no opportunity to convert these assets to the standardized voltage levels, as assets would have to be replaced in a like-for-like manner. Replacing assets reactively tends to lead to the highest per-unit cost, and greatest impact to customer outage times. Furthermore, the reliability and safety risks associated with this infrastructure would continue to persist. Alectra Utilities would also be required to continue to maintain, and possibly replace or upgrade the legacy substations that supply these lower voltage levels, as many of the breaker assets have reached functional obsolescence and there are no parts available. This is not the recommended alternative.

	Alternative #1	Like-for-like replacement of existing assets with new assets at the same voltage ratings Under the like-for-like replacement option, existing 4.16 kV infrastructure would be replaced with new 4.16 kV infrastructure respectively. This approach is very similar to the status quo option, with the exception that customer outages can be avoided by replacing assets before they fail. By planning ahead to perform the replacements, the added benefit of like-for-like over the status quo is lower per-unit costs given that multiple assets can be addressed at a time. However, by keeping these system voltages intact, the functional obsolescence issues associated with these assets will continue to persist and eventually significant substation investments will be required. Should a future outage occur, it will likely be longer and create a larger customer impact, due to the lack of contingency options available at these voltage levels. This is not the recommended alternative.
	Alternative #2	Full conversion of the lines to new 27.6 kV primary system voltage Renewal investments already would need to be undertaken based on the asset health condition for many of the station assets, poles and distribution transformers. Under this alternative, assets will be aligned to modern standards and practices. Unification of voltage levels across large sections of the system further improves the operability and should lead to reliability gains. Converting to higher-voltages will also create opportunities for Alectra Utilities to reconfigure the grid to add new switching points and automation, and to phase-out trouble areas like rear-lot construction. These improvements will allow Alectra Utilities to improve service to customers by conducting isolation, sectionalizing and restoration activities much faster. This is the recommended alternative.
	Justification for Recommended Alternative	The full conversion option presents the best value long-term by having conversion completed in a planned manner while also avoiding the substation investment costs, as well as benefits to the operability of the system, which ultimately benefits the customers.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable
	Comparative Information on Equivalent Historical Projects (if any)	Decommissioning of MS-8 in Brampton is similar to the nature of this project.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Breakers are obsolete and in Poor condition. MS12 is a 1970 Westinghouse 7.5 MVA transformer and the last in line of 4 decommissioned transformers. There is no contingency for MS12 and the area should be converted to the 27.6kV where contingency exists.
	Condition of Asset vs. Typical Life Cycle and Performance Record	The 4.16kV asset class represents the oldest vintage in the Brampton area. Failure of the assets increases as the vintage grows.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	521
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	521 Customers 29 outages 94267 customer minutes (3 year) 9.67 outages @ 3 hours (per year)
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Aging assets increase the risk of unplanned maintenance and system faults, resulting in customer outages. Previous MS removal as part of the voltage conversion program results in increased contingency risk for the remaining 4.16kV substation transformers. Each substation removal results in further contingency risk until the program ultimately completes.
	Value of Customer Impact	Low
	Factors Affecting Project Timing, if any	Not Applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	Halting voltage conversion would result in the loss of any additional benefits such as: •Reduction in OPEX costs (from eliminated station maintenance); •Increased reliability from feeder ties at 13.8 kV for both 4 kV customers and customers already on 13.8 kV feeders; •Automation (reduction in outage duration) for legacy 4 kV customers and some 13.8 kV customers; •Reduction in reactive costs triggered by asset failure; and •Reduction in line losses. • If Alectra were to renew the deteriorated lower-voltage assets without converting to a higher voltage, it would lose the opportunity to economically transition to higher voltage equipment for a long period.
	Reliability and Safety Factors	Since there are a large population of feeder assets, the condition of feeder assets tends to be diverse. While the overall condition shows the average, this can be a case of diverse populations masking the impact of deteriorated assets. If the Voltage Conversion projects were not to proceed, significant renewal investments would still be required to renew these deteriorated assets as part of the Overhead Renewal investment. Even if the assets in the worst condition were replaced, the rest of the system would continue to deteriorate and continue to pose reliability risk and eventually need to be replaced.
	Analysis for "Like for Like" Renewal Project	Like-for-like renewal of lower-voltage assets would increase Alectra Utilities' stations capital requirements during the first three years of the DSP period by approximately $22M. If Alectra Utilities decided to take an opportunistic approach, where only during rebuilds would conversion take place, in a piece-meal style approach, this would actually introduce more risk to customers. Stations in general are normally backed up by one or more stations in the same geographical area. Similarly feeders themselves are also backed up by other feeders in the surrounding geographical area. Removing any feeder as part of a rebuild could create gaps in the resiliency of the network and increase the risk and exposure to the remaining customers to prolonged outages.



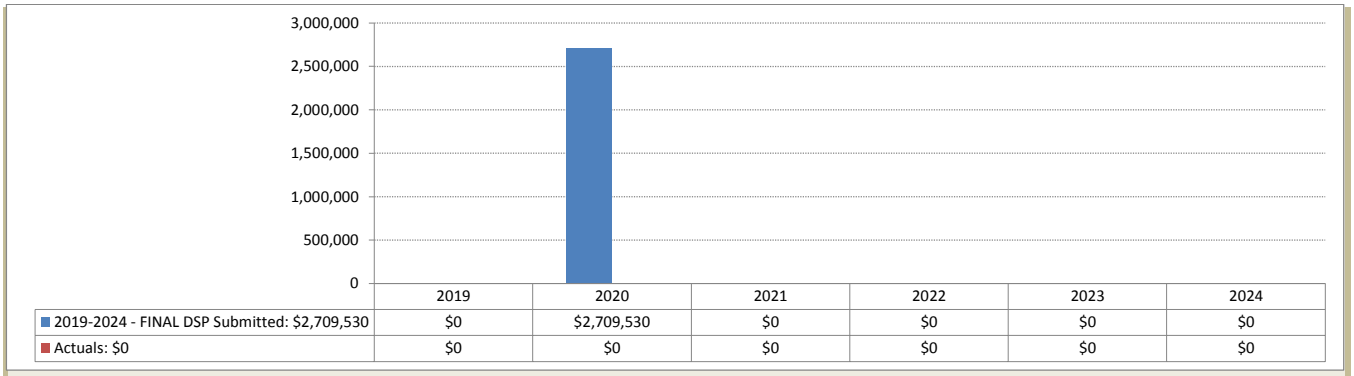
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $5,475,260	$0	$0	$0	$3,054,088	$2,421,172	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code		151141
Project Name		Cable Replacement and Transformers replacement - Project - Windjammer, Mississauga
Major Category		System Renewal
Scenario		2019-2024 - FINAL DSP Submitted
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	Subdivision in the Winston Churchill Blvd and The College Way area.
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation –Replacement
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will replace failing direct-buried Cross-Linked Polyethylene (XLPE) cables and cable accesories with new cable in conduit and will mitigate outage frequencies to customers.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	"Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults."
	Customer Attachment / Load (KVA)	Total connected transformation totals 3587kVA
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensures all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under reactive capital. This would lead to an unacceptable level of outages and customer satisfaction.
	Alternative #1	Perform the replacement in this area.
	Alternative #2	Injection of the cables - these cable segemnts are not technically viable for injection.

	Justification for Recommended Alternative	"This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures,Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable replacement as the method for remediation (injection is not technically feasible for the segments within this project)."
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has a multi-year Master Service Agreement with the cable injection contractor. The unit prices are kept constant during the term of the Master Service Agreement. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Similar projects would include - BoughBeeches for $2MM, Gananoque for $2.5MM
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Under this option, the underground cables will continue to experience faults and will lead to power outages, resulting in deteriorating service reliability for the area. It is also possible that the cable may no longer be repairable and useable which poses a significant amount of operational risk and cost to Alectra Utilities. Reactive repair of cables in an emergency situation is very time consuming and costly. Given the history of cables failing in this area, Alectra Utilities has determined the looped supply cables, which provide an alternative supply upon a system fault, are also no longer reliable. Based on recently increasing failure trends in the area, Alectra Utilities anticipates further failures in the near term. In addition, continued failure of this cable may result in the cable and elbows being ultimately inoperable and would require substantial resources to replace segments in an emergency manner.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this area is 45 years old (installed in 1971), which exceeds the Kinectrics Report ""Asset Amortization Study for the Ontario Energy Board"" results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	40
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	This area has seen 32 cable faults since 2005, 9 of those failures in the last 3 years. One cable segement has seen seven (7) cable failures, two (2) other segments have seen three (3) cables failures, five (5) segments have seen 2 failures, and several others with 1 cable fault.
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	This project will address aging assets that are experiencing failures. Furthermore, transformers well beyond their useful life with greater risk of failure will also be replaced. This renewal investment will provide customers in this area with better reliability.
	Value of Customer Impact	Medium
	Factors Affecting Project Timing, if any	Local approvals and weather.
	Consequences for O&M System Costs Including Implications of Not Implementing	• O&M Cost for emergency cable failure repair = $20,000 per failure • O&M Cost for 1 cable failure repairs = $20,000 x 1 = $20,000.
	Reliability and Safety Factors	Reliability benefits are found in the form of installing duct structure where none exists today, minimizing outage time for future interruptions and reducing capital costs for future asset renewal projects.
	Analysis for "Like for Like" Renewal Project	When the direct buried cable is replaced, the new cable will be installed according to new Standards - cable to be put in conduit. The conduit provides additional mechanical protection for the cable. In addition it will also facilitate for future cable replacement (faulted cable can be pulled out and new cable be pulled in, no digging is required). .



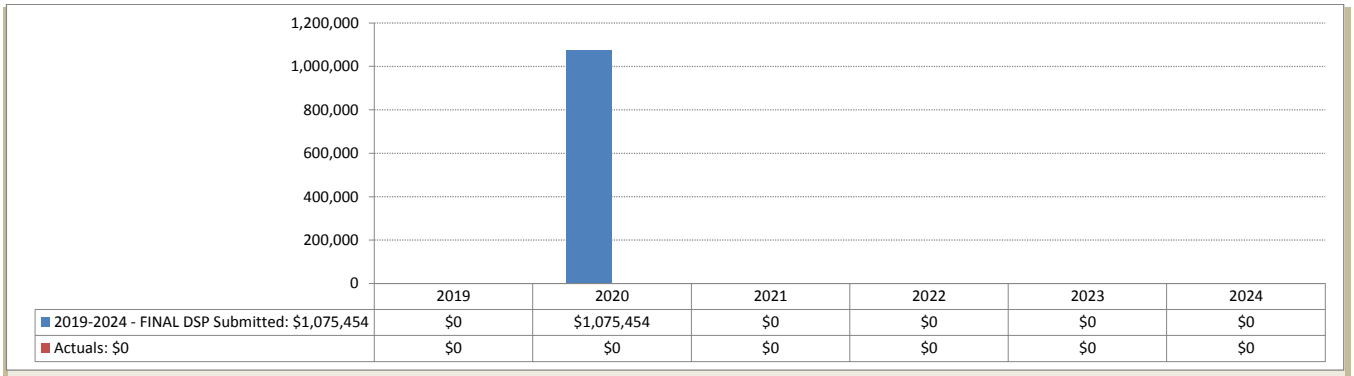
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $2,709,530	$0	$2,709,530	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151143	
Project Name	Cable Replacement and Transformers Replacement -Project - Shelter Bay Rd. Mississauga	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	Area of Winston Churchull Blvd. , Aquitane Ave, Shelter Bay Road, and Derry Road West.
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation –Replacement
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will replace failing direct-buried Cross-Linked Polyethylene (XLPE) cables and cable accesories with new cable in conduit and will mitigate outage frequencies to customers.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	"Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults." .
	Customer Attachment / Load (KVA)	Total connected transformation totals 2025kVA
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensures all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Keep the cable in place and fix any defective section as reactive work.
	Alternative #1	Only replace the cables which have had failures. And inject the other segments.
	Alternative #2	Replace all the transformers not just those over typical useful life

	Justification for Recommended Alternative	"This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures,Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable replacement as the method for remediation (injection is not technically feasible for the segments within this project)."
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has a multi-year Master Service Agreement with the cable injection contractor. The unit prices are kept constant during the term of the Master Service Agreement. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	This project is significantly smaller in size to the closest comparators. Appledore $1.8MM.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Under this option, the underground cables will continue to experience faults and will lead to power outages, resulting in deteriorating service reliability for the area. It is also possible that the cable may no longer be repairable and useable which poses a significant amount of operational risk and cost to Alectra Utilities. Reactive repair of cables in an emergency situation is very time consuming and costly. Given the history of cables failing in this area, Alectra Utilities has determined the looped supply cables, which provide an alternative supply upon a system fault, are also no longer reliable. Based on recently increasing failure trends in the area, Alectra Utilities anticipates further failures in the near term. In addition, continued failure of this cable may result in the cable and elbows being ultimately inoperable and would require substantial resources to replace segments in an emergency manner.
	Condition of Asset vs. Typical Life Cycle and Performance Record	The 7 transformers being replaced have an average age of 37 years, average health index of 46%. However, when pulling the elbows based on the age many of the bushing will be prone to failure. Average age of the cable is 37 years, well beyond the life expectancy for Non-TR XLPE.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	30
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	This area has seen 16 cable faults since 2005, 4 of those failures in the last 3 years. One cable segement has seen three (4) cable failures, four (4) other segments have seen two (2) cables failures, and several others with 1 cable fault.
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	This project will address aging assets that are experiencing failures. Furthermore, transformers well beyond their useful life with greater risk of failure will also be replaced. This renewal investment will provide customers in this area with better reliability.
	Value of Customer Impact	Medium
	Factors Affecting Project Timing, if any	Local approvals and weather
	Consequences for O&M System Costs Including Implications of Not Implementing	This project will have no material impact on planned O&M costs.
	Reliability and Safety Factors	Reliability benefits are found in the form of installing duct structure where none exists today, minimizing outage time for future interruptions and reducing capital costs for future asset renewal projects.
	Analysis for "Like for Like" Renewal Project	When the direct buried cable is replaced, the new cable will be installed according to new Standards - cable to be put in conduit. The conduit provides additional mechanical protection for the cable. In addition it will also facilitate for future cable replacement (faulted cable can be pulled out and new cable be pulled in, no digging is required).



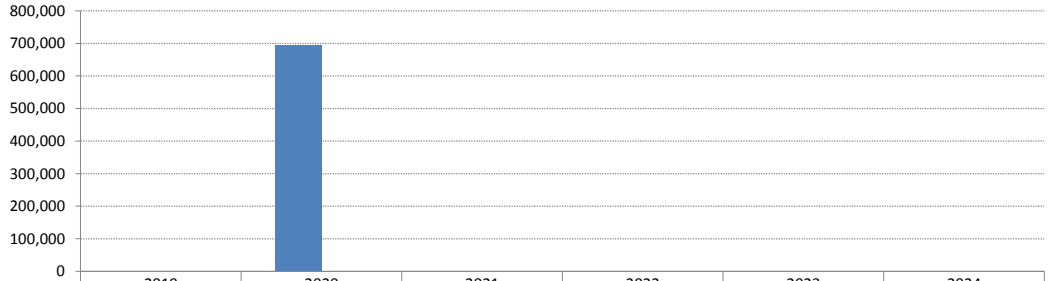
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,075,454	$0	$1,075,454	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151145	
Project Name	Cable Replacement Project - Bough Beeches Blvd.	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	Area of BoughBeeches Blvd., the Hydro One Right of Way, Claypine Rise and Beechknoll Ave.
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation –Replacement
4. Evaluation Criteria (OEB)	Project Summary	Replacing 3 transformers which are well beyond typical useful life (average age of 44 years), and rebuilding the subdivison with all cables in duct. This area has seen 12 cable faults since 2005, 4 of those failures in the last 3 years. Three (3) cable segement has seen three (3) cable failures, and several others with 1 cable fault. Additional redundency will be built in during the rebuild to provide flexiabilty for outage management in the future.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	This area has seen 12 cable faults since 2005, 4 of those failures in the last 3 years. Three (3) cable segement has seen three (3) cable failures, and several others with 1 cable fault.
	Customer Attachment / Load (KVA)	Total connected transformation totals 1025kVA
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensures all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Keep the cable in place and fix any defective section as reactive work.
	Alternative #1	Only replace the cables which have had failures. And inject the other segments.
	Alternative #2	Replace all the transformers not just those over typical useful life
	Justification for Recommended Alternative	Base on the existing data and past expierence by replacing the whole cable , it would prove to be the best and most economical solution in the long run. Since this subdivision was built at the same time, replacing only certain segments would not prevent cable faults on the non-replaced segments which would still have a high likely hood of failure. Alectra Mississauga has in the past reviewed the possibility of rehabilitating the cable with cable injection technology but has determined that this location was not a candidate due to the higher number of cable faults, large portion of solid type conductors, which cannot be injected, high probability of corroded neutrals, and uncertainty of the large number of splice locations in the area. Upon the investigation of 124 cable faults in 2014-2015, 62.1% of the failed cables were solid conductors, thus, cable injection is not a possibility for these types of cables. Moreover, 95.2% of the failed cables were direct buried (not in ducts) and unjacketed; some of these outages were the result of corroded neutrals. Replacing all the transformers is not economical as some have resently been replaced and others are still in good condition.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Alectra Utilities considers the following as general risks to project schedule and cost: - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	This project is significantly smaller in size to the closest comparators. Appledore $1.8MM.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0

7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Under this option, the underground cables will continue to experience faults and will lead to power outages, resulting in deteriorating service reliability for the area. It is also possible that the cable may no longer be repairable and useable which poses a significant amount of operational risk and cost to Alectra Utilities. Reactive repair of cables in an emergency situation is very time consuming and costly. Given the history of cables failing in this area, Alectra Utilities has determined the looped supply cables, which provide an alternative supply upon a system fault, are also no longer reliable. Based on recently increasing failure trends in the area, Alectra Utilities anticipates further failures in the near term. In addition, continued failure of this cable may result in the cable and elbows being ultimately inoperable and would require substantial resources to replace segments in an emergency manner.
	Condition of Asset vs. Typical Life Cycle and Performance Record	The 3 transformers being replaced have an average age of 44 years, average health index of 54%. However, when pulling the elbows based on the age many of the bushing will be prone to failure. Average age of the cable is 37 years, well beyond the life expectancy for Non-TR XLPE.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	20
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	This area has seen 12 cable faults since 2005, 4 of those failures in the last 3 years. Three (3) cable segement has seen three (3) cable failures, and several others with 1 cable fault.
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	This project will address aging assets that are experiencing failures. Furthermore, transformers well beyond their useful life with greater risk of failure will also be replaced. This renewal investment will provide customers in this area with better reliability.
	Value of Customer Impact	Medium
	Factors Affecting Project Timing, if any	Not Applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	This project will have no material impact on planned O&M costs.
	Reliability and Safety Factors	Reliability benefits are found in the form of installing duct structure where none exists today, minimizing outage time for future interruptions and reducing capital costs for future asset renewal projects.
	Analysis for "Like for Like" Renewal Project	Like for like renewal would address the issue of equipment failure due to end-of-life assets in the area, but there is no system benefit in rebuilding the fedeer as "direct buried". Future replacment would be more costly then the additonal cost to place in duct now.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $694,362	$0	$694,362	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151150
Project Name	Fleet East Vehicle replacement - SUV
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North & South
	Location	
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities' workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities' employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Vehicles are the workplace for over 60% of Alectra Utilities' workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities' employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations. Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	Improvments to engine emmisions with newer models, which could count towards Environmental Benefits.

5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	Replacement Assessment Criteria - Light Duty Vehicles: Assessed at 7 years and every year after, and/or high mileage (excess of 150,000 km) Replacement schedule: at 7 years, (150,000 km). Medium Duty Vehicles: Assessed at 10 years and every year after, and/or high mileage (excess of 250,000 km) Replacement schedule: at 10 years, (250,000 km). Heavy Duty Vehicles: Assessed at 12-year service, and every year after, and/or high mileage (excess of 500,000 km) High engine hours (excess of 12,000 engine hours)
	Alternative #2	Not applicable
	Justification for Recommended Alternative	Units have met the replacement guidelines by 2016 - 2021
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: • Fleet Management as the initiative lead and accountability • SCM Operations Director reviews and approves replacement recommendations • Key management stakeholder support across the organization to define business requirements • Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. • Corporate Commitment to approved Capital and Operating Budgets required • Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	RFP process will be followed for best value. Historical spend tracked from all regions
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements

	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $40,596	$0	$0	$0	$0	$0	$40,596
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

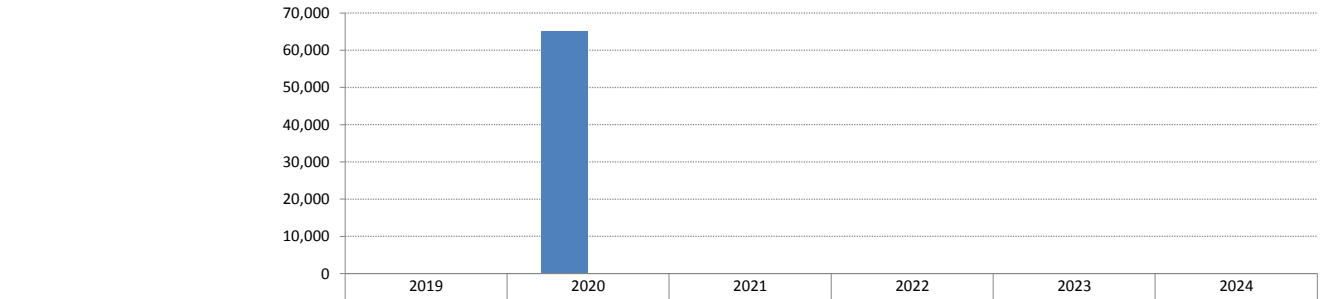
OEB Multi-Project Report

Project Code	151155
Project Name	Fleet_Central South Vehicle Replacement-Pick ups
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 45811 will be a projected 9 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $65,000	$0	$65,000	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

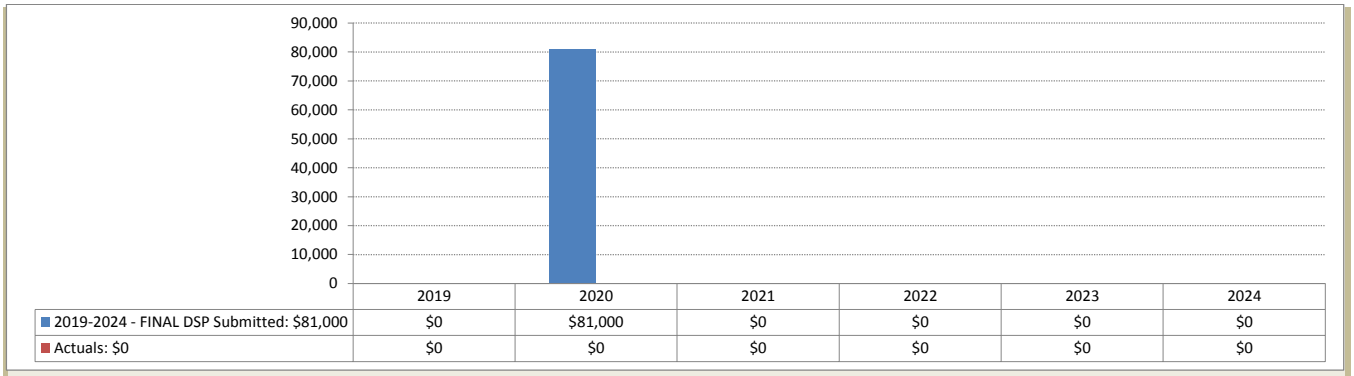
OEB Multi-Project Report

Project Code	151158
Project Name	Fleet_Central South_Vehicle Replacement -Vans
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units , 503-09, 509-09, will be a projected 10-15 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, 1-370, 503-09, 509-09, 520-04 , will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	Light Duty Vehicles: Assessed at 7 years and every year after, and/or high mileage (excess of 150,000 km) Replacement schedule: at 7 years, (150,000 km). Medium Duty Vehicles: Assessed at 10 years and every year after, and/or high mileage (excess of 250,000 km) Replacement schedule: at 10 years, (250,000 km). Heavy Duty Vehicles: Assessed at 12-year service, and every year after, and/or high mileage (excess of 500,000 km) High engine hours (excess of 12,000 engine hours) Trailer replacement will follow the same core principles as the vehicle replacement criteria with the following differences: Assessed at 15-year service When assessing trailer conditions, trailers will be refurbished rather than replaced. Where trailers cannot be refurbished due to application change or condition, trailers will be flagged for replacement.Replacement/Refurbishment: 15 years.
	Alternative #2	N/A
	Justification for Recommended Alternative	N/A
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational Improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $81,000	$0	$81,000	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

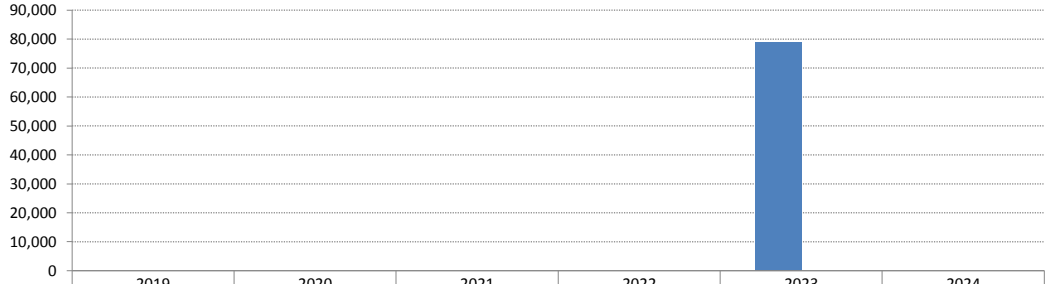
OEB Multi-Project Report

Project Code	151160
Project Name	Fleet_West_Vehicle Replacement_ Pole Trailer_1-405
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Hamilton
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: • Manufacturing Standards • Industry Standards • Non Industry Standards • Vehicle Operational Conditions • Vehicle Age • Vehicle Total Mileage • Highway Traffic Act (“HTA”) • Canadian Motor Vehicle Safety Standards (“CMVSS) • All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment • Motor Vehicle Inspection Station (“MVIS”) requirements • Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable • Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 1-402, 1-403, 1-404, 1-405 will be a projected 30 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	Replacement Assessment Criteria - Light Duty Vehicles: Assessed at 7 years and every year after, and/or high mileage (excess of 150,000 km) Replacement schedule: at 7 years, (150,000 km). Medium Duty Vehicles: Assessed at 10 years and every year after, and/or high mileage (excess of 250,000 km) Replacement schedule: at 10 years, (250,000 km). Heavy Duty Vehicles: Assessed at 12-year service, and every year after, and/or high mileage (excess of 500,000 km) High engine hours (excess of 12,000 engine hours)
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/ARFP processed will be followed for best value. Historical spend tracked from all regions
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



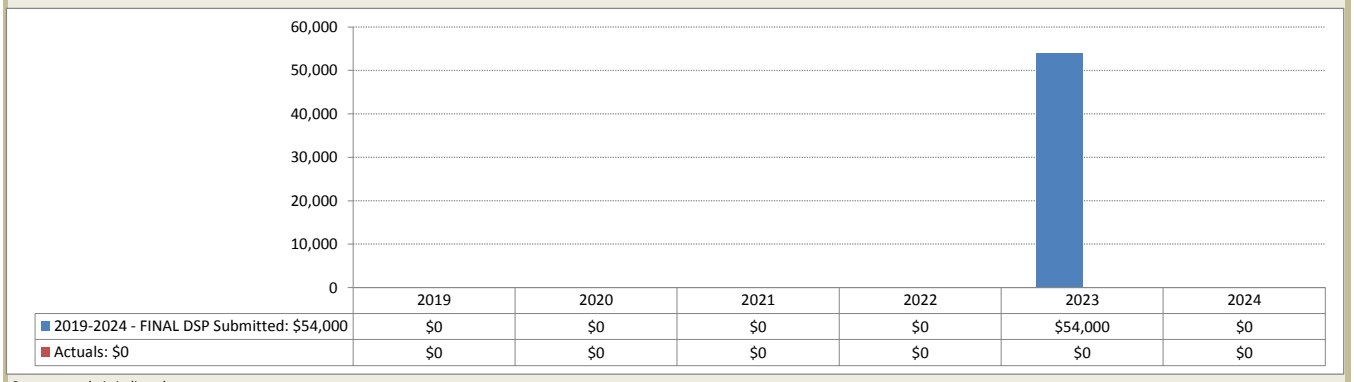
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $79,000	$0	$0	$0	$0	$79,000	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151166	
Project Name	Fleet_ Central North Vehicle Replacement_pick ups	
Major Category	General Plant	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 8815, will be a projected 7 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $54,000	$0	$0	$0	$0	$54,000	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

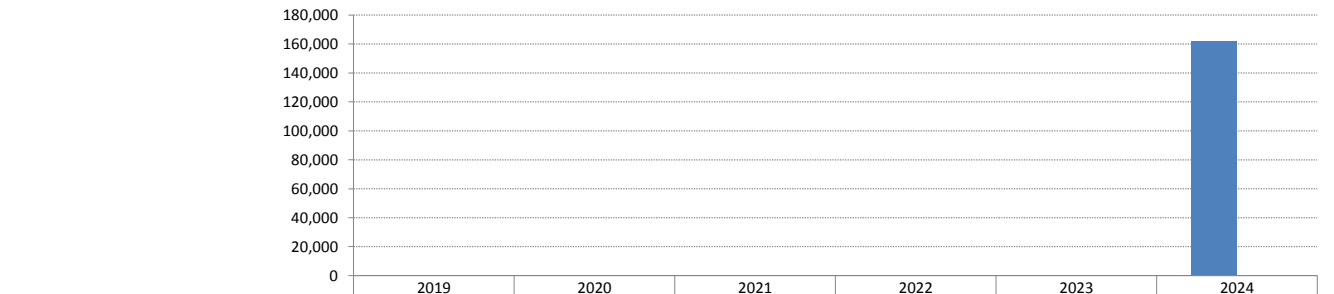
OEB Multi-Project Report

Project Code	151167
Project Name	Fleet_Central South Vehicle Replacement-Pick ups
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Units 401-15, 412-15, 414-15 will be a projected 8-9 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	N/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $162,000	$0	$0	$0	$0	$0	$162,000
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

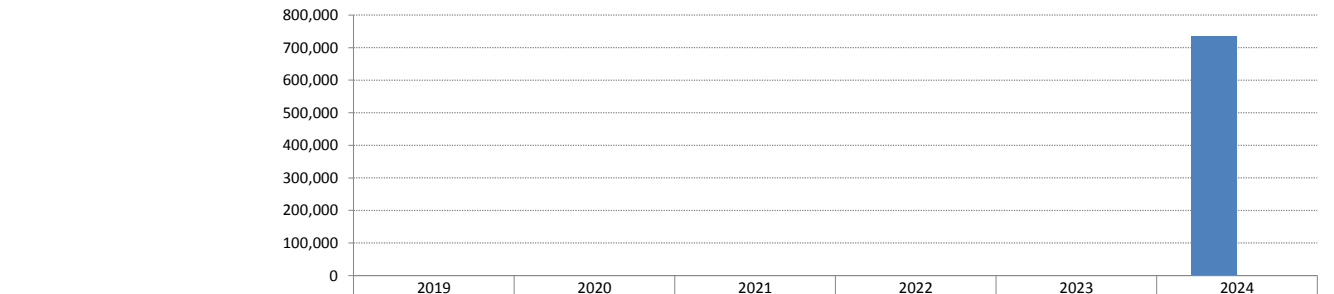
OEB Multi-Project Report

Project Code	151168
Project Name	Fleet_Central South Vehicle Replacement-Step Vans
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Fleet Renewal
	Alectra Subcategory	Fleet
4. Evaluation Criteria (OEB)	Project Summary	Every year vehicles are identified for replacement according to Alectra Utilities Fleet Replacement Plan and a capital budget is requested. The vehicle replacement follows predetermined replacement criteria as outlined in the Fleet Replacement Plan. The replacement criteria are based on the following guidelines: •Manufacturing Standards •Industry Standards •Non Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (“HTA”) •Canadian Motor Vehicle Safety Standards (“CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (“MVIS”) requirements •Electrical & Utility Safety Association (“E&USA Rule Book”) where applicable •Corporate Health & Safety and Environmental Policies A “first pass” screening process is used based on vehicle age at which time, mileage, engine hours, utilization and power take off (“PTO”) hours are documented. This provides a baseline to initiate the capital replacement process. During this time, vehicle utilization is also reviewed and discussions will take place with Business Unit (“BU”) Managers/Directors on whether a vehicle should be retained, re-allocated or replaced with the same class of vehicle or a completely different vehicle configuration. Unit 312-12 ,316-12 322-13 will be a projected 10 years in service when decommissioned. Parts availability is low due to the overall age of this unit and will continue to decline as time progresses. Repairs costs will continue to increase, unit reliability, and lower availability of parts will contribute in the reduction of vehicle availability, decreasing productivity and challenging planning and scheduling. The replacement unit will be ordered turn key, once completed, the old units, will be taken out of service and disposed per Alectra policy.
	Main Driver - General Plant	Capital Investment Support
	Priority and Reasons for Priority	Vehicle availability is critical to keeping operational cost in control, increased productivity and a contributor to positive employee engagement. Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. The capital budget required for the next five years will ensure the replacement of vehicles that have surpass the vehicles life spend. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Customer Attachment / Load (KVA)	N/A
	Safety	Vehicles are the workplace for over 60% of Alectra Utilities’ workforce. Providing and maintaining a safe and reliable fleet, is key to building a better workplace for Alectra Utilities’ employees and providing them with the tools required to provide service to Alectra Utilities customers and meet their expectations.
	Cyber-Security, Privacy	N/A

	Coordination, Interoperability	Alectra's five-year vehicle replacement plan is based on the following criteria guidelines: •Manufacturing Standards •Industry Standards •Non-Industry Standards •Vehicle Operational Conditions •Vehicle Age •Vehicle Total Mileage •Highway Traffic Act (HTA) •Canadian Motor Vehicle Safety Standards (CMVSS) •All related CSA standards, specifically those that relate to aerial devices and hydraulic equipment •Motor Vehicle Inspection Station (MVIS) requirements •Infrastructure Health & Safety Association (IHSA) of Ontario, where applicable •Corporate Health & Safety and Environmental Policies
	Economic Development	Vehicle purchases contribute to the economy by supporting the creation and support of jobs at automakers, car dealers, parts suppliers, and mechanical trade workers.
	Environmental Benefits	New vehicles reduce emissions, gas consumption
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Due to budget mitigation efforts during the last few years, a number of vehicles scheduled for replacement were kept in operation and rescheduled for replacement in future years. As a result, many of Alectra vehicles should have been replaced within the last five years. It is now critical that these vehicles be replaced as maintenance and repairs costs have increased and the vehicles no longer operate at full capacity, reducing vehicle availability, impacting service delivery and most importantly causing potential safety concern for our employees and the public. Regular vehicle replacement is necessary to avoid undue vehicle down and associated negative impacts to customer response time and employee productivity.
	Alternative #1	N/A
	Alternative #2	None
	Justification for Recommended Alternative	N/a
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Vehicle availability & reliability Employee and public safety Increasing systems outages response timelines to support customers. The reliable, availability and safe fleet operations will also rely on: •Fleet Management as the initiative lead and accountability •SCM Operations Director reviews and approves replacement recommendations •Key management stakeholder support across the organization to define business requirements •Vehicles may be replaced by different models or types based on changes to operations, corporate initiatives and customer requirements. •Corporate Commitment to approved Capital and Operating Budgets required •Any emerging requirements of the organization may change the planned replacement of vehicles such as changes to the resources plan and required budget mitigation efforts
	Comparative Information on Equivalent Historical Projects (if any)	n/A
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	Operational improvements



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $735,000	$0	$0	$0	$0	$0	$735,000
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

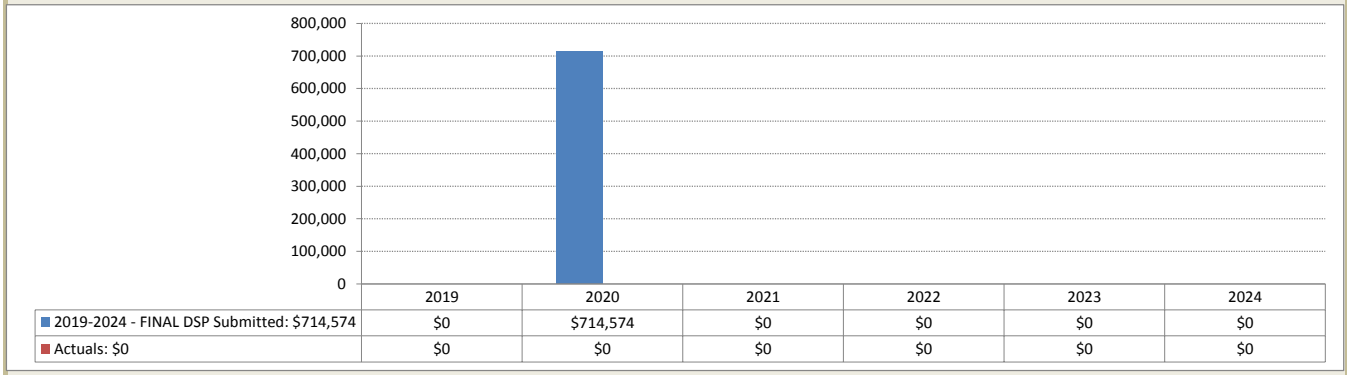
OEB Multi-Project Report

Project Code	151178
Project Name	Cable Replacement Project - Mason Heights
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	Area between Dundas st., Paisley blvd. and Stillmeadow Rd.
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation –Replacement
4. Evaluation Criteria (OEB)	Project Summary	Replacing 8 transformers which are well beyond typical useful life (30 years), and rebuilding the subdivison with all cables in duct. This area has seen 10 cable faults since 2011, 4 of those failures in the last 3 years. One cable segement has seen four (4) cable failures, two (2) other segments have seen two (2) cables failures, and several others with 1 cable fault.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	This area has seen 10 cable faults since 2011, 4 of those failures in the last 3 years. One cable segement has seen four (4) cable failures, two (2) other segments have seen two (2) cables failures, and several others with 1 cable fault.
	Customer Attachment / Load (KVA)	Total connected transformation totals 1125kVA
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensures all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Keep the cable in place and fix any defective section as reactive work.
	Alternative #1	Only replace the cables which have had failures. And inject the other segments.
	Alternative #2	Replace all cables in the area with new cables in duct, and replace all the transformers not just those over typical useful life and in worst condition.
	Justification for Recommended Alternative	Base on the existing data and past expierence by replacing the whole cable , it would prove to be the best and most economical solution in the long run. Since this subdivision was built at the same time, replacing only certain segments would not prevent cable faults on the non-replaced segments which would still have a high likely hood of failure. Alectra Mississauga has in the past reviewed the possibility of rehabilitating the cable with cable injection technology but has determined that this location was not a candidate due to the higher number of cable faults, large portion of solid type conductors, which cannot be injected, high probability of corroded neutrals, and uncertainty of the large number of splice locations in the area. Upon the investigation of 124 cable faults in 2014-2015, 62.1% of the failed cables were solid conductors, thus, cable injection is not a possibility for these types of cables. Moreover, 95.2% of the failed cables were direct buried (not in ducts) and unjacketed; some of these outages were the result of corroded neutrals. Replacing all the transformers is not economical as some have resently been replaced and others are still in good condition.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has multi-year Master Service Agreement with external contractors. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.

	Comparative Information on Equivalent Historical Projects (if any)	This project is significantly smaller in size to the closest comparators. Appledore $1.8MM.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Without investment the underground cables will continue to experience faults and will lead to power outages, resulting in deteriorating service reliability for the area. It is also possible that the cable may no longer be repairable and useable which poses a significant amount of operational risk and cost to Alectra Utilities. Reactive repair of cables in an emergency situation is very time consuming and costly. Given the history of cables failing in this area, Alectra Utilities has determined the looped supply cables, which provide an alternative supply upon a system fault, are also no longer reliable. Based on recently increasing failure trends in the area, Alectra Utilities anticipates further failures in the near term. In addition, continued failure of this cable may result in the cable and elbows being ultimately inoperable and would require substantial resources to replace segments in an emergency manner.
	Condition of Asset vs. Typical Life Cycle and Performance Record	The 8 transformers being replaced have an average age of 32 years, average health index of 65%. However, when pulling the elbows based on the age many of the bushing will be prone to failure. Average age of the cable is 39years, well beyond the life expectancy for Non-TR XLPE.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	40
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	This area has seen 10 cable faults since 2011, 4 of those failures in the last 3 years. One cable segement has seen four (4) cable failures, two (2) other segments have seen two (2) cables failures, and several others with 1 cable fault.
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	This project will address aging assets that are experiencing failures. Furthermore, transformers well beyond their useful life with greater risk of failure will also be replaced. This renewal investment will provide customers in this area with better reliability.
	Value of Customer Impact	Medium
	Factors Affecting Project Timing, if any	Not Applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	This project will have no material impact on planned O&M costs.
	Reliability and Safety Factors	Reliability benefits are found in the form of installing duct structure where none exists today, minimizing outage time for future interruptions and reducing capital costs for future asset renewal projects.
	Analysis for "Like for Like" Renewal Project	Like for like renewal would address the issue of equipment failure due to end-of-life assets in the area, but there is no system benefit in rebuilding the fedeer as "direct buried". Future replacment would be more costly then the additonal cost to place in duct now.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $714,574	$0	$714,574	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

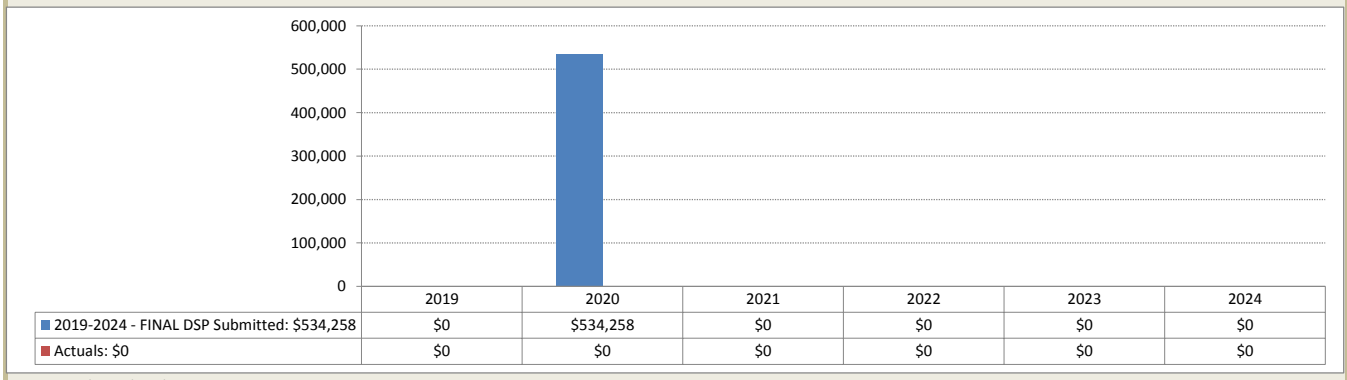
OEB Multi-Project Report

Project Code	151179
Project Name	Cable Replacement Project - Area of Erin Mills Parkway and South Millway
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Mississauga
	Location	Area of SouthMillway and Erin Mills Parkway
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation –Replacement
4. Evaluation Criteria (OEB)	Project Summary	Replacing 6 transformers which are well beyond typical useful life (30 years), and rebuilding the subdivison with all cables in duct. This area has seen 11 cable faults since 2007, 5 of those failures in the last 3 years. One cable segement has seen three (3) cable failures, another segments has seen two (2) cables failures, and several others with 1 cable fault.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	This area has seen 11 cable faults since 2007, 5 of those failures in the last 3 years. One cable segement has seen three (3) cable failures, another segments has seen two (2) cables failures, and several others with 1 cable fault.
	Customer Attachment / Load (KVA)	Total connected transformation totals 1327.5kVA
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensures all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Keep the cable in place and fix any defective section as reactive work.
	Alternative #1	Only replace the cables which have had failures. And inject the other segments.
	Alternative #2	Replace all cables in the area with new cables in duct, and replace all the transformers not just those over typical useful life and in worst condition.
	Justification for Recommended Alternative	Base on the existing data and past expierence by replacing the whole cable , it would prove to be the best and most economical solution in the long run. Since this subdivision was built at the same time, replacing only certain segments would not prevent cable faults on the non-replaced segments which would still have a high likely hood of failure. Alectra Mississauga has in the past reviewed the possibility of rehabilitating the cable with cable injection technology but has determined that this location was not a candidate due to the higher number of cable faults, large portion of solid type conductors, which cannot be injected, high probability of corroded neutrals, and uncertainty of the large number of splice locations in the area. Upon the investigation of 124 cable faults in 2014-2015, 62.1% of the failed cables were solid conductors, thus, cable injection is not a possibility for these types of cables. Moreover, 95.2% of the failed cables were direct buried (not in ducts) and unjacketed; some of these outages were the result of corroded neutrals. Replacing all the transformers is not economical as some have recently been replaced and others are still in good condition.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Alectra Utilities considers the following as general risks to project schedule and cost: - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	This project is significantly smaller in size to the closest comparators. Appledore $1.8MM.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0

7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Without investment the underground cables will continue to experience faults and will lead to power outages, resulting in deteriorating service reliability for the area. It is also possible that the cable may no longer be repairable and useable which poses a significant amount of operational risk and cost to Alectra Utilities. Reactive repair of cables in an emergency situation is very time consuming and costly. Given the history of cables failing in this area, Alectra Utilities has determined the looped supply cables, which provide an alternative supply upon a system fault, are also no longer reliable. Based on recently increasing failure trends in the area, Alectra Utilities anticipates further failures in the near term. In addition, continued failure of this cable may result in the cable and elbows being ultimately inoperable and would require substantial resources to replace segments in an emergency manner.
	Condition of Asset vs. Typical Life Cycle and Performance Record	The 6 transformers being replaced have an average age of 35 years, average health index of 56%. However, when pulling the elbows based on the age many of the bushing will be prone to failure. Average age of the cable is 45 years, well beyond the life expectancy for Non-TR XLPE.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	40
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	This area has seen 11 cable faults since 2007, 5 of those failures in the last 3 years. One cable segement has seen three (3) cable failures, another segments has seen two (2) cables failures, and several others with 1 cable fault.
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	This project will address aging assets that are experiencing failures. Furthermore, transformers well beyond their useful life with greater risk of failure will also be replaced. This renewal investment will provide customers in this area with better reliability.
	Value of Customer Impact	Medium
	Factors Affecting Project Timing, if any	Not Applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	This project will have no material impact on planned O&M costs.
	Reliability and Safety Factors	Reliability benefits are found in the form of installing duct structure where none exists today, minimizing outage time for future interruptions and reducing capital costs for future asset renewal projects.
	Analysis for "Like for Like" Renewal Project	Like for like renewal would address the issue of equipment failure due to end-of-life assets in the area, but there is no system benefit in rebuilding the fedeer as "direct buried". Future replacment would be more costly then the additonal cost to place in duct now.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $534,258	$0	$534,258	$0	$0	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

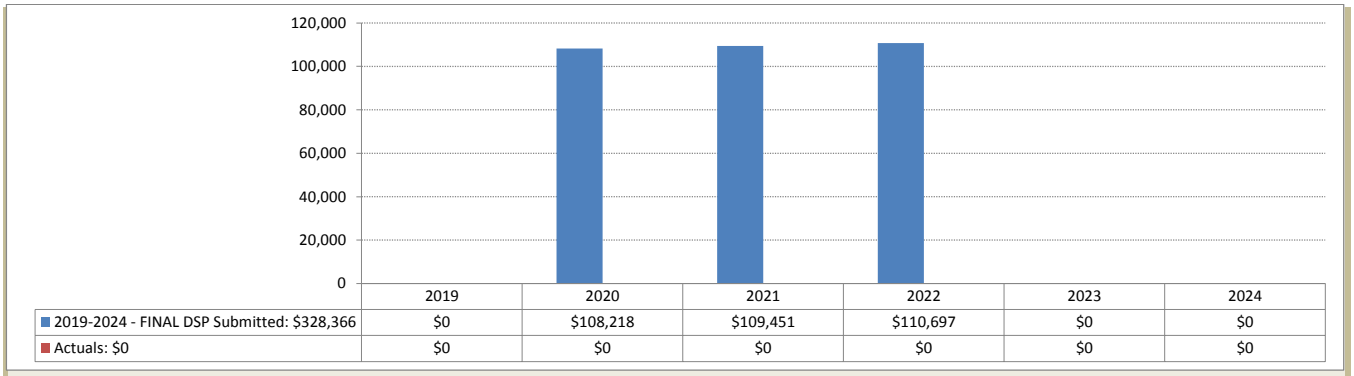
Currency scale is in literal

OEB Multi-Project Report

Project Code	151200
Project Name	Alectra Single Platform Website ongoing
Major Category	General Plant
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream North & South
	Location	
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	Yes
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Rates ID	Rate Base Funded
	Alectra Grouping	Information Technology Systems
	Alectra Subcategory	IT Operational
	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
4. Evaluation Criteria (OEB)	Project Summary	The project will enable Alectra to continuously leverage cutting-edge web technologies and incorporate additonal functionality that will provide optimum user/customer experience and further facilitate access to self-service options, account, power outage, conservation information and any other new endeavours Alectra undertakes that can captured/profiled online. It will enable Alectra to continue to position itself as an industry leader.
	Main Driver - General Plant	Customer Service
	Priority and Reasons for Priority	Aligns with the company's goal of being customer-focused while utilizing new technologies to be operationally more efficient and forward looking.
	Customer Attachment / Load (KVA)	not applicable
	Safety	
	Cyber-Security, Privacy	Additional funding will help to ensure cyber-security and customer privacy is maintained.
	Coordination, Interoperability	The additional funding will help the website align with another project being considered by Alectra Utilities in which an omni-channel approach will be taken to enhance the customer experience, regardless on the channel being used by the customer (i.e. website, phone, email, text, social media, etc.).
	Economic Development	Not applicable
	Environmental Benefits	The ability to offer customers additional and enhanced online services through desktop and mobile versions will reduce the need to print documents internally and thereby minimize the company's paper consumption and environmental footprint..
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Maintaining the status quo will hamstring further development of the website's and its ability to take advantage of new web technologies to better serve customers.
	Alternative #1	Not applicable
	Alternative #2	Provide additional funding to ensure further development of the website to better severe customers and enhance their online experience when dealing with the company
	Justification for Recommended Alternative	Alternative 2 is the recommended alternative to further improve customers online experience through the use of new web technologies.. This alternative also allows the company to leverage advanced design web technologies so that the company will be viewed as a leader in this area of serving customers.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Discussions will be held with all key stakeholders to ensure the latest in web technologies are being used maintain forward thinking and industry leading website.
	Comparative Information on Equivalent Historical Projects (if any)	
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Other Planning Objectives Met	The continuous pursuit of using advanced web technologies is consistent with the company's approach in other operational areas of its business whereby using technology to be more efficient and an enabler in providing additional service and value to customers. It is also consistent with the company's vision of being "Canada's leading electricity distribution and integrated energy solutions provider, creating a future where people, businesses, and communities will benefit from energy's full potential." In addition, it will help to facilitate the online presence of other internal stakeholders by providing better access to the website with more enhanced functionality.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $328,366	$0	$108,218	$109,451	$110,697	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

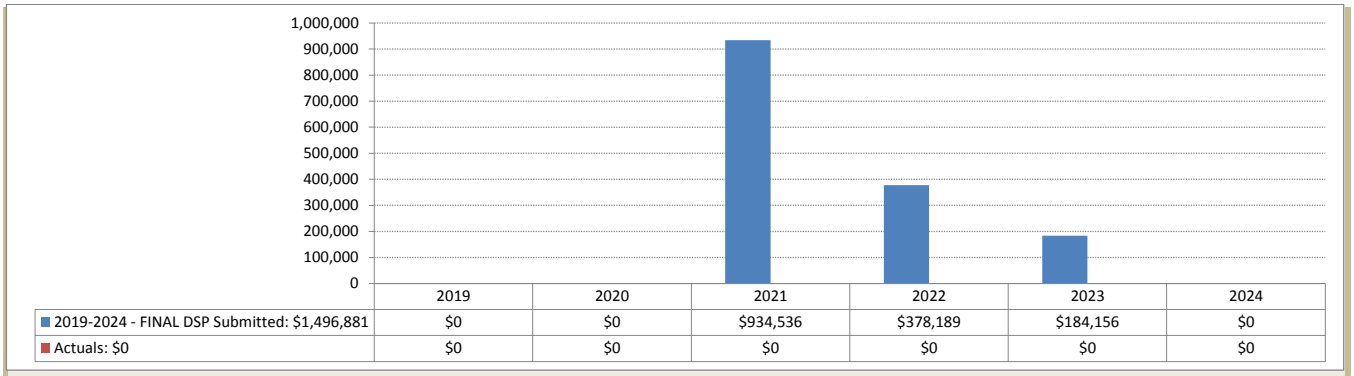
OEB Multi-Project Report

Project Code	151456
Project Name	Cable Injection Project - (V50) - Hwy 7 - Kipling - Steeles - Hwy 27, Vaughan
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	(V50) - Hwy 7 - Kipling - Steeles - Hwy 27, Vaughan
	Units	23946
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation – Injection
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will inject failing direct-buried Cross-Linked Polyethylene (XLPE) cables and will mitigate outage frequencies to customers.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults.
	Customer Attachment / Load (KVA)	Not Applicable.
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under emergency condition.
	Alternative #1	Perform the injection in this area.

	Alternative #2	Replace the cable - this will be a higher cost and is not the preferred approach as injections can be performed in this area.
	Justification for Recommended Alternative	This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures, Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable injection as the method for remediation (injection is technically feasible for the segments within this project).
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has a multi-year Master Service Agreement with the cable injection contractor. The unit prices are kept constant during the term of the Master Service Agreement. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Similar cable injection projects over the past three years (2016, 2017, and 2018) were $78/m. This project is forecasted to be $63/m. The difference is based on the assumption that this project is less complicated (has fewer splices to replace) than projects already completed in prior years.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	In this area, there were 4 cable and splice failures since 2013. If not rehabilitated, this cable will get older and will fail more often to the level that is not tolerable by customers.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this area is 32 years old (installed in 1987), which exceeds the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board" results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	1811
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	For 1000 m of cable (applicable to the selected cable remediation candidates): Frequency of Failure is: 0.25 failures per 1000 m of cable per year For 23946 m of cable in the whole area: Frequency of Failure is: 0.25 x 23946 /1000 = 5.9 failure(s) According to Alectra East Control Room data, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). Annually on average there were 128 Cable and Splice failures affecting 39,280 customers and 5,520,782 CMI Impact of 1 failure: 39,280/128 = 307 customers affected and 5,520,782/128 = 43,131 CMI Impact of 5.9 failures: 307 x 5.9 = 1811 customers affected and 43,131 x 5.9 = 254473 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Not Applicable.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable.
	Reliability and Safety Factors	This project is part of the long-term cable rehabilitation program. The project will help avoid a total of 5.9 potential cable failures and 254473 potential CMI.
	Analysis for "Like for Like" Renewal Project	Not Applicable.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,496,881	$0	$0	$934,536	$378,189	$184,156	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

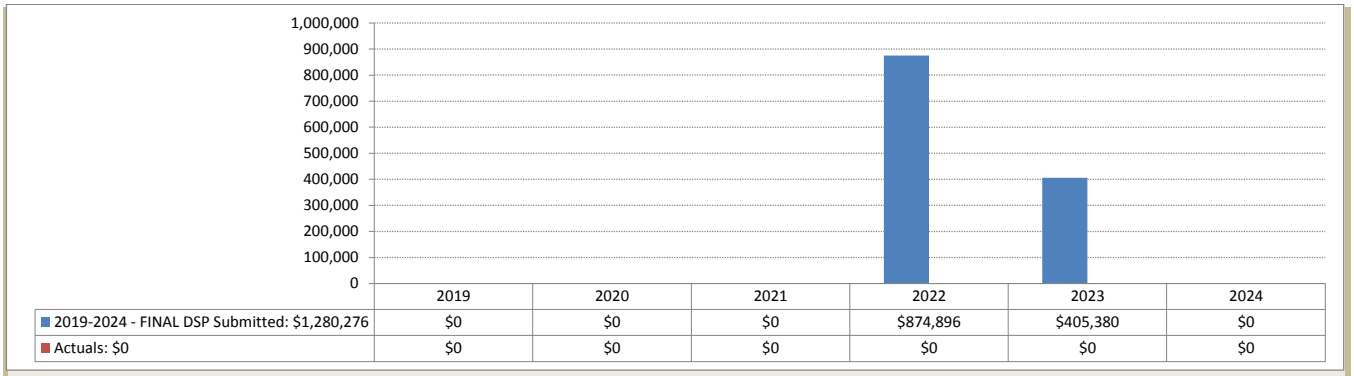
OEB Multi-Project Report

Project Code	151457
Project Name	Cable Injection Project - (V25) - Major Mackenzie - Keele - Rutherford - Jane, Vaughan
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	(V25) - Major Mackenzie - Keele - Rutherford - Jane, Vaughan
	Units	20481
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation – Injection
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will inject failing direct-buried Cross-Linked Polyethylene (XLPE) cables and will mitigate outage frequencies to customers.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults.
	Customer Attachment / Load (KVA)	Not Applicable.
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under emergency condition.
	Alternative #1	Perform the injection in this area.

	Alternative #2	Replace the cable - this will be a higher cost and is not the preferred approach as injections can be performed in this area.
	Justification for Recommended Alternative	This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures, Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable injection as the method for remediation (injection is technically feasible for the segments within this project).
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has a multi-year Master Service Agreement with the cable injection contractor. The unit prices are kept constant during the term of the Master Service Agreement. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Similar cable injection projects over the past three years (2016, 2017, and 2018) were $78/m. This project is forecasted to be $63/m. The difference is based on the assumption that this project is less complicated (has fewer splices to replace) than projects already completed in prior years.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	In this area, there were 3 cable and splice failures since 2013. If not rehabilitated, this cable will get older and will fail more often to the level that is not tolerable by customers.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this area is 32 years old (installed in 1987), which exceeds the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board" results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	1566
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	For 1000 m of cable (applicable to the selected cable remediation candidates): Frequency of Failure is: 0.25 failures per 1000 m of cable per year For 20481 m of cable in the whole area: Frequency of Failure is: 0.25 x 20481 /1000 = 5.1 failure(s) According to Alectra East Control Room data, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). Annually on average there were 128 Cable and Splice failures affecting 39,280 customers and 5,520,782 CMI Impact of 1 failure: 39,280/128 = 307 customers affected and 5,520,782/128 = 43,131 CMI Impact of 5.1 failures: 307 x 5.1 = 1566 customers affected and 43,131 x 5.1 = 219968 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Not Applicable.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable.
	Reliability and Safety Factors	This project is part of the long-term cable rehabilitation program. The project will help avoid a total of 5.1 potential cable failures and 219968 potential CMI.
	Analysis for "Like for Like" Renewal Project	Not Applicable.



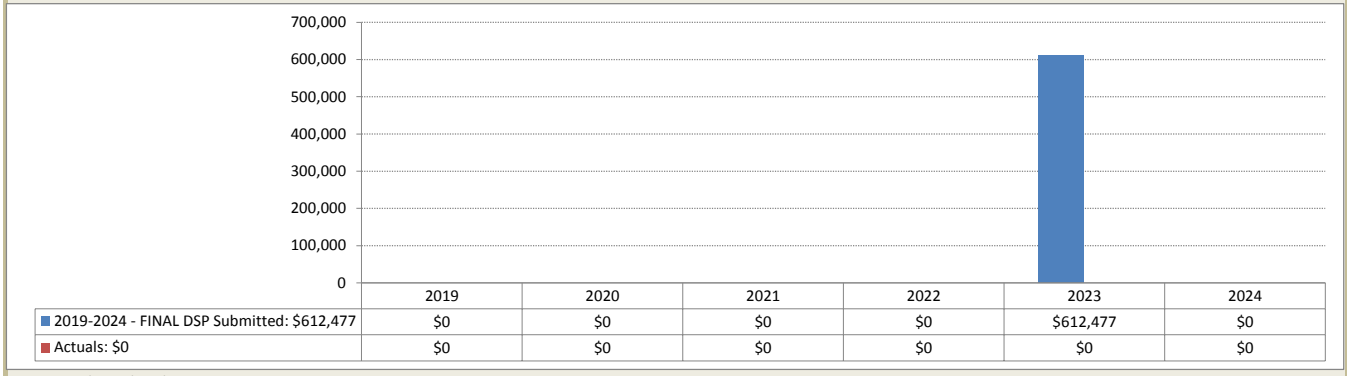
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,280,276	$0	$0	$0	$874,896	$405,380	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151458	
Project Name	Cable Injection Project - (V31) - Langstaff - Weston - Rutherford - Jane, Vaughan	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	(V31) - Langstaff - Weston - Rutherford - Jane, Vaughan
	Units	9798
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation – Injection
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will inject failing direct-buried Cross-Linked Polyethylene (XLPE) cables and will mitigate outage frequencies to customers. 1 failure in that last 3 years.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults.
	Customer Attachment / Load (KVA)	1458kVA
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under emergency condition.
	Alternative #1	Perform the injection in this area.

	Alternative #2	Replace the cable - this will be a higher cost and is not the preferred approach as injections can be performed in this area.
	Justification for Recommended Alternative	This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures, Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable injection as the method for remediation (injection is technically feasible for the segments within this project).
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has a multi-year Master Service Agreement with the cable injection contractor. The unit prices are kept constant during the term of the Master Service Agreement. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Similar cable injection projects over the past three years (2016, 2017, and 2018) were $78/m. This project is forecasted to be $63/m. The difference is based on the assumption that this project is less complicated (has fewer splices to replace) than projects already completed in prior years.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	In this area, there were 1 cable and splice failures since 2013. If not rehabilitated, this cable will get older and will fail more often to the level that is not tolerable by customers.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this area is 31 years old (installed in 1988), which exceeds the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board" results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	737
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	For 1000 m of cable (applicable to the selected cable remediation candidates): Frequency of Failure is: 0.25 failures per 1000 m of cable per year For 9798 m of cable in the whole area: Frequency of Failure is: 0.25 x 9798 /1000 = 2.4 failure(s) According to Alectra East Control Room data, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). Annually on average there were 128 Cable and Splice failures affecting 39,280 customers and 5,520,782 CMI Impact of 1 failure: 39,280/128 = 307 customers affected and 5,520,782/128 = 43,131 CMI Impact of 2.4 failures: 307 x 2.4 = 737 customers affected and 43,131 x 2.4 = 103514 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Not Applicable.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable.
	Reliability and Safety Factors	The project will help avoid a total of 2.4 potential cable failures and 103514 potential CMI.
	Analysis for "Like for Like" Renewal Project	Not Applicable.



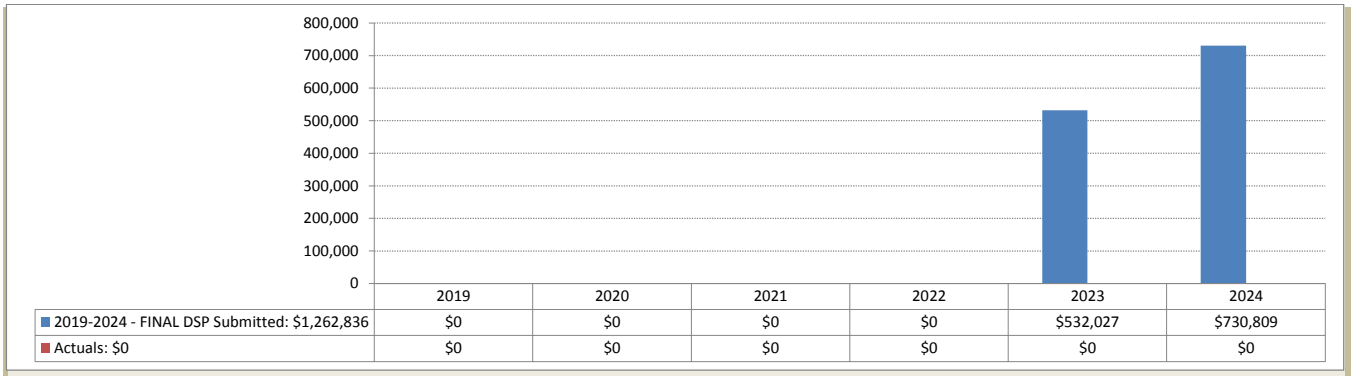
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $612,477	$0	$0	$0	$0	$612,477	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151459	
Project Name	Cable Injection Project - (V24) - Langstaff - Jane - Rutherford - Keele, Vaughan	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	(V24) - Langstaff - Jane - Rutherford - Keele, Vaughan
	Units	20202
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation – Injection
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will inject failing direct-buried Cross-Linked Polyethylene (XLPE) cables and will mitigate outage frequencies to customers.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults.
	Customer Attachment / Load (KVA)	Not Applicable.
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under emergency condition.
	Alternative #1	Perform the injection in this area.

	Alternative #2	Replace the cable - this will be a higher cost and is not the preferred approach as injections can be performed in this area.
	Justification for Recommended Alternative	This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures, Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable injection as the method for remediation (injection is technically feasible for the segments within this project).
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has a multi-year Master Service Agreement with the cable injection contractor. The unit prices are kept constant during the term of the Master Service Agreement. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Similar cable injection projects over the past three years (2016, 2017, and 2018) were $78/m. This project is forecasted to be $63/m. The difference is based on the assumption that this project is less complicated (has fewer splices to replace) than projects already completed in prior years.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	In this area, there were 2 cable and splice failures since 2013. If not rehabilitated, this cable will get older and will fail more often to the level that is not tolerable by customers.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this area is 31 years old (installed in 1988), which exceeds the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board" results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	1535
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	"For 1000 m of cable (applicable to the selected cable remediation candidates): Frequency of Failure is: 0.25 failures per 1000 m of cable per year For 20202 m of cable in the whole area: Frequency of Failure is: 0.25 x 20202 /1000 = 5 failure(s) According to Alectra East Control Room data, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). Annually on average there were 128 Cable and Splice failures affecting 39,280 customers and 5,520,782 CMI Impact of 1 failure: 39,280/128 = 307 customers affected and 5,520,782/128 = 43,131 CMI Impact of 5 failures: 307 x 5 = 1535 customers affected and 43,131 x 5 = 215655 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Not Applicable.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable.
	Reliability and Safety Factors	This project is part of the long-term cable rehabilitation program. The project will help avoid a total of 5 potential cable failures and 215655 potential CMI.
	Analysis for "Like for Like" Renewal Project	Not Applicable.



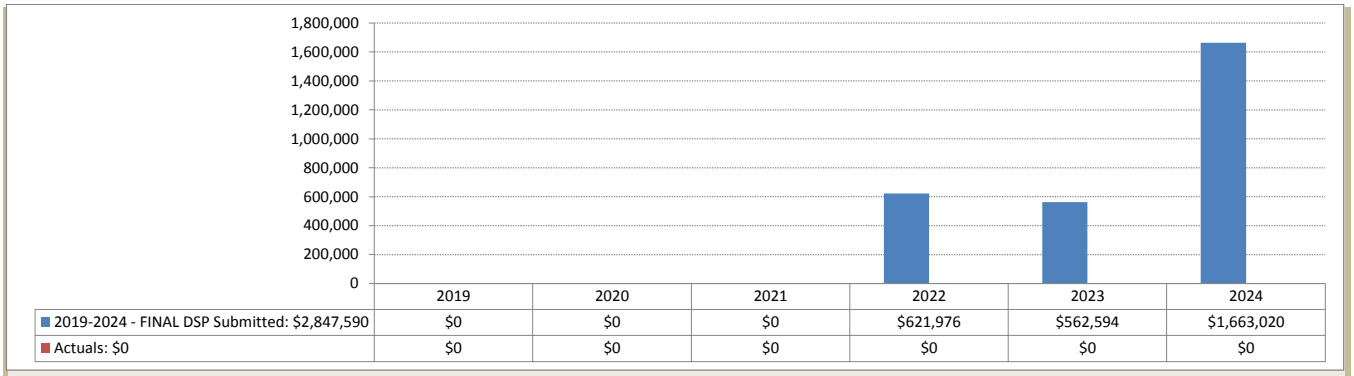
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,262,836	$0	$0	$0	$0	$532,027	$730,809
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151460	
Project Name	Cable Injection Project - (V17) - Langstaff - Keele - Rutherford - Dufferin, Vaughan	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	(V17) - Langstaff - Keele - Rutherford - Dufferin, Vaughan
	Units	45555
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation – Injection
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will inject failing direct-buried Cross-Linked Polyethylene (XLPE) cables and will mitigate outage frequencies to customers.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults.
	Customer Attachment / Load (KVA)	Not Applicable.
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under emergency condition.
	Alternative #1	Perform the injection in this area.

	Alternative #2	Replace the cable - this will be a higher cost and is not the preferred approach as injections can be performed in this area.
	Justification for Recommended Alternative	This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures, Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable injection as the method for remediation (injection is technically feasible for the segments within this project).
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has a multi-year Master Service Agreement with the cable injection contractor. The unit prices are kept constant during the term of the Master Service Agreement. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Similar cable injection projects over the past three years (2016, 2017, and 2018) were $78/m. This project is forecasted to be $63/m. The difference is based on the assumption that this project is less complicated (has fewer splices to replace) than projects already completed in prior years.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	In this area, there were 3 cable and splice failures since 2013. If not rehabilitated, this cable will get older and will fail more often to the level that is not tolerable by customers.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this area is 31 years old (installed in 1988), which exceeds the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board" results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	3531
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	For 1000 m of cable (applicable to the selected cable remediation candidates): Frequency of Failure is: 0.25 failures per 1000 m of cable per year For 45555 m of cable in the whole area: Frequency of Failure is: 0.25 x 45555 /1000 = 11.5 failure(s) According to Alectra East Control Room data, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). Annually on average there were 128 Cable and Splice failures affecting 39,280 customers and 5,520,782 CMI Impact of 1 failure: 39,280/128 = 307 customers affected and 5,520,782/128 = 43,131 CMI Impact of 11.5 failures: 307 x 11.5 = 3531 customers affected and 43,131 x 11.5 = 496007 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Not Applicable.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable.
	Reliability and Safety Factors	This project is part of the long-term cable rehabilitation program. The project will help avoid a total of 11.5 potential cable failures and 496007 potential CMI.
	Analysis for "Like for Like" Renewal Project	Not Applicable.



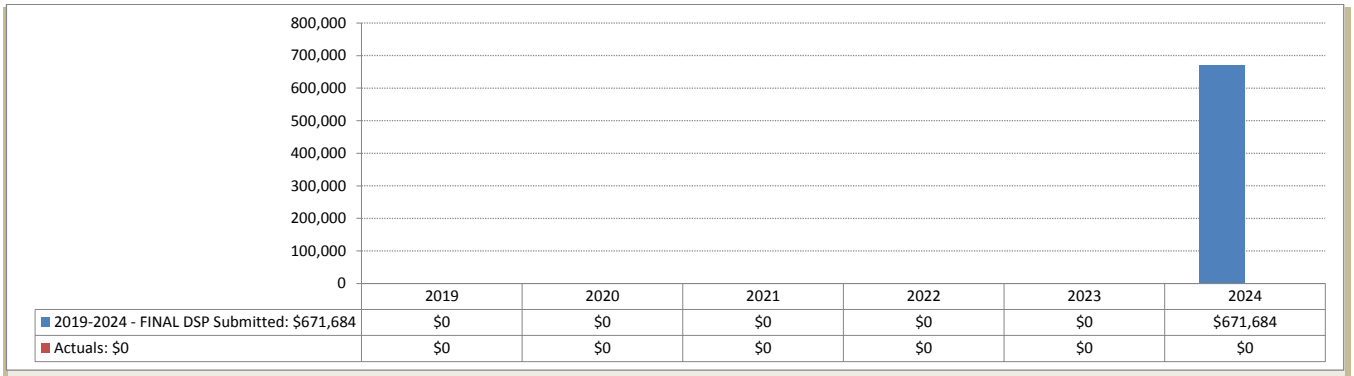
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $2,847,590	$0	$0	$0	$621,976	$562,594	$1,663,020
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151461	
Project Name	Cable Injection Project - (V51) - Langstaff - Kipling - Hwy 7 - Hwy 27, Vaughan	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	(V51) - Langstaff - Kipling - Hwy 7 - Hwy 27, Vaughan
	Units	10586
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation – Injection
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will inject failing direct-buried Cross-Linked Polyethylene (XLPE) cables and will mitigate outage frequencies to customers. 1 failure in the last 3 years. 5 failures in the last 5 years.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults.
	Customer Attachment / Load (KVA)	1458kVA
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under emergency condition.
	Alternative #1	Perform the injection in this area.

	Alternative #2	Replace the cable - this will be a higher cost and is not the preferred approach as injections can be performed in this area.
	Justification for Recommended Alternative	This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures, Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable injection as the method for remediation (injection is technically feasible for the segments within this project).
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has a multi-year Master Service Agreement with the cable injection contractor. The unit prices are kept constant during the term of the Master Service Agreement. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Similar cable injection projects over the past three years (2016, 2017, and 2018) were $78/m. This project is forecasted to be $63/m. The difference is based on the assumption that this project is less complicated (has fewer splices to replace) than projects already completed in prior years.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	In this area, there were cable and splice failures since 2013. If not rehabilitated, this cable will get older and will fail more often to the level that is not tolerable by customers.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this area is 33 years old (installed in 1986), which exceeds the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board" results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	798
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	For 1000 m of cable (applicable to the selected cable remediation candidates): Frequency of Failure is: 0.25 failures per 1000 m of cable per year For 10585.6063902443 m of cable in the whole area: Frequency of Failure is: 0.25 x 10585.6063902443 /1000 = 2.6 failure(s) According to Alectra East Control Room data, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). Annually on average there were 128 Cable and Splice failures affecting 39,280 customers and 5,520,782 CMI Impact of 1 failure: 39,280/128 = 307 customers affected and 5,520,782/128 = 43,131 CMI Impact of 2.6 failures: 307 x 2.6 = 798 customers affected and 43,131 x 2.6 = 112141 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Not Applicable.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable.
	Reliability and Safety Factors	The project will help avoid a total of 2.6 potential cable failures and 112141 potential CMI.
	Analysis for "Like for Like" Renewal Project	Not Applicable.



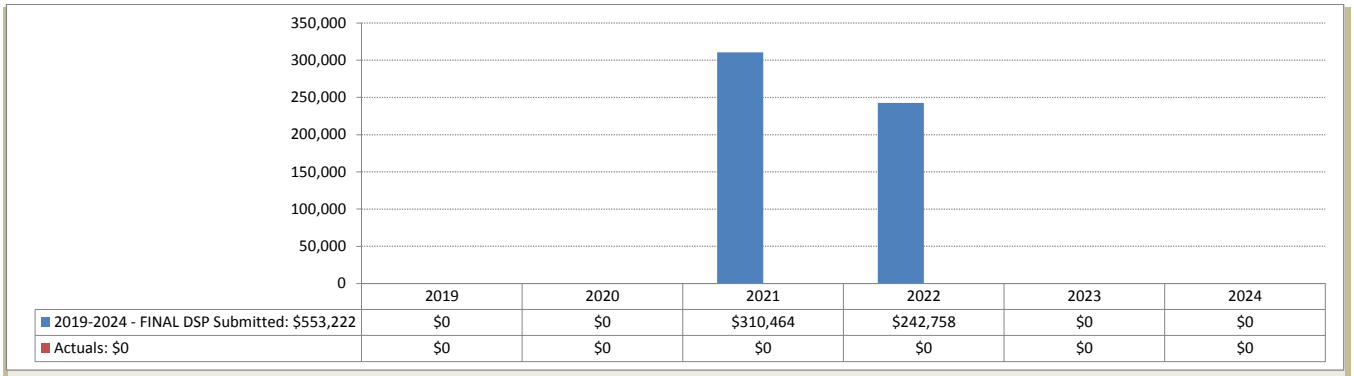
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $671,684	$0	$0	$0	$0	$0	$671,684
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151462	
Project Name	Cable Injection Project - (G1) - Hwy 410 - Kennedy - Wanless - Main, Brampton	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	(G1) - Hwy 410 - Kennedy - Wanless - Main, Brampton
	Units	8809
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation – Injection
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will inject failing direct-buried Cross-Linked Polyethylene (XLPE) cables and will mitigate outage frequencies to customers. 2 cables failures since 2000.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults.
	Customer Attachment / Load (KVA)	1458kVA
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under emergency condition.
	Alternative #1	Perform the injection in this area.

	Alternative #2	Replace the cable - this will be a higher cost and is not the preferred approach as injections can be performed in this area.
	Justification for Recommended Alternative	This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures, Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable injection as the method for remediation (injection is technically feasible for the segments within this project).
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has a multi-year Master Service Agreement with the cable injection contractor. The unit prices are kept constant during the term of the Master Service Agreement. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Similar cable injection projects over the past three years (2016, 2017, and 2018) were $78/m. This project is forecasted to be $63/m. The difference is based on the assumption that this project is less complicated (has fewer splices to replace) than projects already completed in prior years.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	In this area, there were 2 cable and splice failures since 2000. If not rehabilitated, this cable will get older and will fail more often to the level that is not tolerable by customers.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this area is 32 years old (installed in 1987), which exceeds the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board" results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	675
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	For 1000 m of cable (applicable to the selected cable remediation candidates): Frequency of Failure is: 0.25 failures per 1000 m of cable per year For 8809 m of cable in the whole area: Frequency of Failure is: 0.25 x 8809 /1000 = 2.2 failure(s) According to Alectra East Control Room data, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). Annually on average there were 128 Cable and Splice failures affecting 39,280 customers and 5,520,782 CMI Impact of 1 failure: 39,280/128 = 307 customers affected and 5,520,782/128 = 43,131 CMI Impact of 2.2 failures: 307 x 2.2 = 675 customers affected and 43,131 x 2.2 = 94888 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Not Applicable.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable.
	Reliability and Safety Factors	The project will help avoid a total of 2.2 potential cable failures and 94888 potential CMI.
	Analysis for "Like for Like" Renewal Project	Not Applicable.



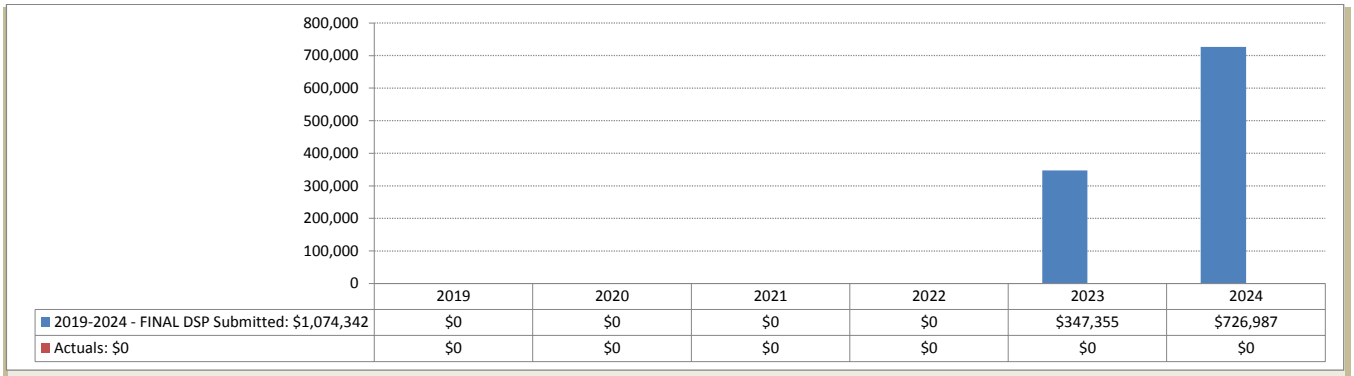
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $553,222	$0	$0	$310,464	$242,758	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151463	
Project Name	Cable Injection Project - (F4-G4) - Main - Steeles - Chinguacousy - Queen, Brampton	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	(F4-G4) - Main - Steeles - Chinguacousy - Queen, Brampton
	Units	17175
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation – Injection
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will inject failing direct-buried Cross-Linked Polyethylene (XLPE) cables and will mitigate outage frequencies to customers.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults
	Customer Attachment / Load (KVA)	Not Applicable.
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under emergency condition.
	Alternative #1	Perform the injection in this area.

	Alternative #2	Replace the cable - this will be a higher cost and is not the preferred approach as injections can be performed in this area.
	Justification for Recommended Alternative	This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures, Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable injection as the method for remediation (injection is technically feasible for the segments within this project).
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has a multi-year Master Service Agreement with the cable injection contractor. The unit prices are kept constant during the term of the Master Service Agreement. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Similar cable injection projects over the past three years (2016, 2017, and 2018) were $78/m. This project is forecasted to be $63/m. The difference is based on the assumption that this project is less complicated (has fewer splices to replace) than projects already completed in prior years.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	In this area, there were 86 cable and splice failures since 2000. If not rehabilitated, this cable will get older and will fail more often to the level that is not tolerable by customers.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this area is 34 years old (installed in 1985), which exceeds the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board" results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	1320
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	For 1000 m of cable (applicable to the selected cable remediation candidates): Frequency of Failure is: 0.25 failures per 1000 m of cable per year For 17175 m of cable in the whole area: Frequency of Failure is: 0.25 x 17175 /1000 = 4.3 failure(s) According to Alectra East Control Room data, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). Annually on average there were 128 Cable and Splice failures affecting 39,280 customers and 5,520,782 CMI Impact of 1 failure: 39,280/128 = 307 customers affected and 5,520,782/128 = 43,131 CMI Impact of 4.3 failures: 307 x 4.3 = 1320 customers affected and 43,131 x 4.3 = 185463 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Not Applicable.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable.
	Reliability and Safety Factors	This project is part of the long-term cable rehabilitation program. The project will help avoid a total of 4.3 potential cable failures and 185463 potential CMI.
	Analysis for "Like for Like" Renewal Project	Not Applicable.



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $1,074,342	$0	$0	$0	$0	$347,355	$726,987
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

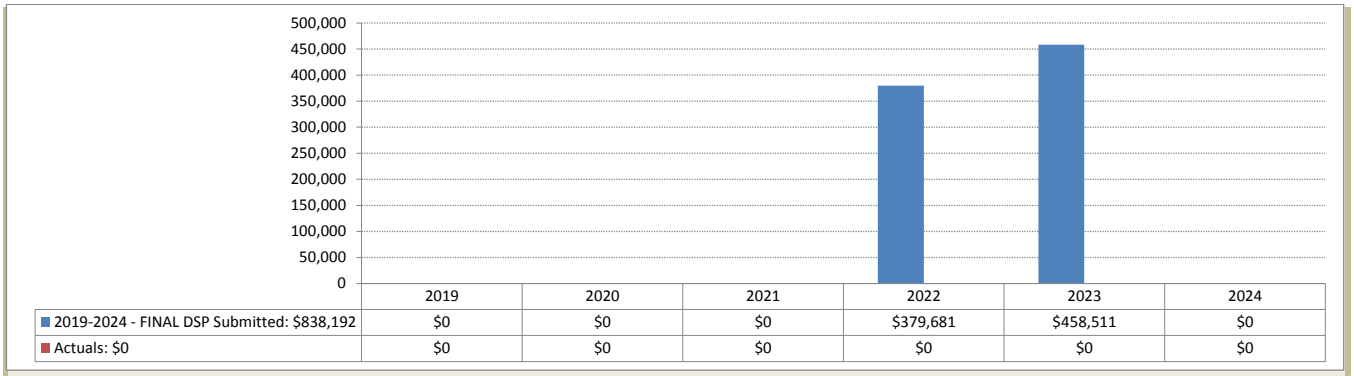
OEB Multi-Project Report

Project Code	151464
Project Name	Cable Injection Project - (F3-G3-H3) - Phase 2, Brampton
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Legacy PowerStream South
	Location	(F3-G3-H3), Brampton
	Units	13400
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation – Injection
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will inject failing direct-buried Cross-Linked Polyethylene (XLPE) cables and will mitigate outage frequencies to customers. This area has had 103 failures since 2000.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults.
	Customer Attachment / Load (KVA)	1458kVA
	Safety	Not Applicable.
	Cyber-Security, Privacy	Not Applicable.
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not Applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under emergency condition.
	Alternative #1	Perform the injection in this area.

	Alternative #2	Replace the cable - this will be a higher cost and is not the preferred approach as injections can be performed in this area.
	Justification for Recommended Alternative	This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures, Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable injection as the method for remediation (injection is technically feasible for the segments within this project).
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has a multi-year Master Service Agreement with the cable injection contractor. The unit prices are kept constant during the term of the Master Service Agreement. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Similar cable injection projects over the past three years (2016, 2017, and 2018) were $78/m. This project is forecasted to be $63/m. The difference is based on the assumption that this project is less complicated (has fewer splices to replace) than projects already completed in prior years.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	In this area, there were 103 cable and splice failures since 2000. If not rehabilitated, this cable will get older and will fail more often to the level that is not tolerable by customers.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this area is 34 years old (installed in 1985), which exceeds the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board" results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	1013
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	103 Failures since 2000 For 1000 m of cable (applicable to the selected cable remediation candidates): Frequency of Failure is: 0.25 failures per 1000 m of cable per year For 13400 m of cable in the whole area: Frequency of Failure is: 0.25 x 13400 /1000 = 3.3 failure(s) According to Alectra East Control Room data, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). Annually on average there were 128 Cable and Splice failures affecting 39,280 customers and 5,520,782 CMI Impact of 1 failure: 39,280/128 = 307 customers affected and 5,520,782/128 = 43,131 CMI Impact of 3.3 failures: 307 x 3.3 = 1013 customers affected and 43,131 x 3.3 = 142332 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Not Applicable.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable.
	Reliability and Safety Factors	The project will help avoid a total of 3.3 potential cable failures and 142332 potential CMI.
	Analysis for "Like for Like" Renewal Project	Not Applicable.



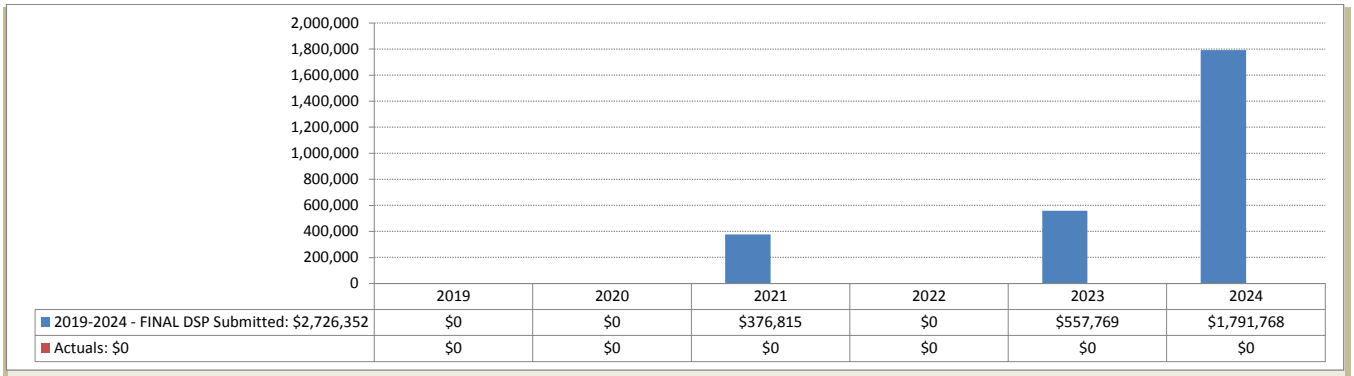
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $838,192	$0	$0	$0	$379,681	$458,511	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151465	
Project Name	Cable Replacement - Mississauga Left Behind Cable	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Mississauga
	Location	Various locations in Alectra Mississauga
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation –Replacement
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will replace failing direct-buried Cross-Linked Polyethylene (XLPE) cables and cable accesories with new cable in conduit and will mitigate outage frequencies to customers.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under reactive capital. This would lead to an unacceptable level of outages and customer satisfaction.
	Alternative #1	Perform the replacement in this area.

	Alternative #2	Injection of the cables - these cable segments are not technically viable for injection.
	Justification for Recommended Alternative	This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures,Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable replacement as the method for remediation (injection is not technically feasible for the segments within this project).
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has multi-year Master Service Agreement with external contractors. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	In Alectra Central South, there were 40, 38, 24, 30, 28, 32 and 20 primary cable failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 30 failures per year). If not rehabilitated, this cable will get older and will fail more often to the level that is not tolerable by customers.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this project exceeds the Kinectrics Report ''Asset Amortization Study for the Ontario Energy Board'' results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	737
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	For 1000 m of cable (applicable to the selected cable remediation candidates): Frequency of Failure is: 0.25 failures per 1000 m of cable per year For 9000 m of cable: Frequency of Failure is: 0.25 x 9000 /1000 = 2.4 failure(s) According to Alectra East Control Room data, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). Annually on average there were 128 Cable and Splice failures affecting 39,280 customers and 5,520,782 CMI Impact of 1 failure: 39,280/128 = 307 customers affected and 5,520,782/128 = 43,131 CMI Impact of 2.4 failures: 307 x 2.4 = 737 customers affected and 43,131 x 2.4 = 103514 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Not Applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable
	Reliability and Safety Factors	This project is part of the long-term cable rehabilitation program. The project will help avoid a total of 2.4 potential cable failures and 103514 potential CMI.
	Analysis for "Like for Like" Renewal Project	When direct buried cable is replaced, the new cable installed according to new Standards. Which call for the cable to be put in conduit. The conduit provides additional mechanical protection for the cable. In addition it will also facilitate for future cable replacement (faulted cable can be pulled out and new cable be pulled in, no digging is required).



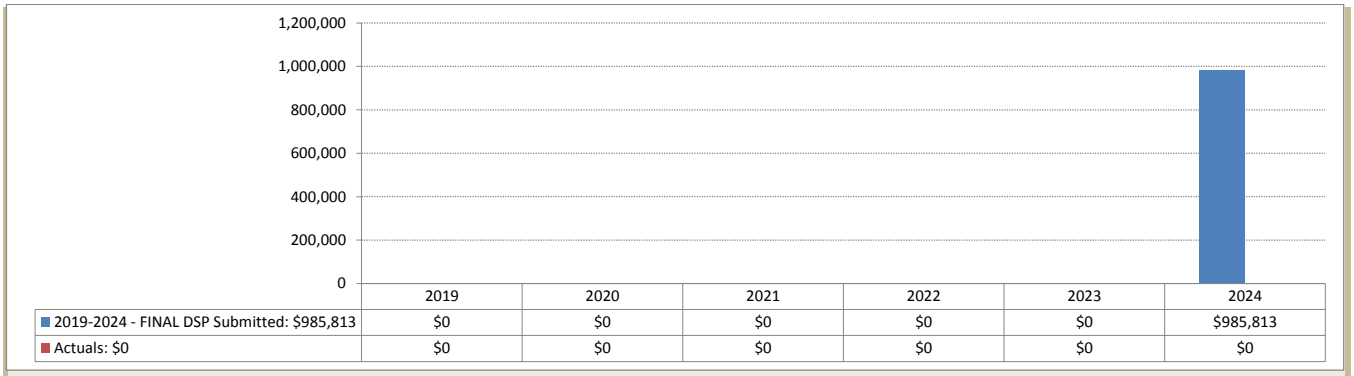
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $2,726,352	$0	$0	$376,815	$0	$557,769	$1,791,768
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151466	
Project Name	Cable Replacement Project - (V24) - Langstaff - Jane - Rutherford - Keele, Vaughan	
Major Category	System Renewal	
Scenario	2019-2024 - FINAL DSP Submitted	
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	(V24) - Langstaff - Jane - Rutherford - Keele, Vaughan
	Units	2817
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation –Replacement
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will replace failing direct-buried Cross-Linked Polyethylene (XLPE) cables and cable accesories with new cable in conduit and will mitigate outage frequencies to customers.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults.
	Customer Attachment / Load (KVA)	1458kVA
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under reactive capital. This would lead to an unacceptable level of outages and customer satisfaction.
	Alternative #1	Perform the replacement in this area.
	Alternative #2	Injection of the cables - these cable segemnts are not technically viable for injection.

	Justification for Recommended Alternative	This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures,Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable replacement as the method for remediation (injection is not technically feasible for the segments within this project).
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has multi-year Master Service Agreement with external contractors. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Similar cable replacement projects over the past 3 years (2016, 2017, and 2018) were $389/m. This project is forecasted to be $350/m. The difference is based on the assumption that this project is less complicated (less obstruction, long clearance from other utilities) than the projects already completed in prior years.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	In Alectra East, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). If not rehabilitated, this cable will get older and will fail more often to the level that is not tolerable by customers.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this area is 31 years old (installed in 1988), which exceeds the Kinectrics Report ''Asset Amortization Study for the Ontario Energy Board'' results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	215
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	For 1000 m of cable (applicable to the selected cable remediation candidates): Frequency of Failure is: 0.25 failures per 1000 m of cable per year For 2817 m of cable in the whole area: Frequency of Failure is: 0.25 x 2817 /1000 = 0.7 failure(s) According to Alectra East Control Room data, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). Annually on average there were 128 Cable and Splice failures affecting 39,280 customers and 5,520,782 CMI Impact of 1 failure: 39,280/128 = 307 customers affected and 5,520,782/128 = 43,131 CMI Impact of 0.7 failures: 307 x 0.7 = 215 customers affected and 43,131 x 0.7 = 30192 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Local approvals and weather.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable
	Reliability and Safety Factors	The project will help avoid a total of 0.7 potential cable failures and 30192 potential CMI.
	Analysis for "Like for Like" Renewal Project	When direct buried cable is replaced, the new cable installed according to new Standards. Which call for the cable to be put in conduit. The conduit provides additional mechanical protection for the cable. In addition it will also facilitate for future cable replacement (faulted cable can be pulled out and new cable be pulled in, no digging is required).



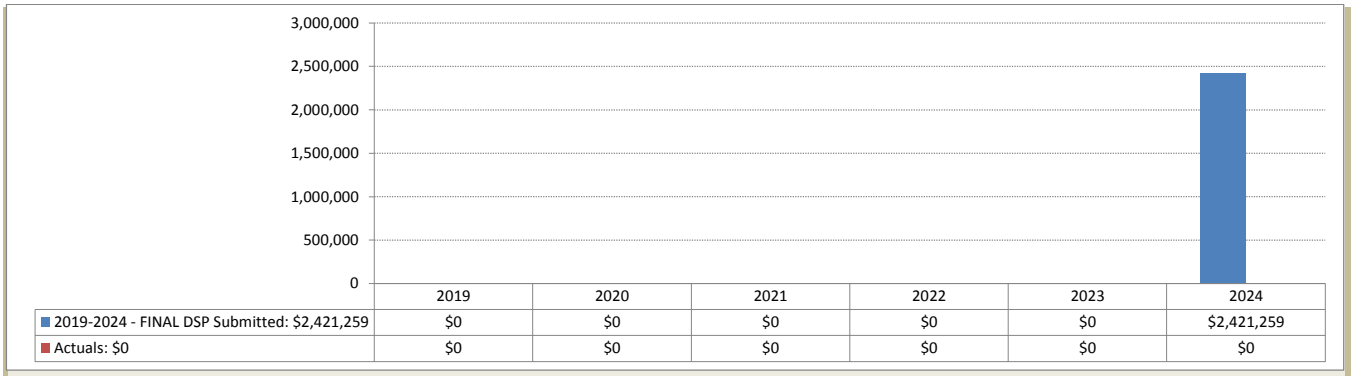
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $985,813	$0	$0	$0	$0	$0	$985,813
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code		151467
Project Name		Cable Replacement Project - (V17) - Langstaff - Keele - Rutherford - Dufferin, Vaughan
Major Category		System Renewal
Scenario		2019-2024 - FINAL DSP Submitted
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	(V17) - Langstaff - Keele - Rutherford - Dufferin, Vaughan
	Units	6918
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation –Replacement
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will replace failing direct-buried Cross-Linked Polyethylene (XLPE) cables and cable accesories with new cable in conduit and will mitigate outage frequencies to customers.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under reactive capital. This would lead to an unacceptable level of outages and customer satisfaction.
	Alternative #1	Perform the replacement in this area.
	Alternative #2	Injection of the cables - these cable segemnts are not technically viable for injection.

	Justification for Recommended Alternative	This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures,Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable replacement as the method for remediation (injection is not technically feasible for the segments within this project).
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has multi-year Master Service Agreement with external contractors. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Similar cable replacement projects over the past 3 years (2016, 2017, and 2018) were $389/m. This project is forecasted to be $350/m. The difference is based on the assumption that this project is less complicated (less obstruction, long clearance from other utilities) than the projects already completed in prior years.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	In Alectra East, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). If not rehabilitated, this cable will get older and will fail more often to the level that is not tolerable by customers.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this area is 31 years old (installed in 1988), which exceeds the Kinectrics Report ''Asset Amortization Study for the Ontario Energy Board'' results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	522
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	For 1000 m of cable (applicable to the selected cable remediation candidates): Frequency of Failure is: 0.25 failures per 1000 m of cable per year For 6918 m of cable in the whole area: Frequency of Failure is: 0.25 x 6918 /1000 = 1.7 failure(s) According to Alectra East Control Room data, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). Annually on average there were 128 Cable and Splice failures affecting 39,280 customers and 5,520,782 CMI Impact of 1 failure: 39,280/128 = 307 customers affected and 5,520,782/128 = 43,131 CMI Impact of 1.7 failures: 307 x 1.7 = 522 customers affected and 43,131 x 1.7 = 73323 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Local approvals and weather.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable
	Reliability and Safety Factors	This project is part of the long-term cable rehabilitation program. The project will help avoid a total of 1.7 potential cable failures and 73323 potential CMI.
	Analysis for "Like for Like" Renewal Project	When direct buried cable is replaced, the new cable installed according to new Standards. Which call for the cable to be put in conduit. The conduit provides additional mechanical protection for the cable. In addition it will also facilitate for future cable replacement (faulted cable can be pulled out and new cable be pulled in, no digging is required).



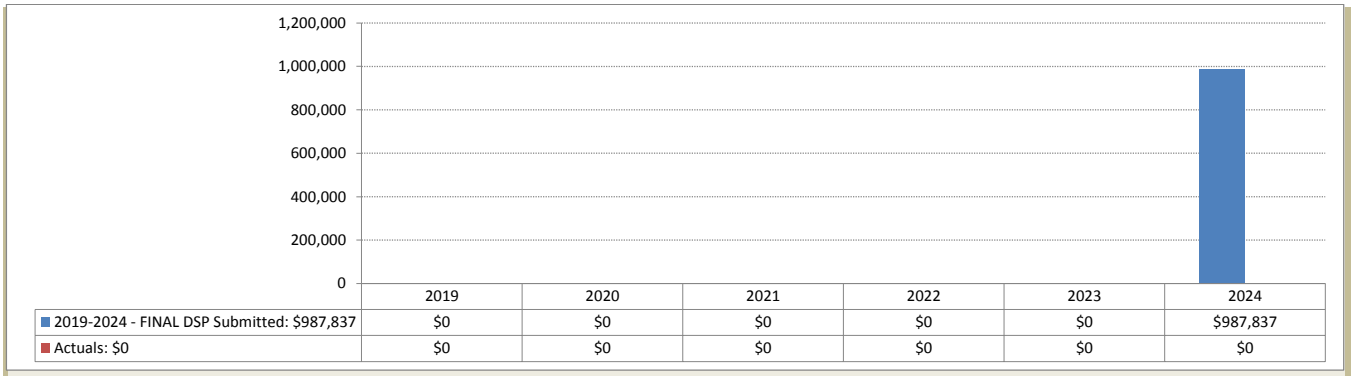
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $2,421,259	$0	$0	$0	$0	$0	$2,421,259
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code		151468
Project Name		Cable Replacement Project - (V51) - Langstaff - Kipling - Hwy 7 - Hwy 27, Vaughan
Major Category		System Renewal
Scenario		2019-2024 - FINAL DSP Submitted
Project Overview		
2. Additional Information	Service Territory	Legacy PowerStream South
	Location	(V51) - Langstaff - Kipling - Hwy 7 - Hwy 27, Vaughan
	Units	2822
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation –Replacement
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will replace failing direct-buried Cross-Linked Polyethylene (XLPE) cables and cable accesories with new cable in conduit and will mitigate outage frequencies to customers.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults.
	Customer Attachment / Load (KVA)	1458kVA
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under reactive capital. This would lead to an unacceptable level of outages and customer satisfaction.
	Alternative #1	Perform the replacement in this area.
	Alternative #2	Injection of the cables - these cable segemnts are not technically viable for injection.

	Justification for Recommended Alternative	This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures,Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable replacement as the method for remediation (injection is not technically feasible for the segments within this project).
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has multi-year Master Service Agreement with external contractors. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Similar cable replacement projects over the past 3 years (2016, 2017, and 2018) were $389/m. This project is forecasted to be $350/m. The difference is based on the assumption that this project is less complicated (less obstruction, long clearance from other utilities) than the projects already completed in prior years.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	In Alectra East, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). If not rehabilitated, this cable will get older and will fail more often to the level that is not tolerable by customers.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this area is 31 years old (installed in 1988), which exceeds the Kinectrics Report ''Asset Amortization Study for the Ontario Energy Board'' results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	215
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	For 1000 m of cable (applicable to the selected cable remediation candidates): Frequency of Failure is: 0.25 failures per 1000 m of cable per year For 2822 m of cable in the whole area: Frequency of Failure is: 0.25 x 2822 /1000 = 0.7 failure(s) According to Alectra East Control Room data, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). Annually on average there were 128 Cable and Splice failures affecting 39,280 customers and 5,520,782 CMI Impact of 1 failure: 39,280/128 = 307 customers affected and 5,520,782/128 = 43,131 CMI Impact of 0.7 failures: 307 x 0.7 = 215 customers affected and 43,131 x 0.7 = 30192 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Local approvals and weather.
	Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable
	Reliability and Safety Factors	The project will help avoid a total of 0.7 potential cable failures and 30192 potential CMI.
	Analysis for "Like for Like" Renewal Project	When direct buried cable is replaced, the new cable installed according to new Standards. Which call for the cable to be put in conduit. The conduit provides additional mechanical protection for the cable. In addition it will also facilitate for future cable replacement (faulted cable can be pulled out and new cable be pulled in, no digging is required).



	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $987,837	$0	$0	$0	$0	$0	$987,837
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

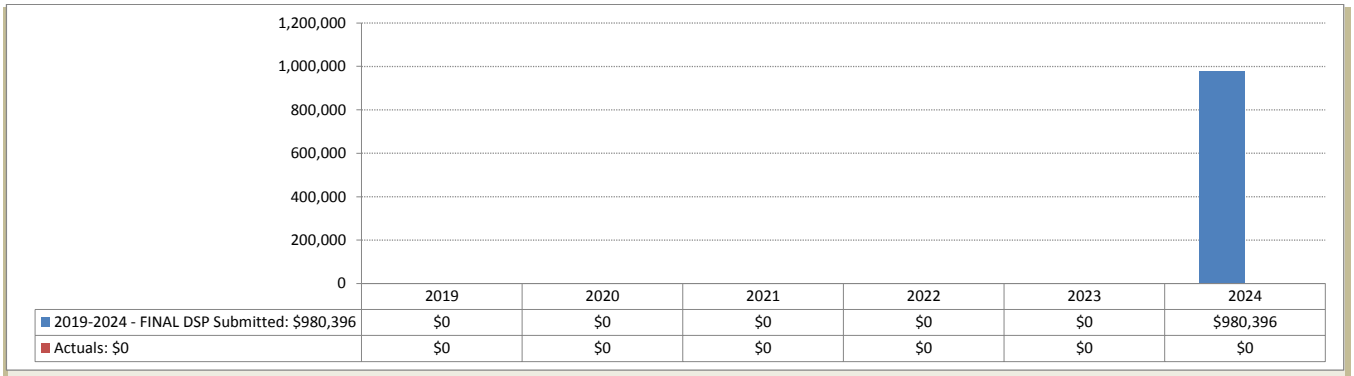
OEB Multi-Project Report

Project Code	151469
Project Name	Cable Replacement Project - (F4-G4) - Main - Steeles - Chinguacousy - Queen, Brampton
Major Category	System Renewal
Scenario	2019-2024 - FINAL DSP Submitted

Project Overview

2. Additional Information	Service Territory	Brampton
	Location	(F4-G4) - Main - Steeles - Chinguacousy - Queen, Brampton
	Units	2801
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
	Rates ID	Rate Base Funded
	Alectra Grouping	Underground Asset Renewal
	Alectra Subcategory	Cable Remediation –Replacement
4. Evaluation Criteria (OEB)	Project Summary	Alectra Utilities' service area currently contains a population of underground cables totalling approximately 21 million linear meters of cable, which are continuing to degrade. Alectra Utilities' planned Underground Asset Renewal investments are driven by an increasing decline in reliability on the distribution system. At present, defective equipment accounts for 45% of controllable outages in Alectra Utilities' system. Failing cable and cable accessory failures account for 50% of all equipment-related outages. Alectra Utilities plans to gradually but significantly increase its spending to rejuvenate or replace XLPE cable and related accessories that are either in poor or very poor condition. This investment will replace failing direct-buried Cross-Linked Polyethylene (XLPE) cables and cable accesories with new cable in conduit and will mitigate outage frequencies to customers. This area has seen 86 failures since 2000
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Cable manufactures introduced the first-generation XLPE cable into the market in the late 1960's. These cables have inherent problems due to the nature of the manufacturing processes, which led to impurities developing over time in the insulating medium. These impurities are responsible for the increase in cable failures that Alectra Utilities and other utilities have been experiencing with cables from this period. XLPE cables also fail because of the way they installed. Decades ago, utilities buried cable directly in the ground. Over time, the construction standard shifted to installing cable in protective conduits, but much of the system still consists of "direct-buried" cable. When more modern cable-in-conduit fails, it can typically be entirely removed and replaced with brand-new cable with relative ease. In contrast, direct-buried cables can only be repaired by excavating the cable and splicing in a replacement segment. This approach is fundamentally reactive and introduces further complications, since the installed splice may itself become a future failure point. Nor does it solve the underlying issue, since the older, direct-buried cable remains installed and increasingly likely to fail again. Failing direct-buried cables are causing an increasing number of outages, and when buried cables fail it can take a significant amount of time to restore service. Failing cables are significantly and increasingly impacting the quality of service received by Alectra Utilities' customers. Alectra Utilities must increase spending not only to halt the increasing trend, but to reverse it and reduce the number of cable failures to return customers back to historical reliability levels. Without the proposed expenditures, cables will continue to degrade and Alectra Utilities expects reliability to decline further as deteriorated cables begin to fail at greater rates, having been stressed from historical faults.
	Customer Attachment / Load (KVA)	1458kVA
	Safety	Not Applicable
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra Utilities constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Utilities participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra Utilities also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.
	Economic Development	Alectra Utilities ensure all policies and practices don't unnecessarily create barriers to economic development which are primarily focused within our communities.
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	The status quo is to do nothing, allowing the end-of-life cable to run to failure, and respond to outages under reactive capital. This would lead to an unacceptable level of outages and customer satisfaction.
	Alternative #1	Perform the replacement in this area.
	Alternative #2	Injection of the cables - these cable segments are not technically viable for injection.

	Justification for Recommended Alternative	This project is part of Alectra Utilities annual investment initiative for cable remediation (cable replacement and cable injection) to maintain system reliability. The oldest cables are at end-of-life and are failing. Since cables are the main component of the underground electrical distribution system, when a cable segment fails, system reliability and customer service are negatively affected. For small-scale outages, Alectra Utilities has the capability to replace or repair the faulted cable segments under reactive capital, however, if too many cable failures occur at the same time, Alectra Utilities would not have sufficient resources to manage the large-scale and cascading outages - system integrity will be compromised and reliability will be unacceptable to the customers. To manage the risk of large-scale cable failures,Alectra Utilities must implement proactive cable remediation projects. These projects are a result of continuous assessments, prioritizing, and remediating the worst cable segments by a combination of cable injection and cable replacement. This project addresses cable replacement as the method for remediation (injection is not technically feasible for the segments within this project).
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Risk: Alectra Utilities considers the following as general risks to project schedule and cost: - fluctuation in cost and staff resources (internal and external) to complete high annual volume of work. - customer delays or restricted access to work sites - inclement weather, either in the form of extreme temperatures or due to restoration activities following major storms - delays to material shipment from vendors - general unforeseen delays such as striking rock when digging, tree conservation, municipal/regional consent forms Risk Management: Alectra Utilities has multi-year Master Service Agreement with external contractors. Regular progress meetings are held to ensure technical and operational issues are resolved promptly; budget performance is monitored; and projects are on track. Alectra Utilities has utilized coordination with third parties to mitigate some of the issues where possible, with municipalities/region/suppliers/customers. Alectra Utilities has implemented a Planning and Scheduling solution to track projects and resources. The Program Delivery department allows Alectra Utilities to manage schedule and cost risks and improve the overall efficiency of implementation. Alectra Utilities is able to reduce controllable cost impacts on the project due to these risk mitigation strategies.
	Comparative Information on Equivalent Historical Projects (if any)	Alectra Brampton has budgeted and completed similar cable replacement projects in 2016, 2017 and 2018.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	In Alectra Central North, there were 40, 38, 24, 30, 28, 32 and 20 primary cable failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 30 failures per year). If not rehabilitated, this cable will get older and will fail more often to the level that is not tolerable by customers.
	Condition of Asset vs. Typical Life Cycle and Performance Record	Cable in this project exceeds the Kinectrics Report ''Asset Amortization Study for the Ontario Energy Board'' results for Typical Useful Life of non-tree retardant XLPE of 25 years.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	215
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	This area has seen 86 failures since 2000: For 1000 m of cable (applicable to the selected cable remediation candidates): Frequency of Failure is: 0.25 failures per 1000 m of cable per year For 2801 m of cable in the whole area: Frequency of Failure is: 0.25 x 2801 /1000 = 0.7 failure(s) According to Alectra East Control Room data, there were 123, 133, 113, 126, 131, 131 and 138 Cable and Splice failures in 2012, 2013, 2014, 2015, 2016, 2017 and 2018 respectively (7-year average is 128 failures per year). Annually on average there were 128 Cable and Splice failures affecting 39,280 customers and 5,520,782 CMI Impact of 1 failure: 39,280/128 = 307 customers affected and 5,520,782/128 = 43,131 CMI Impact of 0.7 failures: 307 x 0.7 = 215 customers affected and 43,131 x 0.7 = 30192 CMI
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Cable failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Not Applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable
	Reliability and Safety Factors	This project is part of the long-term cable rehabilitation program. The project will help avoid a total of 0.7 potential cable failures and 30192 potential CMI.
	Analysis for "Like for Like" Renewal Project	When direct buried cable is replaced, the new cable installed according to new Standards. Which call for the cable to be put in conduit. The conduit provides additional mechanical protection for the cable. In addition it will also facilitate for future cable replacement (faulted cable can be pulled out and new cable be pulled in, no digging is required).



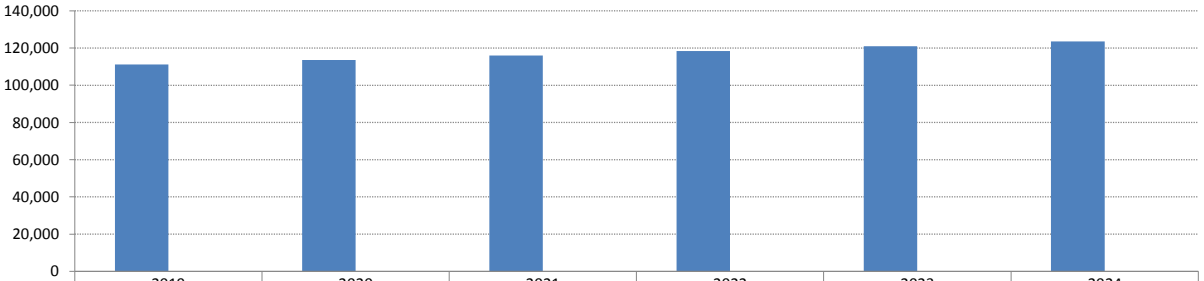
	2019	2020	2021	2022	2023	2024
2019-2024 - FINAL DSP Submitted: $980,396	$0	$0	$0	$0	$0	$980,396
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151085	
Project Name	Rear Lot Conversions	
Major Category	System Renewal	
Scenario	Submitted	
Project Overview		
2. Additional Information	Service Territory	Guelph
	Location	
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Rates ID	Rate Base Funded
	Alectra Grouping	Rear Lot Conversion
	Alectra Subcategory	Rear Lot Conversion
	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
4. Evaluation Criteria (OEB)	Project Summary	This project is to convert existing rear lot primary distribution to a front lot supply. Rear lot primary poses a problem for both reliability and safety. Due to the reduced access to the distribution assets, restoration of power to customers is significantly impacted by not having access to powered equipment, while also presenting risks to the workers. Many of the Rear Lot Supply distribution systems were built in 1950s, 1960s, and 1970s and are mostly located in inner-city of Guelph directly affecting more than 4000 customers. The rear lot equipment is older than typical useful life and the asset condition is deteriorating, therefore to improve reliability and safety, the rear lot conversion is required.
	Main Driver - System Renewal	Mitigate Failure Risks
	Priority and Reasons for Priority	Alectra Guelph has pockets of customers being supplied by rear lot construction. The electrical system is ageing and deteriorating and poses many safety, customer service and operations concerns that must be addressed. If not addressed, the system will deteriorate further and failures and safety hazards will increase to a level that is not manageable and not tolerable by the customers.
	Customer Attachment / Load (KVA)	XX customers and XXX kVA
	Safety	Rear lot construction is difficult to replace and many of the poles are not to current/correct specifications and cannot be climbed. This makes repairs difficult and takes much longer than for standard construction. These assets also pose a risk to the public as the poles or transformer could fall into the customers backyards.
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	Not applicalbe
	Economic Development	Not applicable
	Environmental Benefits	No oil spills from the transformers in customer's backyard.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	By leaving the assets to deteriorate in the rear lot, the customers would see an increasing risk to both prolonged outages as well as exposure to safety-related incidents inherent in having primary distribution assets in backyards.
	Alternative #1	Remediate the existing rear lot plant with other design options . The other design options considered are described below. Rear Lot Overhead Option: Under this Option, the existing rear lot plant is replaced with new overhead plant in the rear lot. When the replacement project is implemented, the following design parameters should be considered: •Install critical components such as fuse, switch, and transformer as close to the accessible street as possible This Option is not acceptable because it does not resolve the major operations and customer reliability concerns related to the distribution assets located at rear lot at this location. Partial Underground Option This scenario involves the replacement of existing rear lot infrastructure with a new hybrid solution, where primary voltage infrastructure, including transformers, switches and lines would be installed as per an underground configuration within the front right-of-way, following standard Alectra Utilities installation practices. Under this approach, secondary infrastructure, including wood poles and secondary conductor, would remain in the rear lot in overhead configuration. This approach would not fully address the reliability and safety concerns associated with rear lot distribution, as secondary connections will remain in the rear lot. However, future outage impacts will be reduced and contained to only those customers connected to the associated transformer. Lower voltage classes will also be converted up to the standardized 27.6kV voltage standard as per this investment option. Under this option, reliability and safety issues would continue to persist due some infrastructure remaining overhead. The cost of partial underground renewal is higher than the renewal of the rear lot overhead and further more does not result in mitigating the risks associated with the existing system. This partial underground approach has been adopted where feasible.

	Alternative #2	Replace with Full Underground Infrastructure This investment scenario considers the full replacement of existing rear lot infrastructure – including primary and secondary plant – with new front lot underground infrastructure. All existing primary and secondary distribution assets within the rear lot corridor will be removed and replaced with new underground primary and secondary infrastructure that is installed within the front lot corridor as per current standard design practices. Underground secondary cables will run from the front lot underground transformers to the individual meter bases in order to supply the customers. Under this approach, existing under-classed legacy wood poles will be replaced with higher-class poles that are better suited to withstand major weather events. Through this investment scenario, these high impact assets will be better secured and weather-hardened against future outage events. This approach would completely mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure. This approach also introduces efficiencies for the utility, as tree trimming activities can be eliminated.
	Justification for Recommended Alternative	It is recommended to convert the area to partial underground. Under this Option, the existing rear lot plant is removed and partially underground plant is installed in front lot. This approach would mitigate the reliability and safety issues associated with rear lot distribution, as well as the operational constraints associated with the existing infrastructure. For these reasons, Alectra Utilities selected this approach.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Customer expectation for what the new distribution will look like is a risk, especially if the customer is pushing for a more aesthetically-pleasing but more expensive alternative by going fully underground. Customer consultation will be an important step in mitigating this risk and ensure the public and the utility are aligned in addressing this renewal.
	Comparative Information on Equivalent Historical Projects (if any) Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	
	Condition of Asset vs. Typical Life Cycle and Performance Record	It is extremely difficult to gain access to the backyard to maintain, repair, and restore power. As a result there are prolonged outages to customers. This is especially more difficult in the event of ice storm or where sever flooding may occur. Many of the Rear Lot Supply distribution systems were built in 1950s, 1960s, and 1970s . The rear lot equipment is older than typical useful life and the asset condition is deteriorating. According to the Kinectrics Report "Asset Amortization Study for the Ontario Energy Board", typical useful life of overhead transformers and wood poles are 40 and 45 years respectively. Many of the installations are not in compliance to today's standards.
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	84
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Rear lot supply failures have negative impact to system reliability and customer service. Outages cause inconvenience and financial loss to customers (office closing, production stoppage). Rear lot system also poses safety hazards to the customers because live electrical components are in proximity of customer's backyard and proper clearance may be violated due to customer's installations (examples: trees, garden, swimming pool, storage shed, deck, house extension).
	Value of Customer Impact	High
	Factors Affecting Project Timing, if any	Not applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	Not applicable
	Reliability and Safety Factors	Due to rear lot location these assets are not easily accessible.
	Analysis for "Like for Like" Renewal Project	Not applicable.

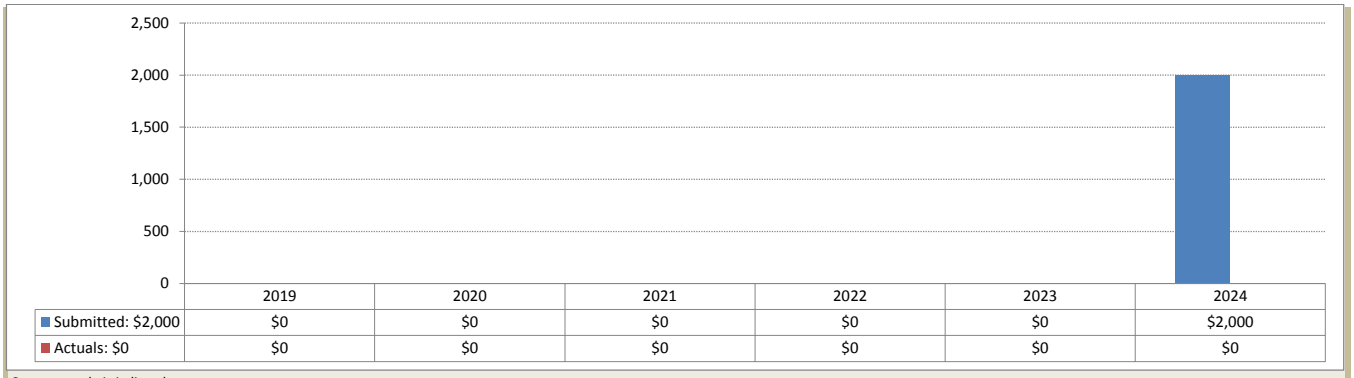


	2019	2020	2021	2022	2023	2024
Submitted: $703,543	$111,111	$113,500	$115,940	$118,433	$120,979	$123,580
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151209	
Project Name	Station LED Lighting Upgrades - South West	
Major Category	System Renewal	
Scenario	Submitted	
Project Overview		
2. Additional Information	Service Territory	Guelph
	Location	
	Units	1
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Rates ID	Rate Base Funded
	Alectra Grouping	Substation Renewal
	Alectra Subcategory	Station Building Improvement
	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
4. Evaluation Criteria (OEB)	Project Summary	Replace incandescent, fluorescent and high-pressure sodium with LED lighting. Indoor and outdoor fixtures for various stations. LED lights last longer and are more energy-efficient.
	Main Driver - System Renewal	Obsolescence
	Priority and Reasons for Priority	Replacement of inefficient lighting fixtures and lamps at Guelph stations will result in longer lasting lighting. Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock.
	Cyber-Security, Privacy	Not Applicable
	Coordination, Interoperability	Not Applicable
	Economic Development	Not Applicable
	Environmental Benefits	Not Applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Continue using obsolete lighting that requires a higher rate of replacement and results in higher energy consumption. Continue to stock multiple light bulbs for replacement in inventory.
	Alternative #1	Replace with LED light bulbs. LED lights are longer lasting and more energy efficient.
	Alternative #2	Not Applicable
	Justification for Recommended Alternative	Lighting at stations in important for safety and security. LED lighting provides lower power consumption, longer life which results in less likelihood of outages between inspections cycles, less maintenance and enable standardization of replacement stock. Some lamps are difficult to replace and require special lifts which need to be rented.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Not Applicable
	Condition of Asset vs. Typical Life Cycle and Performance Record	Not Applicable
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	0
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Not Applicable
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Not Applicable
	Value of Customer Impact	Low
	Factors Affecting Project Timing, if any	Not Applicable
	Consequences for O&M System Costs Including Implications of Not Implementing	Not implementing this will result in lighting consuming higher energy for the same function.
	Reliability and Safety Factors	Not Applicable
	Analysis for "Like for Like" Renewal Project	Not Applicable



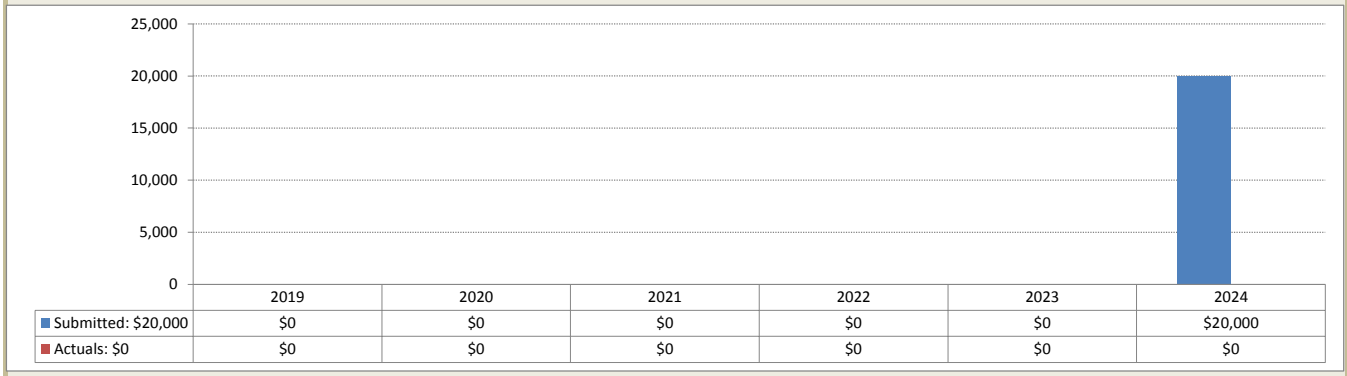
	2019	2020	2021	2022	2023	2024
Submitted: $2,000	$0	$0	$0	$0	$0	$2,000
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151212	
Project Name	Driveway Paving Multi-year initiative - South West	
Major Category	System Renewal	
Scenario	Submitted	
Project Overview		
2. Additional Information	Service Territory	Guelph
	Location	
	Units	3
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Rates ID	Rate Base Funded
	Alectra Grouping	Substation Renewal
	Alectra Subcategory	Station Building Improvement
	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
4. Evaluation Criteria (OEB)	Project Summary	Paving station driveway to facilitate year-round access. Driveway paving of various stations in this operating area. Existing driveways are covered in gravel, which required filling depressions on a continuous basis. Depressions allow for crawl spaces which result in a safety and security risk. Paving will facilitate snow removal and allow for access year-round to perform maintenance and respond to outages. This will also eliminate trip hazards.
	Main Driver - System Renewal	Safety
	Priority and Reasons for Priority	Existing driveways in the Operational Area that are covered in gravel and require ongoing maintenance for smoothing and filling depressions as well as gaps that may allow for crawl space under fencing, which presents a safety and security risk are going to be paved. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
	Customer Attachment / Load (KVA)	Not Applicable
	Safety	Paving will eliminate crawl spaces under the fence thus improving safety and security at the station. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Moreover, paved driveways eliminate the risk of trip hazards.
	Cyber-Security, Privacy	Not applicable
	Coordination, Interoperability	Not applicable
	Economic Development	Not applicable
	Environmental Benefits	Not applicable
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Leave as is and continue to add gravel and level as required. Usually post winter season and rainy Spring season. Crawl spaces will not be eliminated and tripping hazards will continue to be a risk. Snow removal might be impeded which could result in a longer outages.
	Alternative #1	Pave the driveway to eliminate the crawl spaces and eliminate tripping hazards and not impede outage restoration.
	Alternative #2	Not applicable
	Justification for Recommended Alternative	This is required to provide a smooth hard surface during all weather seasons. Gravel driveways require smoothing and filling overtime as plowing and vehicles often move the gravel around and allow for crawl space under station compound fences. Paving will facilitate snow plowing and will enable ready access to the station for maintenance and emergency repair activities year-round. Impeded access due to poor driveway conditions could result in longer outage durations. Paving the driveway also improves safety by eliminating tripping hazards and allowing for improved snow removal.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not applicable
	Comparative Information on Equivalent Historical Projects (if any)	Not Applicable
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Description of the Relationship between the Asset Characteristics and Consequences of Asset Performance Deterioration or Failure:	Not Applicable
	Condition of Asset vs. Typical Life Cycle and Performance Record	Not Applicable
	Number of Customers in Each Customer Class Potentially Affected by Asset Failure	0
	Quantitative Customer Impacts (frequency or duration of interruptions and associated risk level)	Not Applicable
	Qualitative Customer Impacts (customer satisfaction, customer migration and associated risk level)	Not Applicable

Value of Customer Impact	Low
Factors Affecting Project Timing, if any	Not Applicable
Consequences for O&M System Costs Including Implications of Not Implementing	Not Applicable
Reliability and Safety Factors	Not Applicable
Analysis for "Like for Like" Renewal Project	Not Applicable



	2019	2020	2021	2022	2023	2024
Submitted: $20,000	$0	$0	$0	$0	$0	$20,000
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

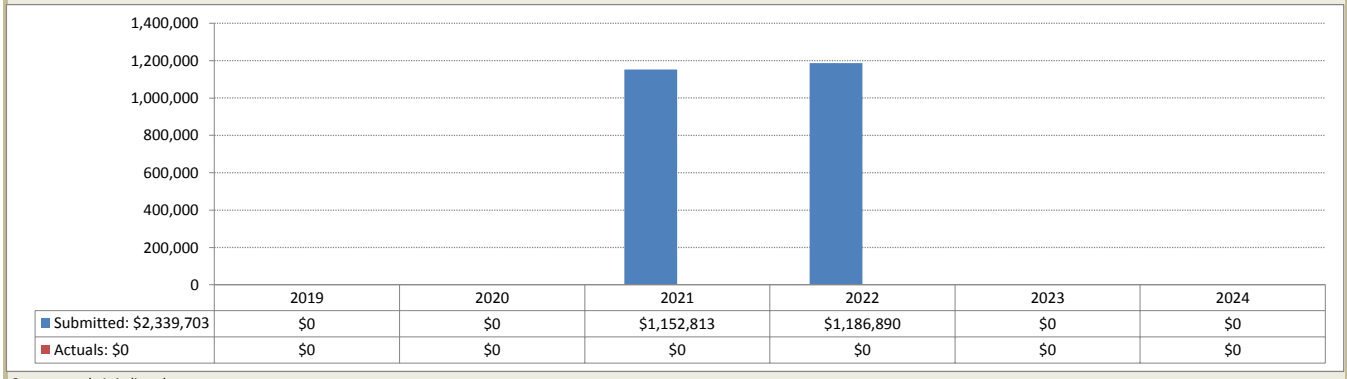
OEB Multi-Project Report

Project Code	151233
Project Name	New Construction - Campbell TS 36M63 Feeder PHASE 1 & 2, Guelph
Major Category	System Service
Scenario	Submitted

Project Overview

2. Additional Information	Service Territory	Guelph
	Location	
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
4. Evaluation Criteria (OEB)	Project Summary	There is a requirement to provide additional capacity support to the NW area of the City of Guelph. This project identifies a new 13.8kV feeder required from Campbell TS to bring additional load support to NW section of the city as the existing 13.8kV feeders in the area are unable to accommodate the additional load growth. The new feeder will also have load transferred to it from the existing 13.8kV feeders in the area, to alleviate the capacity constraints in the vicinity. Investments in this project will provide capacity to new and existing customers and increase the security and reliability of supply to customers. New civil infrastructure is needed from HONI owned Campbell TS to the first manhole on south side of Campbell Rd/Dawson Rd (MH390) with HONI civil work involved at the station and requiring an easement on adjacent property for new GHESI duct structure with new cable splice manhole. From MH390, existing civil infrastructure with spare ducts can be utilized up to Lewis Rd/Massey Rd across on the Hanlon Expressway. The feeder would be from Campbell TS, ZE Bus, Feeder 36M63 which is being redirected from NE to NW section of the city. A new pole line will be required on the south side of Massey Rd from Lewis to Imperial Rd to bring this express feeder up to Imperial Rd to provide support to existing loads connected on 36M22, 36M23, 36M34 and 36M42. A new pad-switch and two SCADAmate switches are required to create the appropriate inter-ties at Imperial Rd. In Phase 2 of the project in 2022, a new pole line is required between Imperial Rd and Elmira Rd to accommodate load growth and support existing loads connected. The Imperial Rd N pole line between Massey Rd and Speedvale Ave W needs to be rebuilt with 556ASC overhead conductor to meet existing construction standards and to increase the feeder current rating to 600A.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	The new feeder circuit will be used to transfer load out of Campbell JQ yard and also accommodate possible feeder outages required for a MTO project at Woodlawn Rd and Hanlon Pkwy. Campbell TS J and Q busses have hard limits of 46 MVA and 50 MVA instead of the standard Campbell TS 63 MVA LTR ratings. This requires GHESI to implement a control action that prevents HONI from planning any bulk system or equipment outages between the months of May to September for the following equipment : 230 kV circuits D6V/D7V, Campbell B, Campbell Y, Campbell J, Campbell Q, Campbell Z and Campbell E busses. New industrial connections from customer Linamar connecting to the JQ Bus pair require additional feeder capacity to transfer load out of the Campbell JQ yard and even with the HONI control action in place continued load growth in the Northwest Business Park will exceed the Campbell TS bus ratings in the near future (2-3 years). Planned or emergency bus outages at Campbell TS result in a loss of N-1 switching capability for the majority of customers supplied from Campbell TS. Alectra has already installed scada switches to enable System Control Operators the ability to remotely transfer feeders 36M33, 36M44 and 36M52 (20 MVA) out of Campbell TS to Cedar TS to accommodate planned or emergency Campbell TS Bus outages.
	Customer Attachment / Load (KVA)	Linamar Camtac # 2 (Campbell J Bus 36M31) 4000 KVA energized in fourth quarter 2017, Linamar Quadrad # 2 (Campbell Q Bus 36M43) 1500 KVA to 4000 KVA upgrade in 3rd quarter 2018, Linamar Linergy # 2 (Campbell Q Bus 36M42) 4000 KVA energized 4th quarter 2018. Linamar corporation has either added or upgraded the transformer at a minimum of one manufacturing plant to 4000 or 5000 KVA every year for the past 5 years. Normal loading for a Linamar plant is 40 to 60 percent of connected transformation. Alectra is also required to provide 6 MVA of emergency standby for PolyCon (Campbell Q Bus 36M41).
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Pertaining to coordination with utilities, regional planning and other 3rd parties, Alectra constructs all new projects using approved construction standards complying with ESA Regulation 22/04. Alectra Guelph participates in regional planning, both at an infrastructure level with local municipalities and regions, as well as at an electrical infrastructure level with Hydro One and other participants in the Regional Planning Process. Alectra also attends Public Utility Coordinating Committee (PUCC) meetings which jointly allows for the coordination and planning of investments with other utilities who provide cable tv, internet, phone and natural gas services.

	Economic Development	By improving capacity in the North West section of the city, future development and intensification that is likely occur due to Linamar plants - can be more adequately supplied with existing infrastructure, mitigating cost barriers to attracting new load growth.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Status quo is to leave the circuits as they are and not build anything. This is not a viable option as the existing Campbell TS feeders are already near their planning limit and cannot accommodate future load growth and load relief under contingency scenarios.
	Alternative #1	Build a new circuit out of 36M63 ZE Bus as described in the project summary.
	Alternative #2	There is no viable alternate solution, as 36M63 needs to be an express circuit until the Hanlon crossing. There is no existing pole lines that can accommodate an additional circuit to be strung on Campbell Road and Dawson Road, as they already have overhead pole lines on both sides of the road. Re-building the pole lines on those roads to accommodate an additional circuit is not feasible due to outages required and the constraints that it would put on the system.
	Justification for Recommended Alternative	Alternative #1 is the recommended alternative as it provides feeder capacity relief to existing adjacent feeders in the area and there is no viable alternative. However, the project cost includes estimated HONI Civil work costs and easement costs at 171 Dawson Rd and Alectra 2018 labour/contractor pricing.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Timing of the project due to the unknown construction schedule for MTO Hwy 7 work and HONI timelines to install underground duct structure at Campbell TS. Linamar is currently considering taking three of their plants off-grid, thus reducing 10-12MW of load in NW section of City of Guelph. Some additional factors might increase the overall project cost.
	Comparative Information on Equivalent Historical Projects (if any)	There are no recent comparable projects.
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not applicable.
	Identify any reliability, efficiency, safety or coordination benefits	Alectra Utilities requires to prepare the distributions system to address the system capacity need driven by intensification. This project will also help reliability and security of supply to the North West Section of the city, especially during the expansion of Hwy 7 by MTO at Woodlawn Rd.

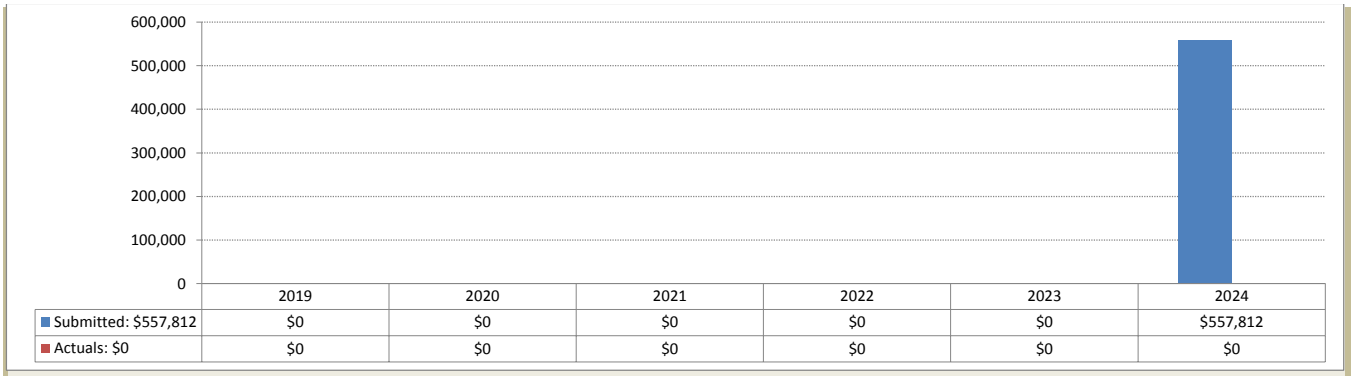


	2019	2020	2021	2022	2023	2024
Submitted: $2,339,703	$0	$0	$1,152,813	$1,186,890	$0	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal

OEB Multi-Project Report

Project Code	151240	
Project Name	Southgate Dr to Maltby Rd O/H Extension	
Major Category	System Service	
Scenario	Submitted	
Project Overview		
2. Additional Information	Service Territory	Guelph
	Location	
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
4. Evaluation Criteria (OEB)	Project Summary	The road extension by City of Guelph and potential developments on Southgate Drive requires two 13.8kV circuit expansion in order to provide capacity and contingency. Developments consist of various industrial and commercial customers (including large scale warehouse) with an additional 5 MVA to 8 MVA required capacity. Extending OH circuits will provide capacity and contingency for the loads connected south of Clair Road on Southgate Drive.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	Development of various industrial and commercial plants will result in required capacity.
	Customer Attachment / Load (KVA)	The proposed plants call for large scale warehouses with 5-8MVA of connected transformation.
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	"Connect to existing radial 13.8kV line. The existing feeders will provide the required capacity for the development; however no contingency is available. This is not the recommended option."
	Alternative #1	"Extending OH circuits and connecting is to the pole line on Maltby Rd will provide capacity and contingency for the loads connected on Southgate Dr south of Clair Rd. "
	Alternative #2	
	Justification for Recommended Alternative	"Extending OH circuits and connecting is to the pole line on Maltby Rd will provide capacity and contingency for the loads connected on Southgate Dr south of Clair Rd. "
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable.
	Comparative Information on Equivalent Historical Projects (if any)	
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable Identify any reliability, efficiency, safety or coordination benefits	Not applicable.



	2019	2020	2021	2022	2023	2024
Submitted: $557,812	$0	$0	$0	$0	$0	$557,812
Actuals: $0	$0	$0	$0	$0	$0	$0

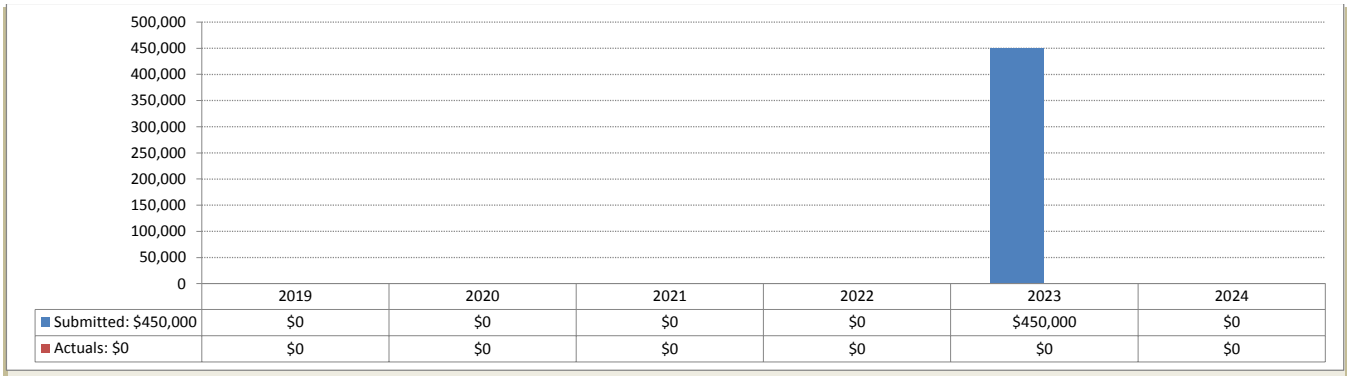
Currency scale is in literal

OEB Multi-Project Report

Project Code	151241
Project Name	Arlen MTS - New Feeder
Major Category	System Service
Scenario	Submitted

Project Overview

2. Additional Information	Service Territory	Guelph
	Location	
	Units	
	Project Class	No Burden
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Rates ID	Rate Base Funded
	Alectra Grouping	Capacity (Lines)
	Alectra Subcategory	Line Capacity Projs & Add Circ
	Contributed Capital	*Entered Manually in Forecast
	Expenditure Type	Controllable
4. Evaluation Criteria (OEB)	Project Summary	Development of various residential, commercial and industrial areas, roughly 1,300 acres of land, will result in required capacity at south Guelph. City of Guelph is proposed development of about 50,000 sq.m commercial floor area at Gordon and Clair in south Guelph. Multiple high and mid rise residential buildings totaling over 500 units plus townhouses are proposed to be constructed. This will translate into additional 4 MW residential/commercial capacity in near term and more capacity requirements in mid-long term. New distribution feeder will provide capacity and contingency for the growing residential and commercial loads in south Guelph.
	Main Driver - System Service	Support Capacity Delivery
	Priority and Reasons for Priority	Development of various industrial and commercial plants will result in required capacity.
	Customer Attachment / Load (KVA)	
	Safety	Not applicable.
	Cyber-Security, Privacy	Not applicable.
	Coordination, Interoperability	Not applicable.
	Economic Development	Not applicable.
	Environmental Benefits	Not applicable.
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	
	Alternative #1	"Extending OH circuits and connecting is to the pole line on Maltby Rd will provide capacity and contingency for the loads connected on Southgate Dr south of Clair Rd. "
	Alternative #2	
	Justification for Recommended Alternative	
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not Applicable.
	Comparative Information on Equivalent Historical Projects (if any)	
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not applicable.
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not applicable.
	Description of Incorporation of Advanced Technology, if applicable	Not applicable.
	Identify any reliability, efficiency, safety or coordination benefits	



	2019	2020	2021	2022	2023	2024
Submitted: $450,000	$0	$0	$0	$0	$450,000	$0
Actuals: $0	$0	$0	$0	$0	$0	$0

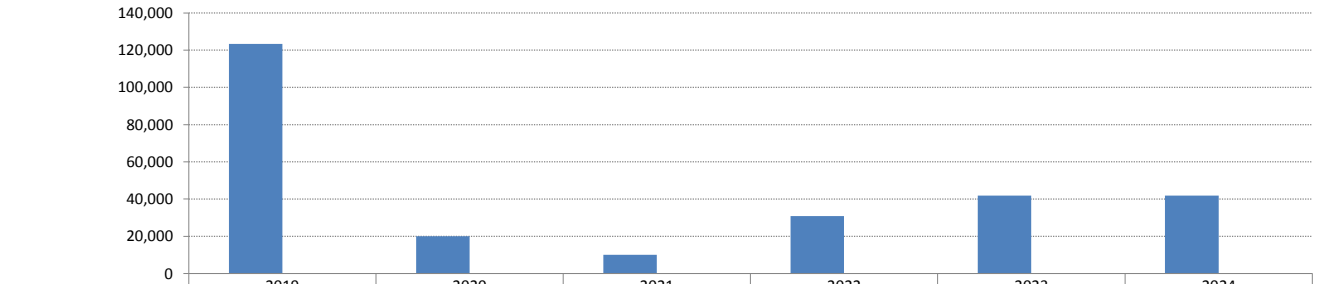
Currency scale is in literal

OEB Multi-Project Report

Project Code	151245
Project Name	Capacitor Bank Installations
Major Category	System Service
Scenario	Submitted

Project Overview

2. Additional Information	Service Territory	Guelph
	Location	various locations in Guelph
	Units	
	Project Class	Regular
	Project Includes R&D	No
	Technology Project or has Technology Component	No
	Project Will Generate Ongoing IT OM&A Costs	No
3. General Project Information (OEB)	Rates ID	Rate Base Funded
	Alectra Grouping	System Control, Comm & Performance
	Alectra Subcategory	Power Quality
	Contributed Capital	Contributed Capital 0%
	Expenditure Type	Controllable
4. Evaluation Criteria (OEB)	Project Summary	Not available
	Main Driver - System Service	Reliability
	Priority and Reasons for Priority	Not available
	Customer Attachment / Load (KVA)	not applicable
	Safety	Not available
	Cyber-Security, Privacy	Not available
	Coordination, Interoperability	Not available
	Economic Development	Not available
	Environmental Benefits	Not available
5. Qualitative and Quantitative Analysis of Project and Project Alternatives (OEB)	Status Quo	Do not install the capacitor banks. This result sin poor power factor and higher distribution system losses.
	Alternative #1	Install capacitors banks at strategic locations in the distribution system.
	Alternative #2	Not available
	Justification for Recommended Alternative	Installing capacitor banks in the distribution system increases power factors, capacity, and reduces line losses.
6. General Information on the Project/Activity (OEB)	Risks to Completion and Risk Management	Not available
	Comparative Information on Equivalent Historical Projects (if any)	not available
	Total Capital and OM&A Costs for Renewable Energy Generation portion of Projects (if any)	0
7. Category-Specific Requirements for Each Project/Activity (OEB)	Benefits to Customers of Project Expressed in terms of Cost Impact, where practicable	Not available
	Regional Electricity Infrastructure Requirements which affect Project, if applicable	Not available
	Description of Incorporation of Advanced Technology, if applicable	Not available
	Identify any reliability, efficiency, safety or coordination benefits	



	2019	2020	2021	2022	2023	2024
Submitted: $267,889	$123,366	$20,000	$10,000	$30,841	$41,841	$41,841
Actuals: $0	$0	$0	$0	$0	$0	$0

Currency scale is in literal