ENERGY PROBE COMPENDIUM #2

EB-2019-0018

ONTARIO ENERGY BOARD

IN THE MATTER OF the *Ontario Energy Board Act*, *1998*, S.O. 1998, c.15 (Sched. B);

AND IN THE MATTER OF an application by Alectra Utilities Corporation under Section 78, for an Order or Orders approving or fixing just and reasonable rates and other service charges for the distribution of electricity, as of January 1, 2020.

Alectra Utilities Hearing

Energy Probe Research Foundation

October 15, 2019

Alectra Hearing October15, 2019
EP Compendium #2

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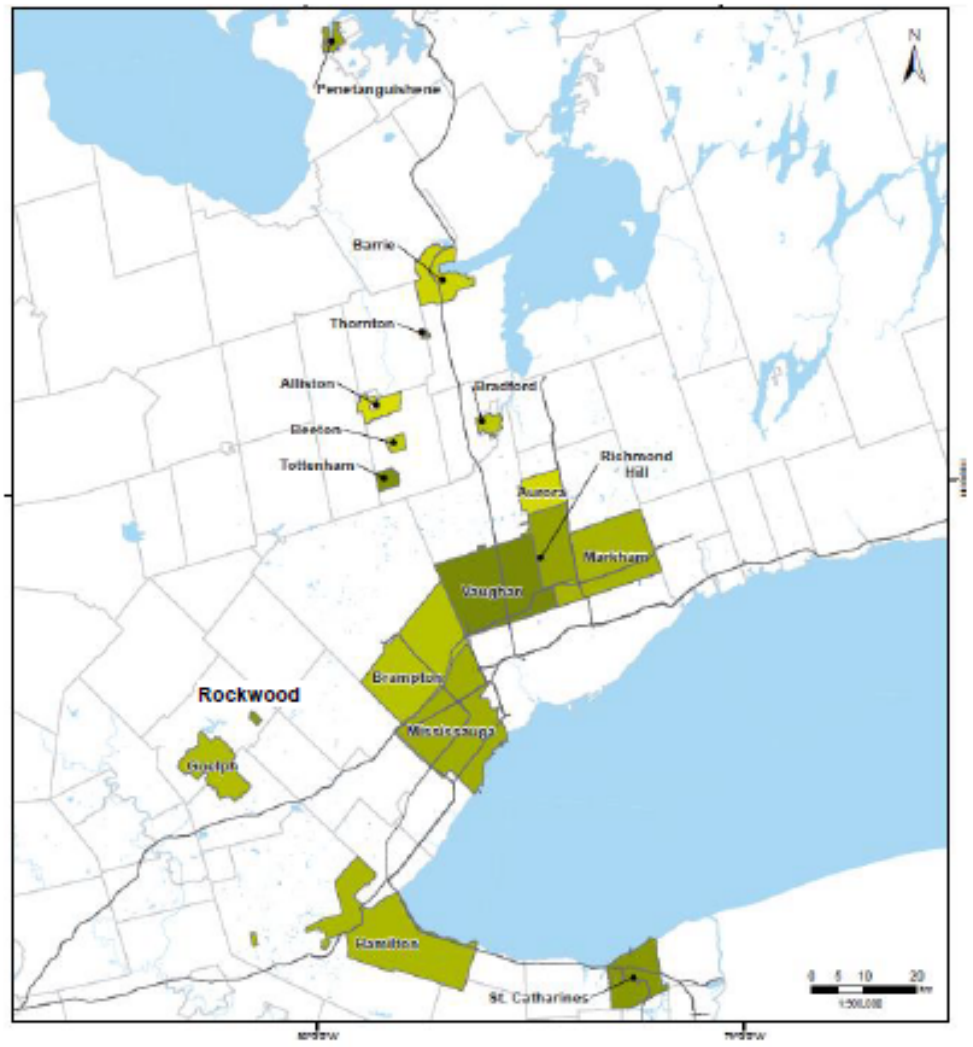
Table 5.1 - 1: Alectra Utilities' Operating Areas

Operating Area	Municipality
East	Alliston, Aurora, Barrie, Beeton, Bradford, Markham, Penetanguishene, Richmond Hill, Thornton, Tottenham, Vaughan
Central	Brampton (North), Mississauga (South)
West	Hamilton, St. Catharines
South West	Guelph, Rockwood

Figure 5.1 - 1: Alectra Utilities' Service Area



KT2.1 Page 1

EP Exhibit TC XX based on EP-4 IRR

Alectra Utilities Rate Zones System Reliability

SAIDI [MEDs Adjusted]	HISTORIC 2014-1018							Target
Rate Zone	2014	2015	2016	2017	2018	*5 year Avg*	*Trend**	*2020-2024*
ERZ	0.53	0.72	0.81	0.61	0.94	*0.72*	*Worse*	
BRZ	0.38	0.48	0.45	0.41	0.58	*0.46*	*Worse*	
HRZ	1.00	1.57	1.51	1.23	1.93	*1.45*	*Worse*	
PRZ	1.23	1.19	0.90	1.05	1.10	*1.09*	*Better*	
GRZ	0.75	0.57	0.82	0.47	0.30	*0.58*	*Better*	
Alectra	**0.88**	**1.05**	**0.96**	**0.87**	**1.14**	***0.98***	*Worse*	***0.98***
SAIFI [MEDs Adjusted]								
ERZ	0.97	1.64	1.13	1.14	1.50	*1.28*	*Worse*	
BRZ	0.81	0.98	0.72	0.68	0.87	*0.81*	*Better*	
HRZ	1.48	1.86	1.93	1.74	2.54	*1.91*	*Worse*	
PRZ	1.48	1.14	0.96	1.16	1.24	*1.20*	*Better*	
GRZ	1.30	1.53	1.95	1.30	0.97	*1.41*	*Better*	
Alectra	**1.27**	**1.41**	**1.24**	**1.23**	**1.53**	***1.34***	*Worse*	***1.34***
MAIFI								
Alectra					**3.53**			***No Target***

SAIDI [MEDs Adjusted]	Defective Equipment Cause Code							
Rate Zone	2014	2015	2016	2017	2018	*5 year Avg*	*%of SAIDI*	*Trend**
ERZ	0.31	0.37	0.48	0.34	0.56	*0.41*	*57.06%*	
BRZ	0.27	0.17	0.19	0.24	0.38	*0.25*	*54.35%*	
HRZ	0.49	0.74	0.35	0.38	0.65	*0.52*	*36.05%*	
PRZ	0.49	0.42	0.41	0.45	0.48	*0.45*	*41.13%*	
GRZ	0.06	0.18	0.34	0.18	0.08	*0.17*	*28.87%*	
Alectra	**0.40**	**0.44**	**0.37**	**0.36**	**0.50**	***0.41***	***42.29%***	*Worse*
SAIFI [MEDs Adjusted]	**Defective Equipment Cause Code**						***% SAIFI***	
ERZ	0.51	0.53	0.54	0.54	0.75	*0.57*	*44.98%*	
BRZ	0.47	0.21	0.20	0.35	0.42	*0.33*	*40.64%*	
HRZ	0.44	0.46	0.35	0.35	0.45	*0.41*	*21.47%*	
PRZ	0.51	0.31	0.41	0.40	0.45	*0.42*	*34.78%*	
GRZ	0.10	0.49	0.39	0.38	0.13	*0.30*	*21.13%*	
Alectra	**0.47**	**0.38**	**0.39**	**0.41**	**0.49**	***0.43***	***31.92%***	*Worse*

Summary Alectra Reliability

	2014	2015	2016	2017	2018	*5 year Avg*
Alectra SAIDI Meds Adj	**0.88**	**1.05**	**0.96**	**0.87**	**1.14**	***0.98***
Alectra SAIFI Meds Adj	**1.27**	**1.41**	**1.24**	**1.23**	**1.53**	***1.34***

Chart 1

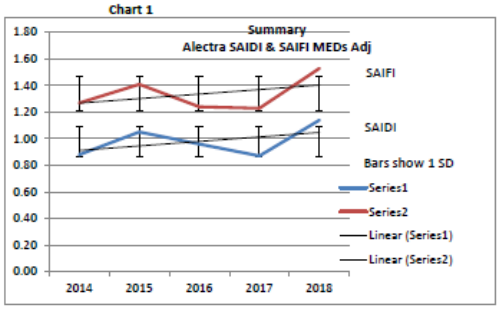


Chart 2

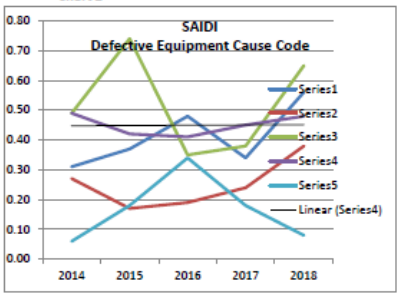


Chart 3

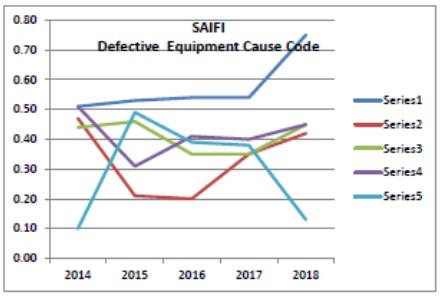


Chart 4

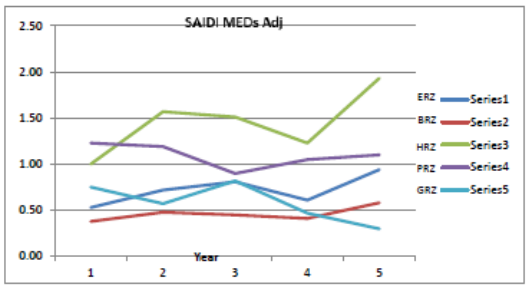
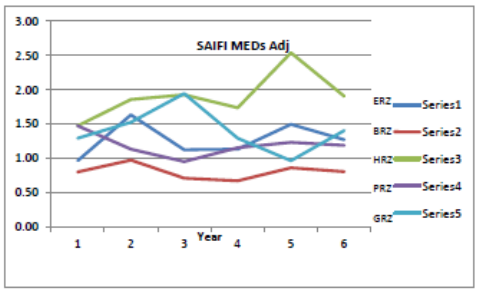


Chart 5



SAIDI	Effect of Major Event Days						
Rate Zone	2014	2015	2016	2017	2018		Difference
ERZ MEDs Adj	0.53	0.72	0.81	0.61	0.94	*0.72*	
ERZ Unadjusted	0.67	0.72	0.81	0.71	1.72	*0.93*	0.20
BRZ MEDs Adj	0.38	0.48	0.45	0.41	0.58	*0.46*	
BRZ Unadjusted	0.57	0.72	0.45	0.48	0.72	*0.59*	0.13
HRZ MEDs Adj	1.00	1.57	1.51	1.23	1.93	*1.45*	
HRZ Unadjusted	2.18	1.77	1.64	1.47	2.96	*2.00*	0.56
PRZ MEDs Adj	1.23	1.19	0.90	1.05	1.10	*1.09*	
PRZ Unadjusted	1.45	1.99	2.74	1.44	1.95	*1.91*	0.82
GRZ MEDs Adj	0.75	0.57	0.82	0.47	0.30	*0.58*	
GRZ Unadjusted	0.75	0.57	1.08	0.47	0.50	*0.67*	0.09
Alectra MEDs Adj	**0.88**	**1.05**	**0.96**	**0.87**	**1.14**	***0.98***	
Alectra Unadjusted	**1.3**	**1.42**	**1.66**	**1.1**	**1.87**	***1.47***	**0.49**

EP IRR 4 c) System Interruptions (SAIDI) for Ontario Utilities 2018 showing Alectra Legacy Utilities

c) Alectra Utilities has updated the chart provided in EB-2018-0165 as Figure 1 and Figure 2, below. A breakdown of SAIDI and SAIFI by quartile is provided in Tables 23 to 24, below.

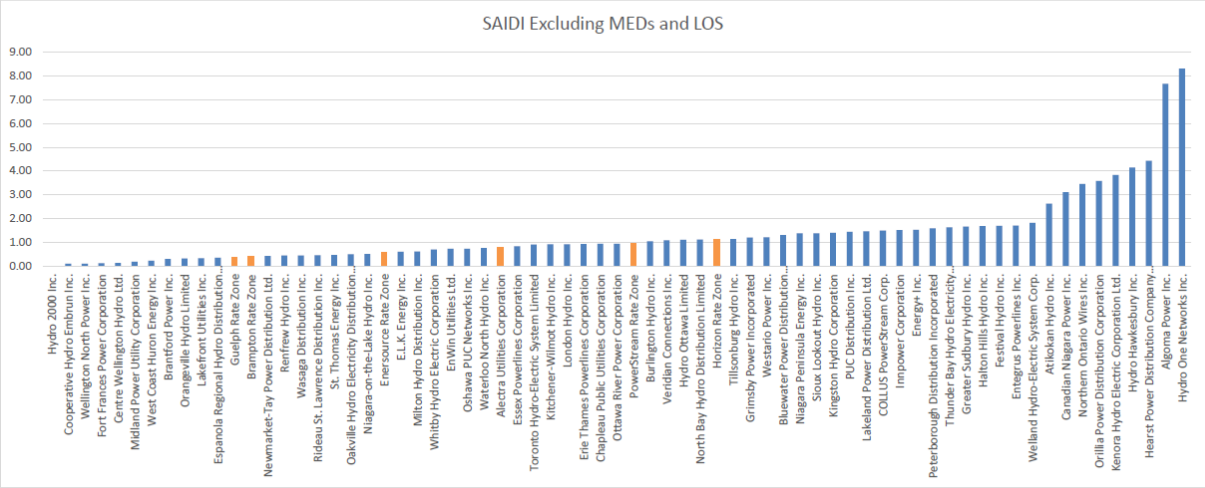


Figure 1: SAIDI Excluding MEDS and LOS

Table 24 - SAIDI Quartile Grouping

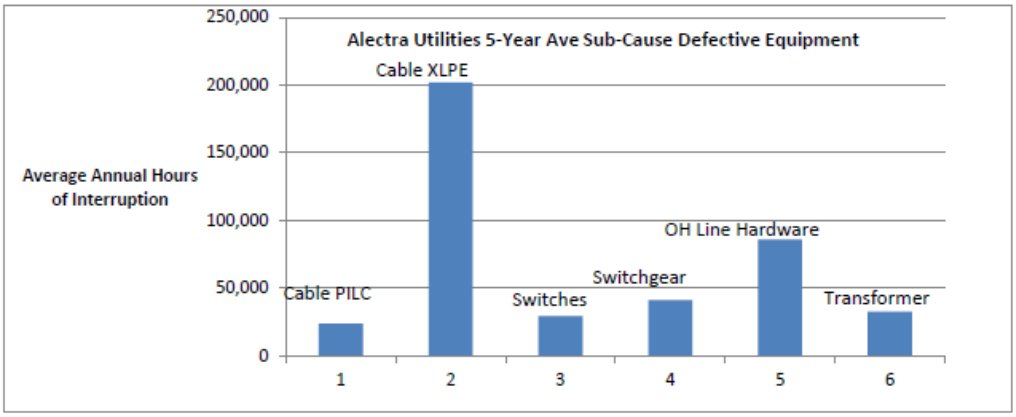
Quartile	SAIDI
Q1	BRZ, GRZ
Q2	ERZ, Alectra
Q3	PRZ and HRZ
Q4	None

EP KT2.1 Page 2 Causes of Interruptions SAIDI and SAIFI

Alectra EP IRR 26 Table 2
Ex 04 Tab1 Sch 1Fig 5.2.3-11

5 Year Reliability Average Impact

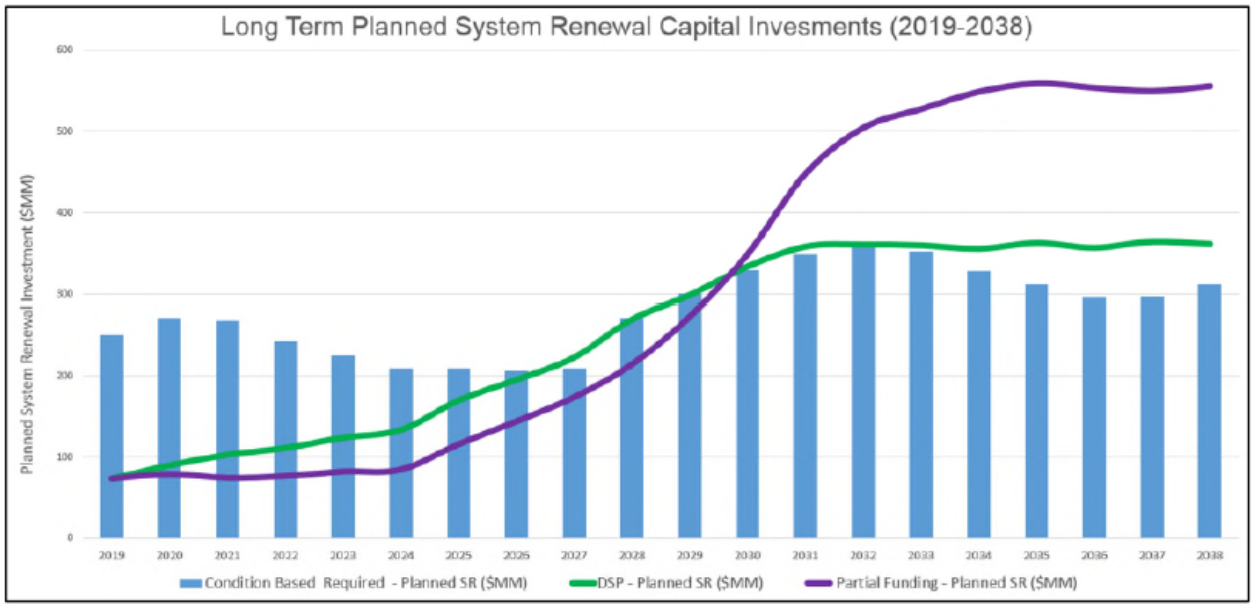
Asset Type	# of Events	# of Customer Interruptions	Customer Hour Interruptions	Per Event Customer Impact	Per Event Duration Impact hrs	% of Events	% of Duration	Customer Int SAIDI*
Cable & Accessories PILC	14	14,633	23,966	1,031	1.64	0.01	0.06	0.02
Cable & Accessories XLPE	504	168,999	202,003	335	1.20	0.44	0.49	0.20
Switches	87	38,916	29,262	446	0.75	0.08	0.07	0.03
Switchgear	57	51,104	41,099	897	0.80	0.05	0.10	0.04
OH Line Hardware	157	87,219	85,845	557	0.98	0.14	0.21	0.09
Transformer	317	20,365	32,666	64	1.60	0.28	0.08	0.03
TOTAL	**1,136**	**381,236**	**414,841**	**3,330**		**1.00**	**1.00**	**0.41**



*assumes~1 million Customers

Replacement Scenario	2019	2020	2021	2022	2023	2024	Total	Impact on # Interruptions SAIFI	Impact on Duration Hrs SAIDI
# Units									
Cable & Accessories PILC	0	0	0	0	0	0	0	0	0
Cable & Accessories XLPE	216	306	400	445	495	538	2400	0.246	0.560
Switches	49	44	44	44	44	44	269	0.006	0.025
Switchgear	81	83	83	83	83	83	496	0.016	0.066
OH Line Hardware - Poles	912	868	929	907	890	868	5374	0.034	0.009
Transformer	1008	485	530	565	580	590	3758	0.016	0.066

Figure 2: Long-Term System Renewal Trends



Customer Engagement Exhibit 4 Appendix C

Online Workbook

Reliability Experience | Preamble

Residential

Reliability Experience

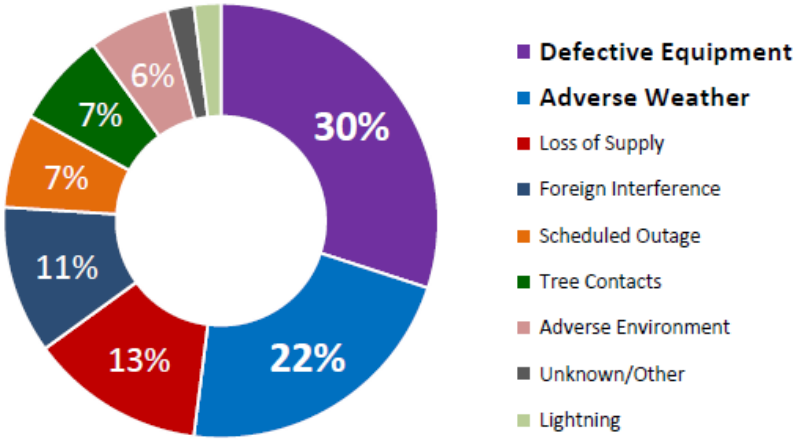
Reliability is a key priority for Alectra Utilities. Since 2014, both the average **number** and **duration** of outages has increased for the typical Alectra Utilities customer.

- The average number of outages (excluding major event days) has increased by an average of 6% per year from 2014-2018, rising from **1.27 to 1.53** over this period.
- The average duration of outages (excluding major event days) has increased by an average of 8% per year from 2014-2018, rising from **0.88 hours to 1.14** hours over this period.

The two primary contributors to outages account for more than 50% of all outages.

1. **Defective equipment** accounted for 30% of customer hours of interruption between 2014-2018, the single largest outage cause.
2. **Adverse weather** is the second leading cause of outages. It accounted for 22% of customer hours of interruption over the same period.

Customer Outage Duration (Hours) by Cause 2014-2018



Depending on what rate zone you are in, the subsequent pages will ask you to review between 7 and 13 choices, many of which address the issues identified in the chart above.

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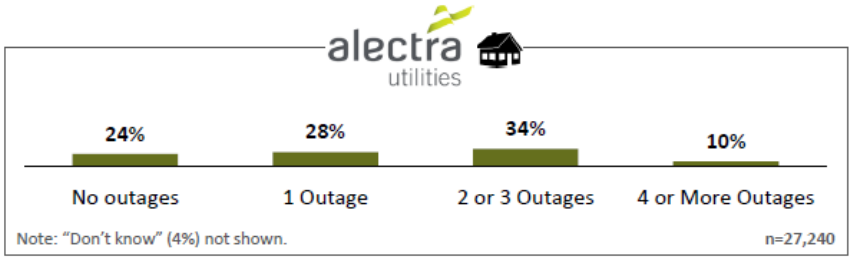
Online Workbook
Reliability Experience

Residential

Q In the past 12 months, how many power outages do you recall experiencing at home/your organization?



Rate Zone Breakdown	ERZ	BRZ	HRZ	PRZ	GRZ
No outages	30%	37%	20%	17%	29%
1 outage	28%	27%	30%	26%	30%
2 or 3 outages	28%	26%	37%	39%	29%
4 or more outages	8%	5%	10%	14%	8%
Don't know	6%	5%	3%	4%	4%

INNOVATIVE RESEARCH GROUP

Technical Conference Undertaking JT1.8

Table 1: Customer Outages by Rate Zone in 2018

Multiple Sustained Outages (Scheduled Outages Removed)					
Metric	PRZ	ERZ	HRZ	BRZ	GRZ
No Outages	27%	22%	25%	44%	31%
1 Outage	32%	30%	32%	17%	29%
2 or 3 Outages	33%	30%	34%	23%	29%
4 or more Outages	8%	18%	10%	16%	11%
Total	100.00%	100.00%	100.00%	100.00%	100.00%

Online Workbook

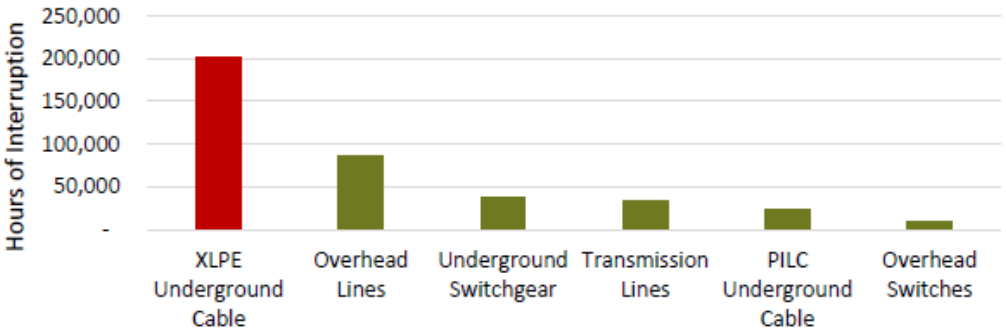
Underground Asset Renewal | Preamble

Residential

Underground Asset Renewal

Equipment failure is the single largest cause of outages in Alectra Utilities' system. As the chart below illustrates, a particular type of equipment known as cross-linked polyethylene (XLPE) cable is the leading cause of outages across Alectra Utilities' system.

What type of equipment is causing the most outages? (5-year average)



Case Study

The deterioration of these cables is directly impacting customers. For example, the York/Hilda neighbourhood in Vaughan was originally scheduled to have its cables replaced in 2019. But in 2018, customers began to experience a cascading series of prolonged outages, due to cable failures. Cables repaired one week would fail again the next. In the summer, 250 customers experienced eight cable faults (one outage a week). As a result, the cable had to be replaced on an emergency basis at both a higher cost to Alectra Utilities and major inconvenience to the affected customers.

As Alectra Utilities reviewed all of its equipment across all of its operating areas, it became clear that replacing XLPE underground cable requires an accelerated investment plan. To provide the best value to customers, Alectra Utilities will be using two approaches:

- **Cable Rejuvenation**: Cable rejuvenation is a lower-cost solution that can extend the life of these cables without the need to excavate and replace the entire cable. While it is the better value for customers for cables in fair condition, it is not effective for cables that are already declining.
- **Cable Replacement**: In some cases, Alectra Utilities has no prudent choice but to replace the cable. Replacing this equipment now rather than trying to extend its life will cost more now, but will deliver superior reliability over time, relative to older standards of cable.

Alectra Utilities has a decision to make regarding the pace in which they invest in replacing or extending the life of at-risk underground equipment.

Online Workbook

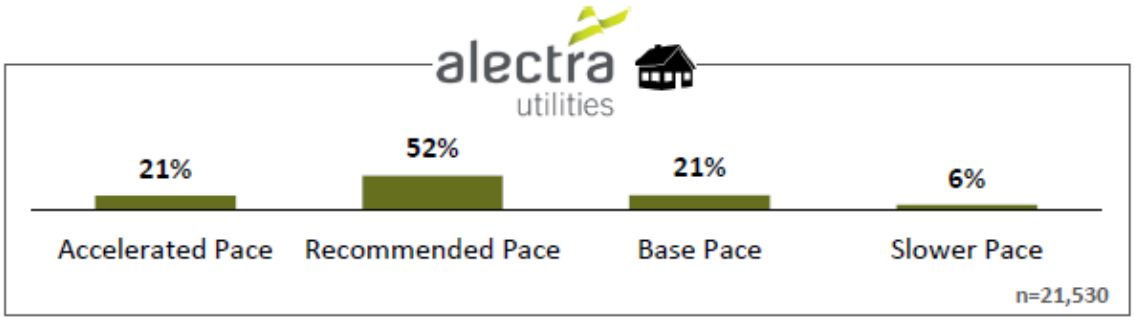
Pacing Investments in the Underground System

Residential

Within current rates, the reliability of underground cable is expected to further worsen by approximately 4% from current 2018 levels. As such, Alectra Utilities is recommending a pace of cable replacement and rehabilitation that will maintain current levels of reliability.

Q Which of the following cable replacement strategies would you prefer?

Option	Cable replaced or rehabilitated	Expected Reliability Outcome
Accelerated Pace *Additional $X.XX per month annually ($Y.YY more per bill by 2024)*	**2,184 km** by 2024	Improve the reliability of cables by 8% from the current (2018) level
Recommended Pace *Additional $X.XX per month annually ($Y.YY more per bill by 2024)*	**1,978 km** by 2024	Maintain the reliability of cables at the current (2018) level
Base Pace *Within current rates*	**1,861 km** by 2024	Reliability of cables to further worsen by 4% from the current (2018) level
Slower Pace *Decrease of $X.XX per month annually ($Y.YY less per bill by 2024)*	**1,624 km** by 2024	Reliability of cables expected to further worsen by 10% from the current (2018) level



Rate Zone Breakdown	ERZ	HRZ	PRZ
Accelerated Pace	21%	26%	17%
Recommended Pace	53%	52%	51%
Base Pace	21%	17%	24%
Slower Pace	6%	6%	7%

Key Findings

A strong majority of Alectra Utilities customers across all rate classes and in all rate zones support additional investments in infrastructure that most directly serve customers. These investments include:

- Overhead renewal;
- Underground renewal;
- Transformer replacement;
- Monitoring and control equipment; and
- Converting rear lot services.

The table below illustrates the typical reaction for underground investment options.

Percentage of Customers Who Chose Recommended or Higher Option for Underground System Investments

Rate Zone Breakdown *% Recommended or higher* *n-size for sample sizes <60*	ERZ	HRZ	PRZ
Residential	74%	77%	68%
Small Business	67%	74%	57%
GS > 50 kW – 4,999	34/51	17/24	46/62
Large Use	4/5	5/7	1/1

EP IRR 8 Parts e) and f) U/G Cable Replacement Quantities and Costs

Table 1: Cost ($MM) and Quantity (kms) of Cable Replacement by Area per Year Between 2015-2018

Area		Year 2015	2016	2017	2018
BRZ	Cost ($MM)	$2.657	$0.634	$4.251	$4.001
	Quantity (km)	1.97	0.5	5.09	7
	Unit Cost ($MM/km)	$1.349	$1.268	$0.835	$0.572
PRZ	Cost ($MM)	$12.105	$9.790	$8.341	$9.865
	Quantity (km)	33.3	29.6	20.5	22.3
	Unit Cost ($MM/km)	$0.364	$0.331	$0.407	$0.442
ERZ	Cost ($MM)	$14.977	$13.434	$18.670	$16.125
	Quantity (km)	21.69	16.75	19.12	33.64
	Unit Cost ($MM/km)	$0.691	$0.802	$0.976	$0.479
HRZ	Cost ($MM)	$0.000	$2.886	$6.610	$2.486
	Quantity (km)	0	17.28	14.5	10.57
	Unit Cost ($MM/km)	$0.000	$0.167	$0.456	$0.235
GRZ	Cost ($MM)	$0.502	$2.030	$1.548	$0.256
	Quantity (km)	1.49	5.27	6.6	0.43
	Unit Cost ($MM/km)	$0.337	$0.385	$0.235	$0.595
Alectra Utilities	Cost ($MM)	$30.241	$28.773	$39.419	$32.733
	Quantity (km)	58.45	69.40	65.81	73.94
	Unit Cost ($MM/km)	$0.517	$0.415	$0.599	$0.443

f) Alectra Utilities proposes to replace 675.38km at a total cost of $236.33MM over 2020-2024 time period. Alectra Utilities provides the details by year in Table 2.

Table 2: Cost ($MM) and Quantity (kms)

	2020	2021	2022	2023	2024
Cable Length (kms)	93.00	130.00	139.75	150.23	162.40
Cost	$ 32.67	$ 44.20	$ 49.21	$ 52.71	$ 57.54

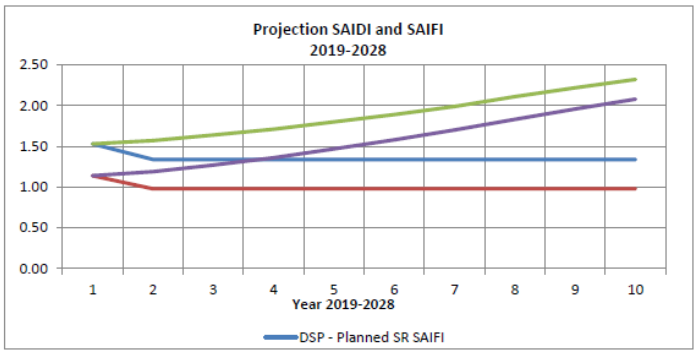
EP KT2.1 Page 3 Alectra DSP System Reliability Improvement Scenarios

Alectra Revision

Table 5: 10 Year Reliability Impact Projection for SAIDI and SAIFI for Scenarios Considered in the Long Term Planned System Renewal Capital Investment Analysis

	DSP - Planned SR Scenario		Partial Funding - Planned SR Scenario	
Year	SAIFI (Interruptions)	SAIDI (Hours)	SAIFI (Interruptions)	SAIDI (Hours)
2019	1.53	1.14	1.53	1.14
2020	1.34	0.98	1.57	1.19
2021	1.34	0.98	1.64	1.27
2022	1.34	0.98	1.71	1.36
2023	1.34	0.98	1.80	1.47
2024	1.34	0.98	1.89	1.58
2025	1.34	0.98	1.99	1.70
2026	1.34	0.98	2.11	1.83
2027	1.34	0.98	2.22	1.96
2028	1.34	0.98	2.32	2.08

Chart 6



ENERGY PROBE WORKBOOK PAGE 1 System Renewal Spending

EP Exhibit XX based on Staff IRR 104

Table 2 - Actual spending from 2012 to 2018, 2019 Q2 Forecast, 2020 – 2024 Plan ($MM)

Category		2012 Actual	2013 Actual	2014 Actual	2015 Actual	2016 Actual	2017 Actual	2018 Actual	2019 Actual	2020 Plan	2021 Plan	2022 Plan	2023 Plan	2024 Plan	2012-2018 Average	2020-2024 DSP Spend
System Renewal																
All Assets	Powerstream	$17.00	$22.30	$39.20	$47.40	$42.20	$39.40	$38.10	$38.20	$52.10	$52.20	$55.60	$61.00	$66.10	$35.09	Higher
	Horizon	$14.10	$18.40	$15.40	$17.40	$23.00	$33.30	$31.60	$36.30	$25.70	$27.90	$30.40	$23.40	$33.50	$21.89	Higher
	Enersource	$16.20	$20.90	$31.30	$44.70	$40.40	$43.90	$41.60	$32.80	$37.60	$39.80	$42.40	$45.30	$51.80	$34.14	Higher
	Brampton	$8.70	$12.10	$9.10	$9.80	$7.20	$11.90	$13.60	$14.70	$17.40	$15.80	$19.10	$19.80	$19.10	$10.34	Lower
	Guelph	$2.50	$2.80	$3.70	$3.30	$6.20	$7.50	$4.80	$5.60	$6.10	$6.30	$6.50	$6.60	$6.80	$4.40	Lower
System Renewal	Total	$58.50	$76.50	$98.70	$122.60	$119.00	$136.00	$129.70	$127.60	$138.90	$142.00	$154.00	$156.10	$177.30	$105.86	
U/G Repl. / Rehab																
	Powerstream	$3.00	$19.60	$21.00	$19.30	$14.50	$12.00	$13.50	$11.80	$19.30	$23.00	$26.60	$29.10	$32.30	$14.70	Higher
	Horizon	$0.00	$1.60	$0.90	$0.30	$4.70	$7.50	$6.60	$7.80	$6.30	$7.10	$7.40	$7.40	$8.10	$3.09	Higher
	Enersource	$5.10	$6.50	$16.90	$15.00	$13.40	$18.70	$16.10	$9.80	$16.80	$24.00	$26.70	$29.30	$30.90	$13.10	Higher
	Brampton	$3.50	$4.00	$3.90	$2.70	$0.60	$4.30	$4.00	$3.80	$4.30	$5.70	$6.30	$7.20	$8.40	$3.29	Higher
	Guelph	$2.10	$2.60	$3.20	$1.30	$3.20	$4.00	$0.60	$0.00	$1.30	$1.30	$1.30	$1.30	$1.40	$2.43	Lower
U/G Repl. / Rehab	Subtotal	$13.70	$34.30	$45.90	$38.60	$36.40	$46.50	$40.80	$33.20	$48.00	$61.10	$68.30	$74.30	$81.10	$36.60	
Wood Pole Replacements																
	Powerstream	$4.10	$4.90	$5.90	$6.20	$4.40	$4.00	$4.60	$4.90	$5.60	$5.90	$6.10	$6.40	$6.40	$4.87	Higher
	Horizon	$0.90	$0.70	$1.20	$1.30	$1.60	$0.80	$1.90	$1.90	$2.30	$2.50	$2.80	$3.10	$3.30	$1.20	Higher
	Enersource	$0.60	$0.30	$0.50	$7.30	$9.60	$8.40	$7.70	$6.40	$4.50	$3.90	$3.50	$3.10	$2.70	$4.91	Lower
	Brampton	$1.10	$1.00	$1.20	$0.10	$0.60	$1.30	$0.80	$0.70	$0.90	$2.10	$2.80	$2.90	$3.00	$0.87	Higher
	Guelph	$0.30	$0.10	$0.20	$1.50	$2.20	$2.60	$2.70	$1.40	$1.20	$1.20	$1.20	$1.30	$1.30	$1.37	Lower
Wood Pole Replacements	Subtotal	$7.00	$7.00	$9.00	$16.40	$18.40	$17.10	$17.70	$15.30	$14.50	$15.60	$16.40	$16.80	$16.70	$13.23	
Reactive & Emer. Projects	Powerstream	$7.90	$8.20	$8.70	$11.20	$8.40	$9.40	$11.30	$9.50	$9.40	$9.60	$9.80	$10.00	$10.10	$9.30	Same
	Horizon	$4.00	$6.10	$4.80	$3.40	$3.90	$3.70	$5.40	$3.20	$3.40	$3.50	$3.60	$3.70	$3.80	$4.47	Same
	Enersource	$0.30	$0.30	$0.40	$0.30	$0.30	$0.40	$0.20	$3.20	$3.40	$3.50	$3.60	$3.60	$3.70	$0.31	Lower
	Brampton	$1.10	$2.40	$0.80	$1.60	$1.90	$1.90	$3.20	$1.50	$1.50	$1.60	$1.60	$1.60	$1.70	$1.84	Lower
	Guelph	$0.00	$0.00	$0.00	$0.10	$0.20	$0.20	$0.50	$1.10	$1.00	$1.00	$1.00	$1.10	$1.10	$0.14	Same
	Subtotal	$13.40	$17.00	$14.70	$16.70	$14.60	$15.60	$20.50	$18.60	$18.80	$19.20	$19.60	$20.00	$20.40	$16.07	
RATE ZONE TOTALS																
	Powerstream	$15.00	$32.70	$35.60	$36.70	$27.30	$25.40	$29.40	$26.20	$34.30	$38.50	$42.50	$45.50	$48.80	$28.87	Higher
	Horizon	$4.90	$8.40	$6.90	$5.00	$10.20	$12.00	$13.90	$12.90	$12.00	$13.10	$13.80	$14.20	$15.20	$8.76	Higher
	Enersource	$6.00	$7.10	$17.80	$22.60	$23.30	$27.50	$24.00	$19.40	$24.70	$31.40	$33.80	$36.00	$37.30	$18.33	Higher
	Brampton	$5.70	$7.40	$5.90	$4.40	$3.10	$7.50	$8.00	$6.00	$6.70	$9.40	$10.70	$11.70	$13.10	$6.00	Higher
	Guelph	$2.40	$2.70	$3.40	$2.90	$5.60	$6.80	$3.80	$2.50	$3.50	$3.50	$3.50	$3.70	$3.80	$3.94	Same
U/G & Poles&Reactive		$34.00	$58.30	$69.60	$71.60	$69.50	$79.20	$79.10	$67.00	$81.20	$95.90	$104.30	$111.10	$118.20	$65.90	
Other System Renewal		$24.50	$18.20	$29.10	$51.00	$49.50	$56.80	$50.60	$60.60	$57.70	$46.10	$49.70	$45.00	$59.10		

Chart 1

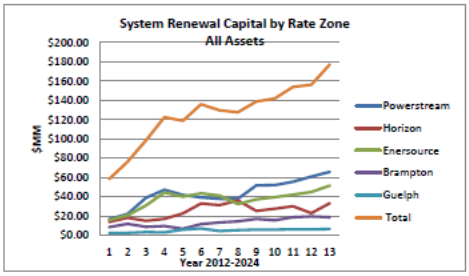


Chart 2

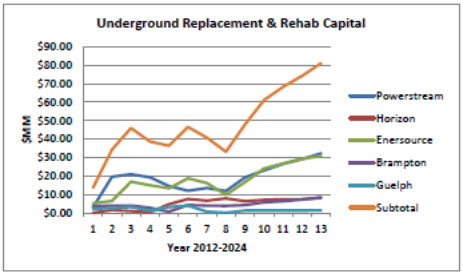
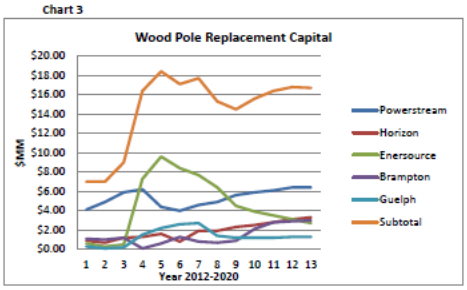


Chart 3



ENERGY PROBE WORKBOOK PAGE 1 DSP U/G Cable Projects IRR G-Staff-29; SEC-2

EP Exhibit J1.xx

BASED ON BOARD STAFF IRR G-29 and (where data are available) IRR SEC-2 &JT2.2 Q1

List of Incremental Cable Injection and Replacement Projects Included in DSP

Project #		Location	Service Area	Rate Zone	Back Calculated Estimate Capital SAIDI	Capital SAIFI	Imprvmt SAIDI	Imprvmt SAIFI	Benefit SAIDI $MM	Benefit SAIFI $MM
150025	Cable Injection Project - (V18) -Major Mackenzie and Keele,	Vaughan	East	PRZ	$904,545	$904,545	0.00440	0.00220	0.00398	0.00199
150026	Cable Injection Project - (M43) -John and Woodbine, Markham	Markham	East	PRZ	$978,571	$985,714	0.00140	0.00070	0.00137	0.00069
150134	Cable Injection Project - (V37) Langstaff and Weston,	Vaughan	East	PRZ	$208,543	$207,000	0.01990	0.01000	0.00415	0.00207
150138	Cable Replacement Project (BA23-8A24) - Cook St and Steel St,	Barrie	East	PRZ	$533,333	$800,000	0.00030	0.00010	0.00016	0.00008
150141	Cable Replacement Project – (M49)- Steeles and Fairway Heights,	Markham	East	PRZ	$350,000	$350,000	0.00040	0.00020	0.00014	0.00007
150254	Cable Replacement Project - (A02) -Steeplechase Ave	Aurora	East	PRZ	$362,500	$350,000	0.00080	0.00040	0.00029	0.00014
150255	Cable Replacement Project - (B23) -Cundles Rd and Janine St, Barrie	Barrie	East	PRZ	$700,000	$700,000	0.00020	0.00010	0.00014	0.00007
150257	Cable Replacement Project - (V15) -Jardin Dr	Vaughan	East	PRZ	$350,000	$342,857	0.00140	0.00070	0.00049	0.00024
150261	Cable Injection Project - (V38) -Rutherford and Weston,	Vaughan	East	PRZ	$700,000	$733,333	0.00190	0.00090	0.00133	0.00066
150262	Cable Replacement Project - (M33)- 16th Avenue and Village Parkway,	Markham	East	PRZ	$460,000	$600,000	0.00050	0.00020	0.00023	0.00012
150263	Cable Replacement Project - East Left Behind Cable	East	East	PRZ	$95,082	$93,548	0.00610	0.00310	0.00058	0.00029
150571	Cable Injection Project - (J3-K3-N2-O2), Brampton	Brampton	Central	BRZ	$434,000	$436,000	0.00500	0.00250	0.00217	0.00109
150572	Cable Replacement Project - (J4) -Queen - Clark - Bramalea -Kensington -Knightsbridge	Brampton	Central	BRZ	$866,667	$866,667	0.00060	0.00030	0.00052	0.00026
151066	Cable Replacement Project -Hamilton Mountain URD	Hamilton	West	HRZ	$262,500	$263,158	0.01520	0.00380	0.00399	0.00100
151091	Switchgear Renewal	???	???	???			?	?	0.00092	0.00015
151121	Cable Injection Project - (V43) - Hwy7 and Pine Valley Dr, Vaughan	Vaughan	East	PRZ	$1,023,077	$942,857	0.00130	0.00070	0.00133	0.00066
151141	Cable Replacement and Transformers replacement - Project Windjammer,	Mississauga	Central	ERZ	$372,308	$375,000	0.00650	0.00160	0.00242	0.00060
151143	Cable Replacement and Transformers Replacement -Project Shelter Bay Rd	Mississauga	Central	ERZ	$892,000	$933,333	0.00250	0.00060	0.00223	0.00056
151144	Cable Replacement Project and Transformers Replacement -Rathburn Rd.W	Mississauga	Central	ERZ	$832,317	$831,707	0.01640	0.00410	0.01365	0.00341
151146	Cable Replacement andTransformers Replacement - Project- Folkway,	Mississauga	Central	ERZ	$1,436,842	$1,360,000	0.00190	0.00050	0.00273	0.00068
151176	Cable Replacement Project - MSArgentia distribution feeder(s) upgrade	Mississauga	Central	ERZ	$633,333	$587,500	0.00300	0.00080	0.00190	0.00047
151286	Cable Replacement Project - (H2) -Wanless - Heart Lake - Bovaird -Kennedy,	Brampton	Central	BRZ	$263,158	$277,778	0.00190	0.00090	0.00050	0.00025
151291	Cable Replacement Project - (I4) -Queen - Dixie - Steeles - Hwy 410,	Brampton	Central	BRZ	$657,084	$65,844	0.00049	0.00243	0.00032	0.00016
151292	Cable Replacement Project- (K4) -Queen - Torbram - Steeles -	Bramalea	Central	BRZ	$775,000	$750,000	0.00040	0.00020	0.00031	0.00015
151299	Cable Replacement Project - (HAM)- Millen - Barton - Fruitland	Hamilton	West	HRZ	$249,682	$251,923	0.01570	0.00520	0.00392	0.00131
151301	Cable Replacement Project - (HAM)- Rymal - Mud - Upper Centennial -Upper Red Hill Valley	Hamilton	West	HRZ			?	?	0.00170	0.00057
151303	Cable Replacement Project - (HAM) Stone Church-Garth-Lincoln M. Alexander	Hamilton	West	HRZ	$151,613	$160,000	0.00310	0.00100	0.00047	0.00016
151315	Cable Injection Project - (G5) -Steeles - Kennedy - Hwy 407 -Main,	Brampton	Central	BRZ			?	?	0.00171	0.00086
151325	Cable Replacement Project - (M31)	Markham	East	PRZ	$85,437	$84,615	0.01030	0.00520	0.00088	0.00044
151328	Cable Replacement Project- (21a)Darcel & Brandon Gate,	Mississauga	Central	ERZ	$687,500	$725,000	0.00080	0.00040	0.00055	0.00029
151329	Cable Replacement Project - (V51) -Langstaff - Kipling - Hwy 7 - Hwy 27,	Vaughan	East	PRZ	$428,571	$500,000	0.00070	0.00030	0.00030	0.00015
151330	Cable Replacement Project - (A01) -Henderson - Yonge - Bloomington -Bathurst,	Aurora	East	PRZ	$533,333	$533,333	0.00060	0.00030	0.00032	0.00016
151331	Cable Replacement Project - (V41) -Stephanie Blvd,	Vaughan	East	PRZ	$725,000	$750,000	0.00040	0.00020	0.00029	0.00015
151332	Cable Replacement Project - (BA20)- Bayfield and Simcoe,	Barrie	East	PRZ			?	?	0.00033	0.00017
151333	Cable Replacement Project - (BA9)- Little - Fairview - Harvie -Ferndale,	Barrie	East	PRZ	$533,333	$533,333	0.00060	0.00030	0.00032	0.00016
151335	Cable Replacement Project - (BA14)- Tiffin and Hwy 400, Barrie	Barrie	East	PRZ	$387,500	$400,000	0.00080	0.00040	0.00031	0.00016
151336	Cable Replacement Project - (BA22)- Sunnidale and Anne,	Barrie	East	PRZ	$102,381	$104,762	0.00420	0.00210	0.00043	0.00022
151337	Cable Replacement Project - (BA18)- Ferndale and Benson, Barrie	Barrie	East	PRZ	$1,033,333	$750,000	0.00030	0.00020	0.00031	0.00015
151338	Cable Replacement Project- (BA15)- Burton - Huronia - Little - Bayview,	Barrie	East	PRZ			?	?	0.00032	0.00016
151339	Cable Replacement Project - (BA19) Letita-Anne-Edgehill-Ferndale	Barrie	East	PRZ	$823,810	$870,000	0.00610	0.00310	0.00052	0.00026
151340	Cable Replacement Project - (V29) -Hwy 7 - Jane - Steeles - Weston,	Vaughan	East	PRZ			?	?	0.00032	0.00016
151361	Cable Injection Project - (V26) - Teston - Keele - Major Mackenzie -Jane,	Vaughan	East	PRZ	$823,810	$870,000	0.00210	0.00100	0.00173	0.00087
151362	Cable Injection Project-(M39)-16th-Warden-Hwy 7-Woodbine	Markham	East	PRZ	$246,154	$228,571	0.00130	0.00070	0.00032	0.00016
151363	Cable Injection Project - (M25) -14th - McCowan - Steeles - Old Kennedy,	Markham	East	PRZ	$243,182	$243,182	0.00880	0.00440	0.00214	0.00107
151366	Cable Injection Project - (M19) -Markham - Steeles - McCowan -14th,	Markham	East	PRZ	$366,667	$366,667	0.00240	0.00120	0.00088	0.00044
151367	Cable Injection Project - (M21) -Hwy 7 - Markham - 16th -McCowan,	Markham	East	PRZ	$347,368	$366,667	0.00190	0.00090	0.00066	0.00033
151401	Cable Replacement Project- (21b)Sigsbee & Morning Star,	Mississauga	Central	ERZ	$1,050,000	$1,100,000	0.00080	0.00040	0.00084	0.00044
151402	Cable Replacement Project-Montevideo & Treviso (19a),	Mississauga	Central	ERZ	$191,803	$193,750	0.00610	0.00320	0.00117	0.00062
151403	Cable Replacement Project-Montevideo & Battleford (19b),	Mississauga	Central	ERZ	$550,000	$575,000	0.00080	0.00040	0.00044	0.00023
151404	Cable Replacement Project- CentralPk E & Miss. Valley (28)	Mississauga	Central	ERZ	$116,667	$133,333	0.00060	0.00030	0.00007	0.00004
151405	Cable Replacement Project- ErinMills & N.Sheridan (16),	Mississauga	Central	ERZ	$900,000	$700,000	0.00030	0.00020	0.00027	0.00014
151407	Cable Replacement Project- GlenErin & Burnhamthorpe (12),	Mississauga	Central	ERZ	$136,842	$136,667	0.00570	0.00300	0.00078	0.00041
151408	Cable Replacement Project-Burnhamthorpe & Miss. Road (13),Mississauga	Mississauga	Central	ERZ	$408,333	$433,333	0.00120	0.00060	0.00049	0.00026
151409	Cable Replacement Project- Central Parkway & Bloor (29),	Mississauga	Central	ERZ	$91,429	$94,444	0.00350	0.00180	0.00032	0.00017
151410	Cable Replacement Project-Roselle& Priority Cres (2), Mississauga	Mississauga	Central	ERZ	$980,000	$866,667	0.00050	0.00030	0.00049	0.00026
151411	Cable Replacement Project-Queensway & Mavis (31),	Mississauga	Central	ERZ	$277,778	$288,889	0.00180	0.00090	0.00050	0.00026
151413	Cable Replacement Project-Rathburn Rd W & Elora Dr (9),	Mississauga	Central	ERZ	$680,000	$600,000	0.00050	0.00030	0.00034	0.00018
151416	Cable Replacement Project-Woodchester & Thorn Lodge (34), Mississauga	Mississauga	Central	ERZ	$400,000	$400,000	0.00060	0.00050	0.00024	0.00020
151418	Cable Replacement Project-Innovator & Courtney Park E (4),	Mississauga	Central	ERZ	$347,727	$348,649	0.00440	0.00370	0.00153	0.00129
151419	Cable Replacement Project-MississaugaThomas St & Hillside (24),	Mississauga	Central	ERZ	$528,571	$516,667	0.00070	0.00060	0.00037	0.00031
151420	Cable Replacement Project-Eglinton& Credit Valley (5),	Mississauga	Central	ERZ	$90,833	$97,872	0.01200	0.00940	0.00109	0.00092
151421	Cable Replacement Project-Rathkeale Rd & Edenrose St (6),	Mississauga	Central	ERZ	$370,000	$344,444	0.00100	0.00090	0.00037	0.00031
151422	Cable Replacement Project-Queen St W & Paisley (30),	Mississauga	Central	ERZ	$766,667	$633,333	0.00030	0.00030	0.00023	0.00019
151423	Cable Replacement Project-Old Carriage Road (33),	Mississauga	Central	ERZ	$750,000	$600,000	0.00020	0.00020	0.00015	0.00012
151424	Cable Replacement Project-Miss.Valley & Bloor (15)	Mississauga	Central	ERZ	$100,000	$100,000	0.00250	0.00210	0.00025	0.00021
151425	Cable Replacement Project-Rathburn Rd E & Tomken (10),	Mississauga	Central	ERZ	$700,000	$600,000	0.00030	0.00030	0.00021	0.00018
151426	Cable Replacement Project-Southdown & Lakeshore (35),	Mississauga	Central	ERZ	$144,444	$150,000	0.00270	0.00220	0.00039	0.00033
151427	Cable Injection- 001- AREA 11-Truscott & Southdown	Mississauga	Central	ERZ	$585,714	$525,000	0.00070	0.00040	0.00041	0.00021
151429	Cable Injection- 003- AREA36 -Matheson & Kennedy,	Mississauga	Central	ERZ	$785,714	$725,000	0.00140	0.00080	0.00110	0.00058
151431	Cable Injection- 006- AREA 39- ErinMills Pkway & Thomas St,	Mississauga	Central	ERZ	$300,000	$400,000	0.00050	0.00020	0.00015	0.00008
151432	Cable Injection- 007- AREA 43 &51- Hurontario & Derry Rd W,	Mississauga	Central	ERZ	$690,000	$720,000	0.00100	0.00050	0.00069	0.00036
151434	Cable Injection- 009- AREA 54-Highway 401 & Argentia,	Mississauga	Central	ERZ	$425,000	$450,000	0.00040	0.00020	0.00017	0.00009
151435	Cable Injection- 010 - Area 56-Derry Rd W & Ninth Line,	Mississauga	Central	ERZ	$242,857	$300,000	0.00070	0.00030	0.00017	0.00009
151436	Cable Injection-011 - Area 58 & 59-Winston Churchill & The Collegeway,	Mississauga	Central	ERZ	$0	$0	0.00000	0.00000	0.00000	0.00000
151460	Cable Injection Project - (V17) -Langstaff - Keele - Rutherford -Dufferin,	Vaughan	East	PRZ	$359,375	$362,500	0.00320	0.00160	0.00115	0.00058
151465	Cable Replacement - Mississauga Left Behind Cable	Mississauga	Central	ERZ	$23,715	$23,678	0.00253	0.00127	0.00006	0.00003
151467	Cable Replacement Project - (V17) -Langstaff - Keele - Rutherford -Dufferin,	Vaughan	East	PRZ	$387,500	$400,000	0.00080	0.00040	0.00031	0.00016
	SUMMARY TOTALS				**$35,240,505**	**$34,314,123**	**0.2103**	**0.1012**	**0.0793**	**0.0335**
	SUMMARY TOTALS				**$35,240,505**	**$34,314,123**	**0.2103**	**0.1012**	**0.0793**	**0.0335**
	RATE ZONE TOTALS			**RATE ZONE**						
				PRZ	$14,092,406	$14,373,486	0.0831	0.0416	0.0260	0.0130
				ERZ	$17,488,396	$16,869,267	0.0848	0.0433	0.0368	0.0145
				HRZ	$663,794	$675,081	0.0340	0.0100	0.0101	0.0030
				BRZ	$2,995,909	$2,396,288	0.0084	0.0063	0.0055	0.0028
				GRZ	$0	$0	0.0000	0.0000	0.0000	0.0000
				Total	**$35,240,505**	**$34,314,123**	**0.2103**	**0.1012**	**0.0784**	**0.0334**

ENERGY PROBE WORKBOOK PAGE 3 DSP U/G Cable Projects JT2.5

JT2.5 **Cable Replacement and Refurbishment by Rate zone**

Table 1

Rate Zone	Method	2020	2021	2022	2023	2024	Total
BRZ	Cable Replacement (km)	8	13	12	11	20	64
ERZ	Cable Replacement (km)	36	38	45	75	38	232
PRZ	Cable Replacement (km)	26	51	53	46	74	250
GRZ	Cable Replacement (km)	3	12	14	7	12	48
HRZ	Cable Replacement (km)	20	16	16	11	18	81
Total (km)		93	130	140	150	162	675

Table 2

BRZ	Cable Injection (km)	56	35	45	53	57	246
ERZ	Cable Injection (km)	30	55	62	68	63	278
PRZ	Cable Injection (km)	93	117	130	156	188	684
GRZ	Cable Injection (km)	2	31	37	34	34	138
HRZ	Cable Injection (km)	32	32	31	34	34	163
Total (km)		213	270	305	345	376	1509
Total (km)	UG CABLE	306	400	445	495	538	2184

ENERGY PROBE WORKBOOK PAGE 4 DSP Capital Plan

APPX 2-AB; JT1.6 Staff G-104	Table 1	Alectra Capital Plan 2019-2024					
	F 2019	2020	2021	2022	2023	2024	5yr TOTAL
System Access	77.4	66.5	66.9	63.2	67.1	70.2	**333.9**
System Renewal	132.1	139	142	154	156.1	177.2	**768.3**
System Service	23.5	38	36.9	36	42.4	37.2	**190.5**
General Plant	26.2	39.4	34.4	35.1	30.2	24.7	**163.8**
Total CAPEX	259.2	282.9	280.2	288.3	295.8	309.3	**1456.5**
ICM Threshold	?	230	233	236	240	243	**1182**
Unfunded Capital	32.4	52.9	47.2	52.3	55.8	66.3	**274.5**

M- Factor Request JT 2.2 Q1		Table 2 PILC Cable	Switches	Proposed M-Factor Capital Investments Switchgear	OH Line	Transformer	Total	SAIDI IMP	SAIFI IMP
BRZ	26								
ERZ	$51.80								
PRZ	$110.60								
BRZ	$0.00								
GRZ	$0.00								
Multiple	25								
Total	213.4								

Board Staff IRR G-4 M-Factor Funded System Renewal Projects PowerStream Example

Table 3 – Proposed M-Factor Funded Capital Investments for PowerStream Rate Zone ($MM)

Project	Investment ($MM)
Vaughan TS#4 Feeder Integration - Part 3	$8.8
Residential Meter "ICON F" Meter Replacement Program - East	$7.3
Install Two 27.6kV Ccts on 16th Ave from Hwy 404 to Woodbine Ave	$5.5
Markham TS #4 Feeder Egress Part 3	$4.9
Residential solar-storage	$4.0
Rear Lot Supply Remediation - Royal Orchard - North	$4.0
Install Double Cct Pole Line on Major Mackenzie - Hwy 27 to Huntington Rd	$3.7
Bathurst Street Widening	$3.4
Connection Cost Recovery Agreement (CCRA) – Midhurst TS – 15th Anniversary True-up	$3.2
Cable Replacement - (V15) - Jardin Dr	$2.9
Cable Replacement - (A02) - Steeplechase Ave	$2.9
Cable Injection Project - (V17) - Langstaff - Keele - Rutherford - Dufferin, Vaughan	$2.8
Install two additional 27.6 kV ccts on Hwy 7 from Jane St to Weston Rd	$2.6
Rear Lot Supply Remediation - East of Queen St. to Eastern Ave./North of Greenway St.	$2.6
Rear Lot Supply Remediation - Main Street / Unionville / Carlton	$2.5
Cable Replacement Project - (V17) - Langstaff - Keele - Rutherford - Dufferin, Vaughan	$2.4
New Barrie 20MVA Substation - Harvie	$2.2
Rebuild 27.6 kV pole line for 4 Ccts on Warden Ave from Major Mack to Elgin Mills	$2.2
Cable Replacement - (M33) - 16th Avenue and Village Parkway	$2.1
27.6 kV Pole Line on 14th Ave from Hwy 48 to 9th Line	$2.0
Aurora MS6 Expansion - (Year 1 of 2) - Design & Order Equipment	$2.0
New Alliston 10MVA Substation - Industrial Parkway	$1.9
Rear Lot - Gunn/Oakley Park/St.Vincent	$1.8
Rear Lot - East of Queen Street/North of Mill Street	$1.8
Cable Replacement – (Barrie) - Cook St and Steel St	$1.7
Net Zero Energy Emissions	$1.6
Two Ccts on Birchmount Rd from ROW to 14th Ave	$1.6
Radial Supply Remediation/Conversion - 13.8 kV to 27.6 kV on Miller Ave	$1.5
Cable Injection Project - (V50) - Hwy 7 - Kipling - Steeles - Hwy 27, Vaughan	$1.5
Pole Line Installation Double Cct on Major Mack - Huntington Rd to Hwy 50	$1.4
Install a new 4 ccts CNR yard overhead crossing on the south side of Hwy 7	$1.4
Add one Additional 27.6 kV Cct on Major Mack Dr and 9th Line	$1.3
Build double ccts 27.6kV pole line on 19th Ave between Leslie St and Bayview Ave	$1.3
Cable Injection Project - (V25) - Major Mackenzie - Keele - Rutherford - Jane, Vaughan	$1.3
Cable Injection Project - (V24) - Langstaff - Jane - Rutherford - Keele, Vaughan	$1.3
Install 44kV & 13.8kV Bryne Drive	$1.1
Cable Replacement - (Barrie) - Cundles Rd and Janine St	$1.1
Cable Replacement Project - (V51) - Langstaff - Kipling - Hwy 7 - Hwy 27, Vaughan	$1.0
Cable Replacement Project - (V24) - Langstaff - Jane - Rutherford - Keele, Vaughan	$1.0
Fleet East 2024 Vehicle replacement - Cube Vans	$0.7
Fleet East Unit # 75 83' Double Bucket	$0.7
Cable Injection Project - (V51) - Langstaff - Kipling - Hwy 7 - Hwy 27, Vaughan	$0.7
Fleet East Unit # 125, 83' Double Bucket	$0.7
Install 2nd 27.6 kV Cct on Woodbine Ave from Elgin Mills Rd to 19th Ave	$0.6

Exhibit 2 Tab1 Schedule 3 page 10 M-Factor Revenue Requirement

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 $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.

JT 2.1 Rate Zone Distribution Bill Impacts

Table 1 M-Factor Bill Impact vs Distribution Bill Impact 2020-2024

				2020			2021			2022			2023			2024		
Enersource Rate Class	Unit	kWh	kW	M-Factor Bill Impact $	Distribution Bill (Proposed)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %
Residential	kWh	750		$ 0.12	$ 25.77	0.47%	$ 0.18	$ 26.11	0.67%	$ 0.34	$ 26.58	1.27%	$ 0.53	$ 27.07	1.97%	$ 0.91	$ 27.75	3.27%
GS<50	kWh	2,000		$ 0.35	$ 74.67	0.47%	$ 0.51	$ 75.69	0.68%	$ 0.99	$ 77.03	1.28%	$ 1.55	$ 78.47	1.97%	$ 2.64	$ 80.45	3.28%
GS>50	kW	100,000	230	$ 5.78	$ 1,289.07	0.45%	$ 8.44	$ 1,305.87	0.65%	$ 16.26	$ 1,327.98	1.22%	$ 25.53	$ 1,351.73	1.89%	$ 43.57	$ 1,384.41	3.15%
GS>500	kW	400,000	2,250	$ 36.01	$ 7,875.43	0.46%	$ 52.60	$ 7,980.05	0.66%	$ 101.25	$ 8,117.79	1.25%	$ 159.04	$ 8,265.73	1.92%	$ 271.37	$ 8,469.30	3.20%
LU	kW	3,000,000	5,000	$ 144.81	$ 31,179.19	0.46%	$ 211.49	$ 31,599.85	0.67%	$ 407.14	$ 32,153.72	1.27%	$ 639.51	$ 32,748.61	1.95%	$ 1,091.18	$ 33,567.16	3.25%

Brampton Rate Class	Unit	kWh	kW	M-Factor Bill Impact $	Distribution Bill (Proposed)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %
Residential	kWh	750		$ 0.31	$ 25.43	1.21%	$ 0.35	$ 25.77	1.35%	$ 0.57	$ 26.28	2.15%	$ 0.76	$ 26.78	2.83%	$ 0.87	$ 27.20	3.21%
GS<50	kWh	2,000		$ 0.76	$ 64.32	1.18%	$ 0.86	$ 65.15	1.32%	$ 1.39	$ 66.42	2.10%	$ 1.87	$ 67.64	2.76%	$ 2.15	$ 68.67	3.13%
GS>50	kW	182,500	500	$ 19.98	$ 1,659.30	1.20%	$ 22.66	$ 1,681.13	1.35%	$ 36.71	$ 1,714.56	2.14%	$ 49.24	$ 1,746.71	2.82%	$ 56.72	$ 1,774.05	3.20%
GS>700	kW	627,215	1,432	$ 75.66	$ 6,242.61	1.21%	$ 85.80	$ 6,325.28	1.36%	$ 139.00	$ 6,451.90	2.15%	$ 186.46	$ 6,573.65	2.84%	$ 214.81	$ 6,677.18	3.22%
LU	kW	10,220,000	20,000	$ 706.27	$ 58,832.84	1.20%	$ 800.89	$ 59,604.58	1.34%	$ 1,297.53	$ 60,786.46	2.13%	$ 1,740.54	$ 61,922.94	2.81%	$ 2,005.15	$ 62,889.34	3.19%

Hortzon Rate Class	Unit	kWh	kW	M-Factor Bill Impact $	Distribution Bill (Proposed)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %
Residential	kWh	750		$ 0.22	$ 27.20	0.81%	$ 0.38	$ 27.78	1.36%	$ 0.56	$ 28.29	1.99%	$ 0.71	$ 28.77	2.45%	$ 0.93	$ 29.33	3.17%
GS<50	kWh	2,000		$ 0.53	$ 65.99	0.80%	$ 0.91	$ 67.14	1.35%	$ 1.35	$ 68.37	1.97%	$ 1.70	$ 69.52	2.44%	$ 2.23	$ 70.86	3.15%
GS>50	kW	110,000	250	$ 8.64	$ 1,051.69	0.82%	$ 14.75	$ 1,070.47	1.38%	$ 21.97	$ 1,090.51	2.01%	$ 27.59	$ 1,109.10	2.49%	$ 36.29	$ 1,130.93	3.21%
LU	kW	2,555,000	5,000	$ 260.33	$ 32,114.72	0.81%	$ 444.65	$ 32,680.87	1.36%	$ 662.19	$ 33,284.82	1.99%	$ 831.63	$ 33,845.31	2.46%	$ 1,093.88	$ 34,503.31	3.17%
LUDA	kW	10,220,000	20,000	$ 103.89	$ 12,885.85	0.81%	$ 177.45	$ 13,111.80	1.35%	$ 264.27	$ 13,352.83	1.98%	$ 331.89	$ 13,576.52	2.44%	$ 436.55	$ 13,839.11	3.15%

PowerStream Rate Class	Unit	kWh	kW	M-Factor Bill Impact $	Distribution Bill (Proposed)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %
Residential	kWh	750		$ 0.30	$ 29.38	1.04%	$ 0.47	$ 29.88	1.59%	$ 0.68	$ 30.43	2.24%	$ 1.15	$ 31.25	3.68%	$ 1.43	$ 31.88	4.48%
GS<50	kWh	2,000		$ 0.65	$ 69.29	0.93%	$ 1.01	$ 70.46	1.43%	$ 1.45	$ 71.72	2.02%	$ 2.44	$ 73.54	3.32%	$ 3.03	$ 74.97	4.05%
GS>50	kW	80,000	250	$ 11.81	$ 1,275.35	0.93%	$ 18.38	$ 1,296.70	1.42%	$ 26.39	$ 1,319.67	2.00%	$ 44.51	$ 1,352.92	3.29%	$ 55.31	$ 1,379.05	4.01%
LU	kW	2,800,000	7,350	$ 223.40	$ 24,030.55	0.93%	$ 347.70	$ 24,434.50	1.42%	$ 499.32	$ 24,869.15	2.01%	$ 842.15	$ 25,498.40	3.30%	$ 1,046.64	$ 25,992.74	4.03%

Guelph Rate Class	Unit	kWh	kW	M-Factor Bill Impact $	Distribution Bill (Proposed)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %	M-Factor Bill Impact $	Distribution Bill (Forecast)	Bill Impact %
Residential	kWh	750		$ 0.03	$ 29.42	0.10%	$ 0.10	$ 29.84	0.32%	$ 0.24	$ 30.34	0.78%	$ 0.38	$ 30.85	1.23%	$ 0.46	$ 31.30	1.48%
GS<50	kWh	2,000		$ 0.05	$ 45.46	0.10%	$ 0.15	$ 46.11	0.32%	$ 0.37	$ 46.89	0.78%	$ 0.59	$ 47.68	1.24%	$ 0.72	$ 48.38	1.49%
GS>50	kW	189,800	500	$ 1.64	$ 1,595.60	0.10%	$ 5.19	$ 1,622.37	0.32%	$ 12.74	$ 1,649.38	0.77%	$ 20.61	$ 1,676.93	1.23%	$ 25.13	$ 1,701.37	1.48%
GS>1000	kW	489,100	1,000	$ 3.81	$ 3,689.01	0.10%	$ 12.09	$ 3,742.07	0.32%	$ 29.69	$ 3,804.98	0.78%	$ 48.01	$ 3,869.16	1.24%	$ 58.53	$ 3,926.10	1.49%
LU	kW	4,215,750	7,500	$ 22.78	$ 22,184.20	0.10%	$ 72.29	$ 22,501.45	0.32%	$ 177.52	$ 22,877.64	0.78%	$ 287.07	$ 23,261.40	1.23%	$ 350.01	$ 23,601.84	1.48%