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Kathleen Burke
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BY EMAIL AND RESS

January 5, 2022

Ms. Nancy Marconi
Acting Registrar
Ontario Energy Board
Suite 2700, 2300 Yonge Street
P.O. Box 2319
Toronto, ON M4P 1E4

Dear Ms. Marconi,

EB-2021-0110 – Custom IR Application (2023-2027) for Hydro One Networks Inc. Transmission and Distribution ("Hydro One") – Undertaking Responses

Attached please find Hydro One's responses to undertakings provided at the Technical Conference held December 13 to 17, 2021 in respect of the above-noted proceeding.

As noted in Hydro One's letter dated December 23, Hydro One has identified two undertakings (VECC TCQ-19 and JT 4.11) which will require additional time to complete. Responses to undertakings JT 5.26 and 5.28 have also been identified as requiring additional time to complete. Hydro One will file these undertaking responses no later than January 14, 2022.

Pursuant to Rule 10.01 of the OEB's *Rules of Practice and Procedure* and the OEB's *Practice Direction on Confidential Filings*, Hydro One requests that the interrogatories listed in Appendix "A" be granted confidential treatment. The specific information for which Hydro One seeks confidential treatment and a summary of the rationale for the requests will be filed shortly by Torys LLP.

Sincerely,

Kathleen Burke

Encls.

cc. EB-2021-0110 parties (electronic)

Appendix "A"

Hydro One has requested confidentiality treatment for the following undertaking responses:

JT-2.08
JT-4.25

UNDERTAKING JT-1.01

Reference:

I-19-B2-PWU-001, Page 1, Line 16

Undertaking:

To clarify line 16 of B2-PWU-001.

Response:

B2-PWU-001, page 1, line 16 should state: "…the next five years compared to the comparator group mean of **2.2%**." The full text can be found in Exhibit B-2-1, TSP Section 2.3, Page 4.

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UNDERTAKING JT-1.02

Reference:

I-19-B2-PWU-001, Page 5, Part (e)

Undertaking:

a) To complete the table in PWU no. 1 part e, or explain why this cannot be done;

b) To clarify year 7 numbers for certain categories of the assets.

Response:

a) Hydro One has updated B2-PWU-001 part e) with the annual data for 2023-2026. Hydro One does not forecast condition over time. The condition data presented in the TSP is taken as of December 31, 2020. The table below represents the total number of remaining assets both in poor condition and obsolete (using 2020 as the baseline). These figures exclude new assets that may be discovered to be in poor condition or obsolete every year.

Asset	Total Population	Share of assets in poor and Obsolete condition (Base Year) (2020 Actual)	Average Annual Replacement Rate of Assets in Poor and Obsolete Condition (2021-2027)	Expected Share of Assets in Poor and Obsolete Condition at Year-end													
				Year 1 2021F		Year 2 2022F		Year 3 2023F		Year 4 2024F		Year 5 2025F		Year 6 2026F		Year 7 2027F	
				#	%	#	%	#	%	#	%	#	%	#	%	#	%
Transformers	721	198	3.2%	177	25%	158	22%	128	18%	110	15%	83	12%	62	9%	38	5%
Breakers	4756	2,769	2.7%	2,601	55%	2,471	52%	2,383	50%	2,276	48%	2,178	46%	2,032	43%	1,878	39%
Protections[1]	12,494	5,669	3.5%	5,148	41%	4,736	38%	4,293	34%	4,015	32%	3,649	29%	3,193	26%	2,639	21%
Conductors	28,552	3,874	1.1%	3,856	14%	3,341	12%	3,322	12%	3,022	11%	2,684	9%	2,449	9%	1,770	6%
Wood Poles	40,041	4,693	2.7%	3,671	9%	2,647	7%	1,571	4%	495	1%	0	0%	0	0%	0	0%

[1] *Please see Interrogatory B2-Staff-039 for further information regarding protection equipment replacements.*

b) The values in Year 7 (2027) represent the number of Base Year (2020) assets remaining in poor condition. For example, for transformers in Year 7 (2027), 38 of the 198 transformers will remain in the system or 5% (38/721) of the transformer fleet. However, as noted above these figures exclude new assets that may be discovered to be in poor condition or obsolete every year.

UUNDERTAKING JT-1.03

Reference:

I-19-B2-PWU-008, Part c

Undertaking:

To advise if the work that got deferred during the '18 to '20 period cost more or less to do during the JRAP period than the forecast cost during the '18 to '20 period.

Response:

In I-19-B2-PWU-008, part c), Hydro One estimated the cost of deferred work from 2020-2022 to be approximately $25M ($8M/year). Hydro One has paced this deferred work so that on an annual basis it will cost less but will be completed over a longer period resulting in a higher cost.

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UNDERTAKING JT-1.04

Reference:

No reference provided

Undertaking:

To provide higher resolution versions of the maps provided at B2-SEC-61 part (iii); if not, to advise why they cannot be provided.

Response:

The maps currently provided are detailed enough to show Hydro One's assets and operations in the province, and the communities serviced by Hydro One. It is unclear what further benefit might be derived by providing higher resolution maps.

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UNDERTAKING JT-1.05

Reference:

I-03-B1-AMPCO-004

Undertaking:

With reference to B1-AMPCO-004, to provide if possible and if relevant all the weighting for all the assets, both transmission and distribution; if not possible, or if deemed not relevant, to provide the reason.

Response:

As noted during Day 1 of the Technical Conference, the composite index is a weighted average of the sub-indices referenced in the tables below. However, the composite score is not used in Hydro One's asset needs assessment and risk assessment processes and is therefore, not a driver of nor relevant to any specific asset decisions or investments. Hydro One planners perform comprehensive asset technical assessments as per SPF Section 1.7 – Asset Needs Assessment to identify the drivers in the development of candidate investments and collect the data necessary to assess risks, none of which involves the composite index.

The investment level decision making is based on the risk assessment process, described in SPF Section 1.7, based on the three taxonomies (reliability, safety and environment).

Assets that were identified in B1-AMPCO-004 and have a composite index are provided below with the corresponding weightings, which, as noted above, are not used for any purpose in Hydro One's asset risk assessment process.

Transmission

Asset	Condition	Utilization	Performance	Criticality	Economics	Demographics
Conductors	40%	15%	15%	15%	0%	15%
Power Transformers	33%	13%	27%	7%	9%	11%
Breakers	33%	13%	27%	7%	9%	11%
Protection and Control Systems	33%	13%	27%	7%	9%	11%
Insulators	40%	0%	20%	20%	0%	20%
Wood poles	40%	0%	20%	20%	0%	20%
U/G Cable	40%	15%	15%	10%	10%	10%

Distribution

Asset	Condition	Utilization	Performance	Criticality	Economics	Demographics
Wood Poles	100%	0%	0%	0%	0%	0%
Station Transformers	100%	0%	0%	0%	0%	0%
Breakers	67%	0%	0%	0%	0%	33%
Protection and Control	67%	0%	0%	0%	0%	33%

UNDERTAKING JT-1.06

Reference:

B-2-1 TSP Section 2.11
ISD-T-SR-03
I-01-B2-Staff-076 Att #3

Undertaking:

To identify which of the breakers identified in IR STAFF-076, attachment 3, are identified for replacement in SR-03 ISD, and to indicate why.

Response:

ISD T-SR-03.37 is being coordinated with Toronto Hydro to manage execution and customer outages. The investment includes the following four breakers: T3A1A2, T3A3A4, T4A1A2 and T4A3A4. These breakers are obsolete, with limited availability of parts, and also present a safety concern due to the arc flash impact of the metalclad system, as described in B2-Staff-076, Attachment 3.

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UNDERTAKING JT-1.07

Reference:

I-01-B2-Staff-076

Undertaking:

With reference to IR B2-STAFF-76:

a) To advise which of the assets in the underlying information are being replaced;
b) For each of the examples provided, to provide the baseline risk and the mitigated risk, and a breakdown of probability and consequences and the three consequence taxonomies

Response:

a) The following major power system assets will be replaced as part of each station investment provided in B2-Staff-76:

ISD Reference	Station	In-Service Year	# of Transformers to be Replaced	# of Breakers to be Replaced	# of Protections to be Replaced
T-SR-01.06	Milton SS	2023	0	0	13
	Protections	HL585 BF, K A, K B, KL561 BF, KL570 BF, KL572 BF, L72L85 BF, M570V A, M570V B, M572T A, M572T B, M585M A, M585M B			
T-SR-03.04	Wilson TS	2023	2	13	40
	Transformers	T1, T2			
	Breakers	M7, T1B ,SC1B, SC2Y, T2Y, BY, M5, M1, M3, M6, M4, M2, M8			
	Protections	54M1 MAIN, 54M16 MAIN, 54M17 MAIN, 54M18 MAIN, 54M2 MAIN, 54M3 MAIN, 54M4 MAIN, 54M5 MAIN, 54M6 MAIN, 54M7 MAIN, 54M8 MAIN, B BU, B MAIN, B23C BU, BY BF, J BU, J MAIN, JQ BF, MG MAIN1, MG MAIN2, Q BU, Q MAIN, SC1 MAIN, SC2 MAIN, SC3 MAIN, SC4 MAIN, T1 A, T1 B, T1B BF, T2 A, T2 B, T2Y BF, T3 A, T3 B, T3J BF, T4 A, T4 B, T4Q BF, Y BU, Y MAIN			
T-SR-03.37	Charles TS	2026	2	4	30
	Transformers	T3, T4			
	Breakers	T3A1A2, T3A3A4, T4A3A4, T4A1A2			
	Protections	PR, A1/A2 BU1, A1/A2 BU2, A3/A4 BU1, A3/A4 BU2, A5/A6 BU1, A5/A6 BU2, A7/A8 BU1, A7/A8 BU2, FTR UFLS, L12C BU, L4C BU-T1, L4C BU-T4, L9C BU, T1 A, T1 B, T1A5A6 BF, T1A7A8 BF, T2 A, T2 B, T2A5A6 BF, T2A7A8 BF, T3 A, T3 B, T3A1A2 BF, T3A3A4 BF, T4 A, T4 B, T4A1A2 BF, T4A3A4 BF			

b) The following table provides the baseline, residual and mitigated risk, as well as a breakdown of consequence and probability for the three station investments in B2-Staff-76.

Please note that the consequences and probabilities are determined based on the planning framework described in SPF Section 1.7. The consequence and probability taxonomies are presented in Figures 4, 5, 7 and 8 (SPF Section 1.7 pages 18-20). The risk scores are evaluated using the risk matrix presented in Figure 9 (SPF Section 1.7 page 23).

Risk Assessment Summary

Station	Equipment Being Replaced	Qty	Risk – Consequence (C) and Probability (P)[1]						Annualized Risk		
			Before			After					
			Safety	Envir.	Reliab.	Safety	Envir.	Reliab.	Baseline	Residual	Mitigated
Charles TS	Transformers	2	--	C5/P2	C4/P4	--	C5/P1	C4/P1	40,460	1,857	38,603
	LV Breakers	4	C3/P3	--	C3/P3	C3/P1	--	C3/P1			
	Protections	30	--	--	C5/P3	--	--	C5/P1			
Milton TS	Protections	13	--	--	C7/P3	--	--	C7/P1	1,849,500	10,350	1,839,150
Wilson TS	Transformers	2	--	C5/P2	C4/P4	--	C5/P1	C4/P1	371,381	6,003	365,378
	LV Breakers	13	--		C5/P3	--		C5/P1			
	Protections	40			C5/P6			C5/P1			

[1] *Values are shown as per SPF Section 1.7.*

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UNDERTAKING JT-1.08

Reference:

I-03-B2-AMPCO-022A

Undertaking:

With reference to the table provided in IR B2-AMPCO-22A, to provide the total numbers of hours of delivery point interruptions.

Response:

The percentages presented in B2-AMPCO-022A are based on the total number of interruptions provided below:

Year	2008-2012	2013-2017	2018	2019	2020
# of Delivery Point Interruptions	881	892	197	183	138

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UNDERTAKING JT-1.09

Reference:

I-03-B2-AMPCO-022B

Undertaking:

With reference to information provided in IR B2-AMPCO-22B, to provide the data.

Response:

Similar to the information provided in JT1.08, the percentages presented in B2-AMPCO-022B are based on the total hours of interruptions provided below:

Year	2016	2017	2018	2019	2020
Delivery Point Interruption Hours	956.2	323.1	421.1	402.1	403.8

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UNDERTAKING JT-1.10

Reference:

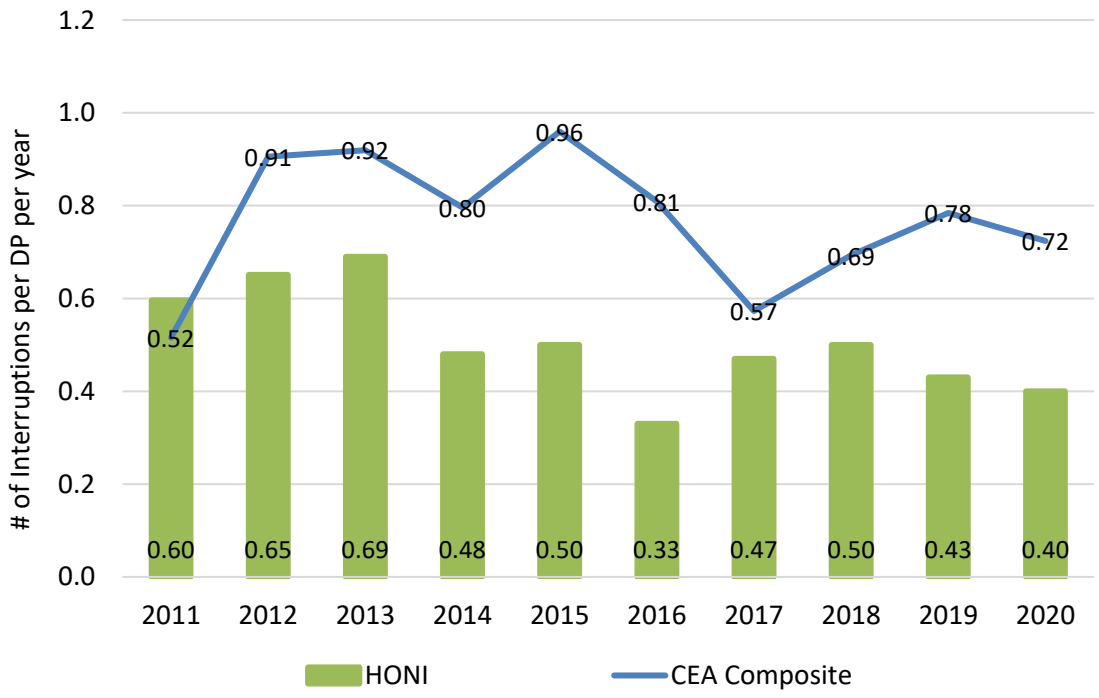
I-22-B2-SEC-079

Undertaking:

To update B2-SEC-79 and provide the Canadian average which is the CEA composite, excluding Hydro One; or to provide the evidentiary reference.

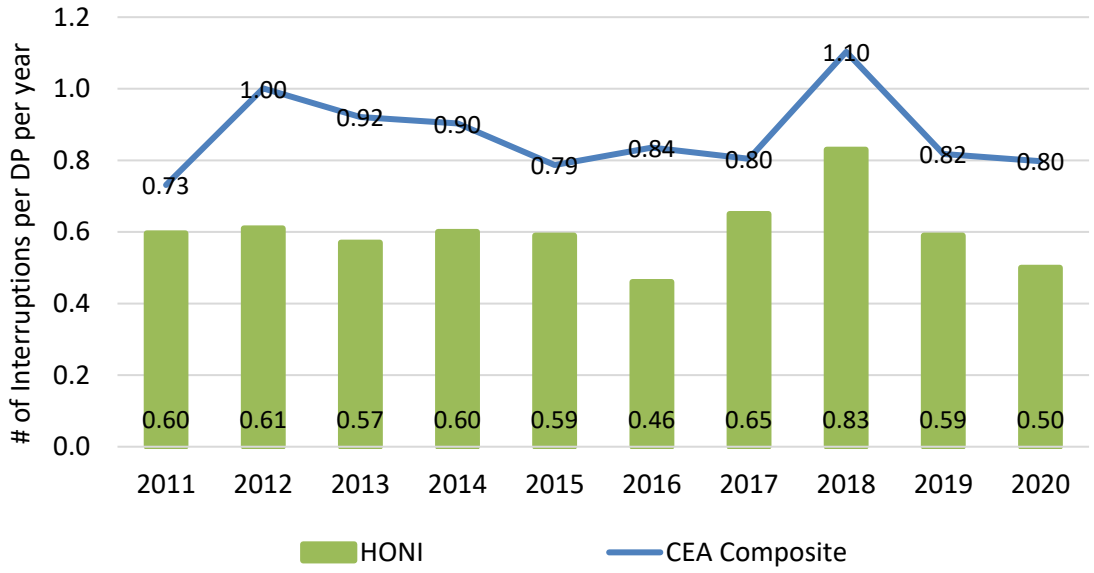
Response:

Updated TSP Section 2.4 Figure 6 - Comparison to CEA composite excluding Hydro One – Frequency of Momentary Interruptions

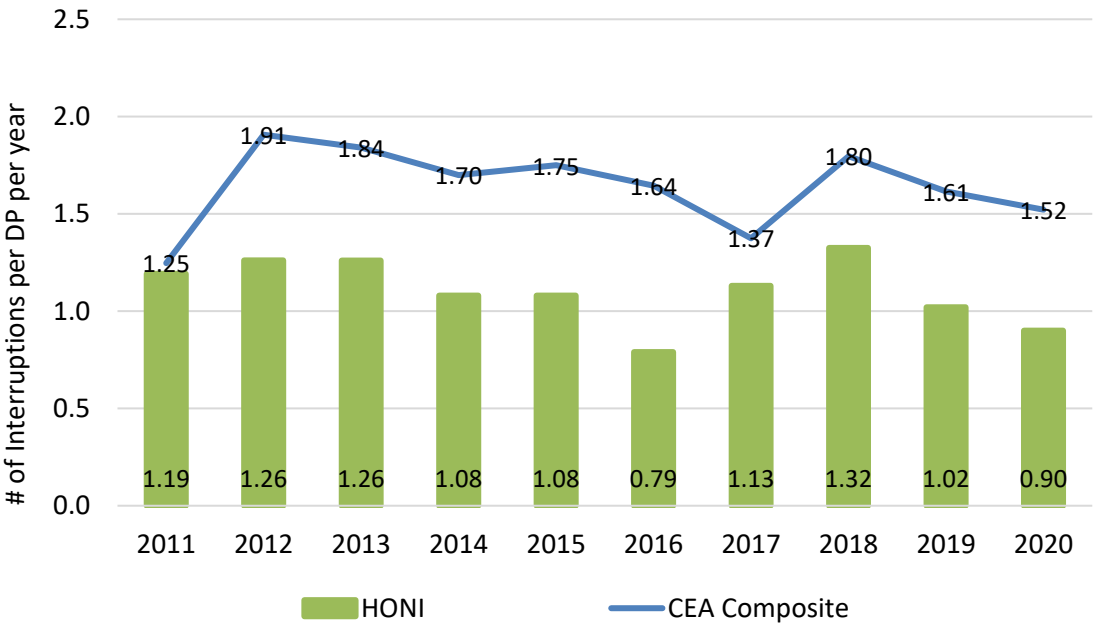


Witness: JESUS Bruno

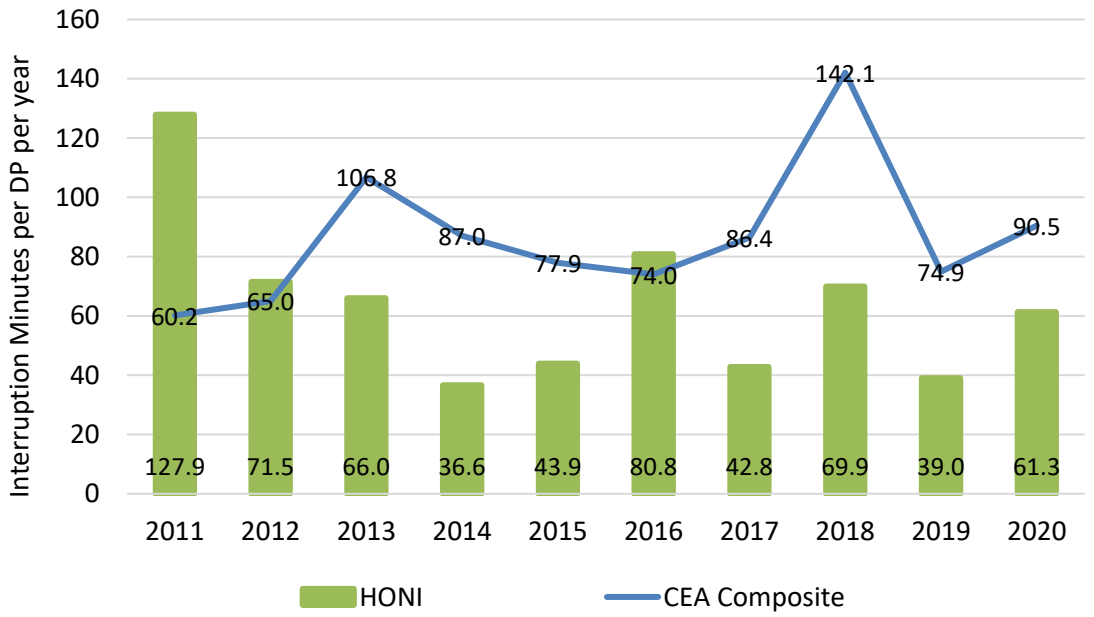
Updated TSP Section 2.4 Figure 7 - Comparison to CEA composite excluding Hydro One – Frequency of Sustained Interruptions



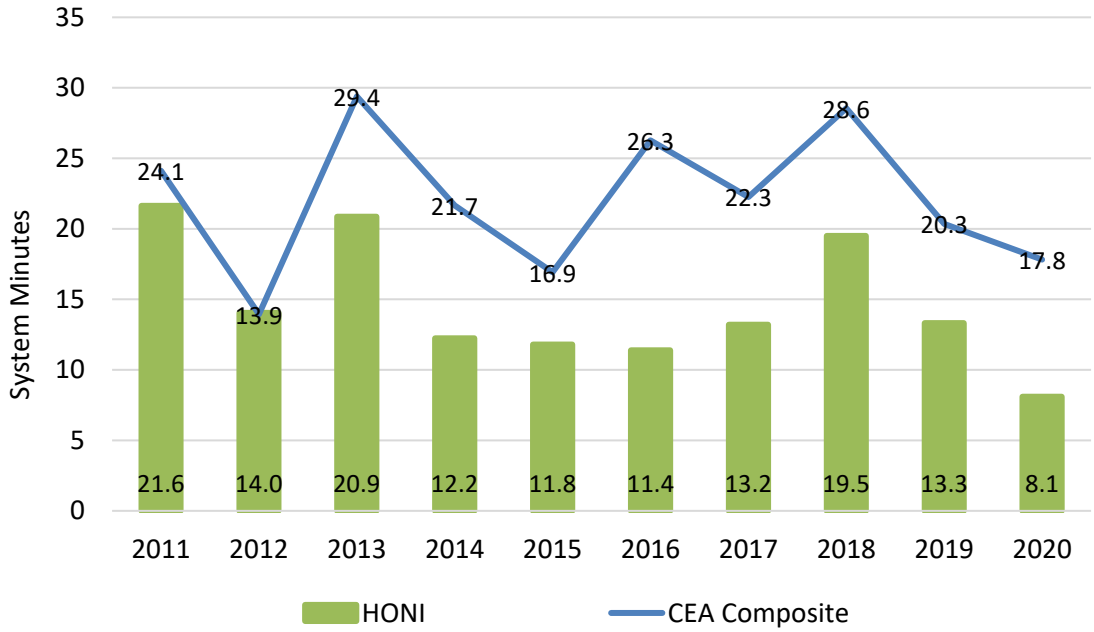
Updated TSP Section 2.4 Figure 8 - Comparison to CEA composite excluding Hydro One – Overall Frequency of Interruptions



Updated TSP Section 2.4 Figure 9 - Comparison to CEA composite excluding Hydro One – Average Duration of Sustained Interruptions



Updated TSP Section 2.4 Figure 10 - Comparison to CEA composite excluding Hydro One – Delivery Point Unreliability Index



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UNDERTAKING JT-1.11

Reference:

I-01-B2-Staff-059, Attachment 1

Undertaking:

To provide a completed version of the attachment at B2-STAFF-59 and if Hydro One cannot, explain why, and if it isn't relevant, indicate that.

Response:

Hydro One has not updated B2-Staff-059-001 to include forecast capital for assets replaced by integrated investments. Hydro One plans station and lines investments through integrated investments and as such the costs to replace individual assets is not available.

In B2-Staff-059-001, Hydro One provided the 2019 and 2020 actual capital in-service additions (ISA) related to the listed stations and lines assets replaced by integrated investments however as explained in B2-Staff-059-001 footnote 2, these ISA amounts do not reflect a 1:1 ratio to the in-serviced units because additional costs pertaining to the installation may or may not be reflected. Since ISA amounts are not available at the asset level for the 2021-2027 period, Hydro One did not provide these.

In EB-2019-0082 (Undertaking JT1.24-01 – which is similar to B2-Staff-059-001) Hydro One estimated the capital expenditures for the stations assets in order to complete the table submitted by SEC however because of integrated investments, costs are not readily separable at the asset level nor available. The method used to complete SEC's table in EB-2019-0082 results in a likelihood of error to misapplying and misinterpreting the estimates i.e. reflecting unit costs.

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UNDERTAKING JT-1.12

Reference:

I-22-B2-SEC-099

Undertaking:

To provide, as appropriate, information like the interrogatory asks for Table 2 and Table 3 for 2021 and 2022 and to the extent that Hydro One is not able to provide the information or it is not appropriate to do so, identify that in the undertaking.

Response:

The table below presents Table 2 from the 2020 Transmission Capital Performance Report (TSP Section 2.9 Attachment 2) with additional columns for project total and project in-service date information for on-going projects, forecasted at Q3 2021.

Table 3 has not been updated as it presents the 2020 plan and actual values for transmission programs. Full year 2021 capital and ISA information for programs will not be available until after the fiscal year end. The 2022 plan values remain consistent with the evidence.

Overall project performance is in line with the 2020 Transmission Capital Performance Report. The two largest variances are for the Middleport TS ABCB Replacement project and the Nanticoke TS ABCB Replacement project, shown in the Project Total Forecasts at Q3 2021 column in the table below. The increase for Middleport TS is mainly attributable to underestimation of project costs due to the maturity level of project definition deliverables, and other execution related challenges. The increase for Nanticoke TS is due to underestimation of material and labour cost in the project definition phase and execution related challenges.

	Project Phase	ISD Number EB-2019-0082	2020 Capex DRO Plan ($M)	2020 Capex Actual ($M)	2020 ISA DRO Plan ($M)	2020 ISA Actual ($M)	Project Total DRO Plan ($M)	Project Total Actual / Forecast ($M)	Project Total Variance ($M)	Project Total Forecast at Q3 2021 ($M)	In-Service Year DRO Plan	Actual / Forecast In-Service Year	In-Service Year Variance (Years)	Forecast In-Service Year at Q3 2021	Variance Category
System Access															
Load Customer Connection															
Leamington TS: New 230/27.6 kV DESN	**Complete**	Other	2.3	3.6	2.3	3.6	56.9	54.6	-2.3		2018	2018	0		Not a material variance
System Renewal															
Integrated Station Investment															
Birch TS: Component Replacement	**Complete**	Other	1.5	0.8	3.2	2.5	35.6	35.5	-0.1		2020	2020	0		Not a material variance
Chatham SS: Capacitor and Breaker Replacement	**Complete**	Other	0.6	0.6	5.1	5.0	5.1	5.0	-0.1		2020	2020	0		Not a material variance
Chenaux TS EOL Transformer Replacement	**Complete**	Other	5.5	7.4	21.0	22.5	40.2	41.1	0.9		2021	2021	0		Not a material variance
Clarabelle TS: Component Replacement	**Complete**	Other	1.8	1.3	4.2	3.2	6.4	6.6	0.2		2021	2020	-1		Not a material variance
Detweiler TS: T2, T4 & Component Replacement	**Executing**	SR-03	10.5	10.7	11.1	12.5	21.2	22.1	0.9	**22.4**	2021	2021	0	**2021**	Not a material variance
Dryden TS - ISCR	**Executing**	Other	3.3	0.5	4.0	0.7	38.1	38.1	0.0	**37.9**	2021	2021	0	**2022**	Not a material variance
Elgin TS; Station Refurbishment	**Executing**	SR-02	8.5	5.2	48.8	44.7	75.1	71.3	-3.8	**74.1**	2021	2021	0	**2022**	Not a material variance
Gage TS: T3,T4,T5,T6, PCT & Switchyard Reconfiguration	**Executing**	SR-02	18.5	18.4	20.0	24.1	53.6	56.8	3.2	**59.5**	2021	2021	0	**2022**	Not a material variance
Hanmer TS: Northern Station Replacement	**Executing**	SR-02	10.1	20.0	15.5	27.8	83.4	93.5	10.1	**91.7**	2022	2022	0	**2022**	Execution Factors

	Project Phase	ISD Number EB-2019-0082	2020 Capex DRO Plan ($M)	2020 Capex Actual ($M)	2020 ISA DRO Plan ($M)	2020 ISA Actual ($M)	Project Total DRO Plan ($M)	Project Total Actual / Forecast ($M)	Project Total Variance ($M)	Project Total Forecast at Q3 2021 ($M)	In-Service Year DRO Plan	Actual / Forecast In-Service Year	In-Service Year Variance (Years)	Forecast In-Service Year at Q3 2021	Variance Category
Hinchinbrooke SS BULK	**Executing**	Other	0.4	5.2	1.5	4.8	22.5	23.5	1.0	**23.7**	2020	2021	1	**2021**	Execution Factors
King Edward TS T3 and PCT Replacement	**Executing**	SR-05	4.8	6.3	4.6	4.0	15.9	15.0	-0.9	**16.6**	2022	2021	-1	**2021**	Not a material variance
Kleinburg TS: Component Replacement	**Complete**	Other	2.4	1.6	4.9	4.1	5.6	7.0	1.4		2021	2020	-1		Work Definition
Leaside TS BULK; Component Replacement	**Executing**	Other	5.6	5.8	10.8	13.7	57.9	61.2	3.3	**61.7**	2021	2021	0	**2022**	Not a material variance
Leaside TS: 27.6kV Switchyard & Component Replacement	**Executing**	SR-06	8.4	14.8	25.5	31.9	36.3	45.4	9.1	**45.8**	2020	2021	1	**2021**	Execution Factors
Manby TS – ISCR	**Executing**	Other	3.7	4.6	3.6	4.3	29.8	31.1	1.3	**33.7**	2021	2021	0	**2022**	Not a material variance
Martindale TS: T21/T23 & Component Replacement	**Executing**	SR-02	11.6	9.9	14.0	15.2	73.8	71.8	-2.0	**74.0**	2021	2021	0	**2021**	Not a material variance
Meaford TS: Component Replacement	**Executing**	Other	4.1	4.3	4.9	5.1	5.3	5.4	0.1	**5.8**	2021	2021	0	**2021**	Not a material variance
Minden TS: T1, T2, PCT, 44kV Yard & Component Replacement	**Executing**	SR-05	20.8	17.9	25.1	22.0	33.2	34.5	1.3	**37.1**	2021	2021	0	**2021**	Not a material variance
Newton TS: T1 & Component Replacement	**Executing**	SR-05	3.5	6.6	0.0	5.8	3.5	9.8	6.3	**10.9**	2021	2021	0	**2021**	Emergent Needs
Runnymede TS: T3, T4 & Switchyard Replacement	**Executing**	SR-02	17.5	17.8	19.8	22.3	30.2	35.9	5.7	**35.6**	2021	2021	0	**2021**	Execution Factors
Sheppard TS: T3, T4, PCT, LV Yard & Component Replacement	**Executing**	SR-02	20.0	15.6	39.1	33.9	40.2	37.8	-2.4	**41.8**	2021	2021	0	**2021**	Not a material variance

	Project Phase	ISD Number EB-2019-0082	2020 Capex DRO Plan ($M)	2020 Capex Actual ($M)	2020 ISA DRO Plan ($M)	2020 ISA Actual ($M)	Project Total DRO Plan ($M)	Project Total Actual / Forecast ($M)	Project Total Variance ($M)	Project Total Forecast at Q3 2021 ($M)	In-Service Year DRO Plan	Actual / Forecast In-Service Year	In-Service Year Variance (Years)	Forecast In-Service Year at Q3 2021	Variance Category
St. Thomas TS: Station Decom & W3T, W4T, T11T Reconfiguration	**Complete**	Other	1.8	2.2	2.8	3.2	2.7	3.7	1.0		2020	2020	0		Execution Factors
Strachan TS T12/T14; T12 & Component Replacement	**Executing**	SR-05	3.7	5.6	6.0	8.7	13.7	19.4	5.7	**18.9**	2022	2021	-1	**2022**	Execution Factors
Transmission Station Renewal - Air Blast Circuit Breakers															
Beck 2 TS, ABCB Replacement & Yard Upgrade	**Executing**	SR-01	15.7	11.4	17.1	10.2	132.4	128.4	-4.0	**127.2**	2023	2023	0	**2023**	Not a material variance
Bruce A 230kV- Replace Breakers & Upgrade Station	**Complete**	SR-01	6.8	8.5	0.8	12.1	118.6	118.2	-0.4		2021	2020	-1		Not a material variance
Cherrywood TS 230kV BULK; ABCB & Component Replacement	**Executing**	SR-01	20.4	26.7	26.8	31.7	90.3	111.6	21.3	**107.9**	2023	2023	0	**2023**	Execution Factors
Lennox TS BULK: ABCB Component Replacement	**Executing**	SR-01	13.6	12.5	50.0	58.8	108.6	142.5	33.9	**142.3**	2024	2026	2	**2026**	Work Definition
Middleport TS ABCB Replacement	**Executing**	SR-01	19.6	35.3	21.0	19.6	113.4	119.8	6.4	**143.3**	2025	2025	0	**2025**	Not a material variance
Nanticoke TS ABCB Replacement	**Executing**	SR-01	10.1	16.7	0.0	11.4	61.2	66.5	5.3	**79.3**	2025	2025	0	**2026**	Not a material variance
IT Security															
ISL Replacement-Discovery-Capital	**Executing**	SR-29	4.4	4.3	6.2	6.1	11.8	12.2	0.4	**14.2**	2021	2021	0	**2021**	Not a material variance
Overhead Lines Refurbishment Projects, Component Replacement Programs and Secondary Land Use Projects															
D6V/D7V, Guelph North JCT-Fergus TS, Transmission Line Refurbishment	**Complete**	Other	4.4	4.4	6.5	3.6	12.4	7.0	-5.4		2021	2020	-1		Work Definition

	Project Phase	ISD Number EB-2019-0082	2020 Capex DRO Plan ($M)	2020 Capex Actual ($M)	2020 ISA DRO Plan ($M)	2020 ISA Actual ($M)	Project Total DRO Plan ($M)	Project Total Actual / Forecast ($M)	Project Total Variance ($M)	Project Total Forecast at Q3 2021 ($M)	In-Service Year DRO Plan	Actual / Forecast In-Service Year	In-Service Year Variance (Years)	Forecast In-Service Year at Q3 2021	Variance Category
CxA, Cameron Falls GS-Alexander G	**Executing**	Other	1.2	1.3	7.5	6.7	7.5	8.5	1.0	**8.6**	2020	2021	1	**2021**	Execution Factors
D3A, Allanburg TS X ASW Steel CT	**Complete**	SR-19	-0.8	2.8	12.1	12.6	12.9	13.5	0.6		2020	2020	0		Not a material variance
D4Z, Nine Mile JCT-IPB Casey JCT	**Complete**	Other	2.4	3.6	4.4	4.5	3.4	4.0	0.6		2021	2020	-1		Execution Factors
Transmission Line Refurbishment															
A7L/R1LB/A6P & 57M1, Alxdr B-Lkhd, Transmission Line Refurbishment	**Executing**	SR-19	24.9	15.0	0.0	6.0	67.9	68.3	0.4	**68.8**	2022	2022	0	**2022**	Not a material variance
B3/B4, Horning Mt. - Glanford, Transmission Line Refurbishment	**Complete**	SR-19	7.2	6.8	15.2	12.4	19.4	17.3	-2.1		2021	2020	-1		Execution Factors
D6, Des Joachims TS X Petawawa DS, Transmission Line Refurbishment	**Executing**	SR-19	4.4	16.1	2.2	12.7	41.3	42.5	1.2	**42.2**	2021	2022	1	**2025**	Not a material variance
Protection and Automation															
Install DDRs for NERC Compliance	**Executing**	Other	4.4	3.6	4.0	3.8	9.3	8.3	-1.0	**9.3**	2022	2021	-1	**2022**	Work Definition
Underground Lines Cable Refurbishment & Replacement															
HV UG Cable - Replace H7L/H11L	**Complete**	Other	3.9	4.4	40.9	41.3	43.0	45.4	2.4		2020	2020	0		Not a material variance
System Service															
Inter Area Network Capability															
Lennox TS 500kV Shunt Reactors	**Executing**	SS-01	18.9	21.8	22.0	0.0	46.2	47.2	1.0	**45.8**	2021	2021	0	**2022**	Not a material variance

	Project Phase	ISD Number EB-2019-0082	2020 Capex DRO Plan ($M)	2020 Capex Actual ($M)	2020 ISA DRO Plan ($M)	2020 ISA Actual ($M)	Project Total DRO Plan ($M)	Project Total Actual / Forecast ($M)	Project Total Variance ($M)	Project Total Forecast at Q3 2021 ($M)	In-Service Year DRO Plan	Actual / Forecast In-Service Year	In-Service Year Variance (Years)	Forecast In-Service Year at Q3 2021	Variance Category
Local Area Supply Adequacy															
Hawthorne TS: Replace 2 Existing Transformers	**Executing**	Other	4.7	2.4	10.3	0.1	20.9	20.4	-0.5	**20.9**	2021	2021	0	**2021**	Not a material variance
Kapuskasing Area Reinforcement	**Executing**	SS-10	15.2	16.6	11.2	11.9	33.7	32.0	-1.7	**34.9**	2022	2022	0	**2023**	Not a material variance
Performance Enhancement															
Port Colborne TS - Outlier Performance Improvement	**Complete**	Other	2.3	3.2	2.9	3.9	6.2	3.9	-2.3		2020	2020	0		Work Definition
Risk Mitigation															
L7S - Reliability Performance Mitigation	**Complete**	Other	2.1	3.7	0.0	4.3	3.6	5.3	1.7		2021	2020	-1		Work Definition
Grand Total			**356.7**	**407.8**	**558.9**	**599.3**	**1750.2**	**1848.9**	**98.7**						

1

UNDERTAKING JT-1.13

Reference:

I-03-B1-AMPCO-014

Undertaking:

To provide on a best-efforts basis the same table for Q4, so end of year 2019 and 2020.

Response:

Please see below for the project and portfolio metric results as of Q4 2019 and Q4 2020 for the metrics identified in EB-2019-0082 Exhibit JT 1.16.

Project Level Metrics	Q4 2019	Q4 2020	Q3 2021
On-time: Project In-Service Date Forecast versus Current Approved	82%	88%	84%
On-time: Project In-Service Date Forecast versus Original Approved	41%	60%	60%
On-budget: Gross Project Total Forecast versus Current Approved	94%	100%	100%
On-budget: Gross Project Total Forecast versus Original Approved	82%	80%	76%
Portfolio Level Metrics	**Q4 2019**	**Q4 2020**	**Q3 2021**
In-Service Additions: Annual Forecast versus Budget	101%	101%	N/A
Capital Expenditures: Annual Forecast versus Budget	99%	104%	N/A
Portfolio Risk: Number of Projects Forecasting a Major Variance (+/- 10%) to Budget	21 of 194	16 of 177	9 of 166
Portfolio Risk: Value of Projects Forecasting a Major Variance (+/- 10%) to Budget	15%	14%	9%
Project Cost Performance: Number of Projects complete within AACE Estimate Class Range documented in original approval	29 of 31	19 of 21	25 of 32
Project Cost Performance: Value of Projects complete within AACE Estimate Class Range documented in original approval	99%	93%	71%
Cost Variance Distribution: Portion of Project Portfolio Delivered On Budget, Over Budget, Under Budget	94%	90%	78%
Cost Variance Distribution: Standard Deviation of Project Cost Performance represented as a percentage of original Budgets	13%	24%	25%
Schedule Variance Distribution: Portion of Project Portfolio Delivered On-time, Late, Early	55%	52%	34%
Schedule Variance Distribution: Standard Deviation of Schedule Variance in Days	670	341	333

Project level performance on Hydro One's largest and strategic projects has been very strong over the 2019 – 2021 period, with improved timeliness relative to originally approved in-service date commitments.

Witness: SPENCER Andrew

On a portfolio basis, the number of projects forecasting a major variance has decreased over the 2019 – 2021 period, which demonstrates the effectiveness of Hydro One's project delivery practices that have been in place over the past several years. Correspondingly, the portion of the overall portfolio that is represented by projects with major variances has also decreased. The majority of projects completed in the 2019 – 2021 period have been within the upper range of the AACE Estimate Class Range, however, site complexities, coordination issues and emergency replacements have negatively impacted cost and schedule adherence for projects completed in 2021. The largest contributor was Bruce A 230KV ABCB Replacement project, which experienced cost and schedule variances due to the need for 230KV bus bypasses, temporary high pressure air systems, and other unanticipated site conditions. In the absence of this project, results for 2021 for projects completed over the trailing 12 month period would have been closer to prior year results.

UNDERTAKING JT-1.14

Reference:

I-22-A-SEC-006

Undertaking:

To provide copies of the following audit reports in full: 2019-28, 2019-32, 2020-08, 2020-15, 2021-04, 2021-07, and 2021-18, subject to relevance caveats and otherwise.

Response:

The requested audit reports are included as follows:

- Attachment 1: 2019-28 – Capital Project Review
- Attachment 2: 2019-32 – Regulatory Account Reconciliation Review
- Attachment 3: 2020-08 – 2019 In-Service Additions Assurance Review
- Attachment 4: 2020-15 – Load Forecasting Review
- Attachment 5: 2021-04 – 2020 In-Service Additions Assurance Review
- Attachment 6: 2021-07 – Distribution Vegetation Management - Optimal Cycle Protocol Effectiveness
- Attachment 7: 2021-18 – Productivity Savings

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Capital Project Review

Internal Audit Report

Client:	**Andrew Spencer** Vice President, Transmission and Stations	**Business Risk Area:**	Major Project Risk Work Program Accomplishment Cost/Productivity Uncertainty
	Kathleen McCorriston Director, Portfolio Management	**Primary Lines of Business Affected:**	Transmission and Stations
	James Mardegan Director, Project Delivery	**Lead Auditor:** **Audit Manager:**	Henrique Dantas Rocha Moufid Dardas
Executive:	**Darlene Bradley** Acting Chief Operating Officer and Chief Safety Officer	**Report Number:**	2019-28
		Date Issued:	17 Jan 2020
	David Lebeter Chief Operating Officer		

Capital Project Review - Internal Audit Report
Executive Summary

Objective and Scope

The objective of this audit was to assess the effectiveness of key project management processes and controls and the adherence to Hydro One's capital project processes as defined within the Transmission Capital Efficiency Program (Project Delivery Model or PDM).

To perform this assessment, project management processes were assessed in three major projects that follow the PDM, namely: Middleport TS, IAMGOLD 115kV Mine Connection, and Glendale TS. These projects identified by Management, are representative of projects employing PDM and have a similar profile to projects likely to be executed in the future.

Audit Opinion

- Needs Significant Improvement
- Needs Improvement
- **Needs Minor Improvement** ◀
- Satisfactory

Conclusion

Positive practices were observed including the strong support of the PDM by Project Managers, team alignment and collaboration between Project Managers and project teams in addition to specific process related success factors.

However, the PDM process continues to evolve and documentation must be updated to ensure it is aligned with current practices. The processes to ensure clear ownership and updates of the PDM processes, integrate continuous improvements, provide ongoing training, and improve specific aspects of Risk Management, Cost Management, and Schedule Management processes **need minor improvement**. An assessment of the specific PDM elements across the sampled projects is provided on the following page.

Summary of Key Observations and Management Actions

The key observations and management actions arising from this review are summarized as follows:

- **The Project Delivery Model (PDM) is not regularly updated, with unclear process ownership and a lack of ongoing training and communication** – Management has committed to regularly update the PDM, and establish clear process ownership, stakeholder training, and effective communication across multiple Lines of Business; and
- **Key processes, namely Risk, Schedule, and Cost Management as defined in PDM are not consistently adhered to in the sample of projects reviewed** – For each process, Management has committed to improve monitoring to ensure that controls are followed, revise the process considering project categorization (based on Project Tier) and project phase, or remove non-essential process steps and controls while assessing the risk of these changes.

Internal Audit will provide support to management for the completion of these action plans and track status until completion.

Capital Project Review - Internal Audit Report
Executive Summary

Capital Project Review – Engagement Scorecard

Background / Profile	Middleport	Glendale	IAMGOLD
Type	Tx Station	Tx Station	Lines (Customer proj.)
Current Budget [1]	$113M	$42M	$65M
Project Stage	Execution	Planning	Planning
Location	Greater Hamilton Area	Hamilton / Niagara	Gogama, ON

Risk Management	Process Design [2]	Process Adherence		
Risk Register developed		Fully followed	Fully followed	Fully followed
Risk Quantification [3]		Partially followed	N/A in early phases	Moderately followed
Risk Response		Fully followed	Not followed	Partially followed
Risk Monitoring		Not followed	Not followed	Not followed
Scheduling				
Schedule Development [4]		Partially followed	Partially followed	Fully followed
Schedule Monitoring [5]		Fully followed	Fully followed	Fully followed
Schedule Quality Assurance [6]		Moderately followed	Not followed	Moderately followed
Schedule reports as per PDM [7]		Partially followed	Partially followed	Generally followed
Estimating				
Deliverables provided to Estimators [8]		Fully followed	Fully followed	Fully followed
Basis of Estimate and completeness [9]		Partially followed	Fully followed	Fully followed
Quality Assurance Review		Fully followed	Fully followed	Fully followed
Change Management				
Change Orders – Adequate information		Fully followed	Fully followed	Fully followed
Change Orders follow PDM		Fully followed	Fully followed	Fully followed
Forecasting				
Forecast is completed and issued		Fully followed	Fully followed	Fully followed
Month End Report created		Fully followed	Fully followed	Partially followed
Month End Report matches Forecast value		Fully followed	Fully followed	Not followed
Governance				
Key Meetings as per PDM [10]		Partially followed	Partially followed	Moderately followed

Legend

- Not followed
- Partially followed
- Moderately followed
- Generally followed
- Fully followed

Report Number: 2019-28

Capital Project Review - Internal Audit Report
Executive Summary

(1) The Approved Budget of Middleport is $113.4M, the requested budget of IAMGOLD as submitted on 6 November 2019 to the Board for project approval is $64.6M, and the current forecast of Glendale as per the October 2019 Month End Report is $41.7M

(2) 100% if there is no Opportunity of Improvement (OFI) or Observation, 75% if there is an OFI or Observation, 50% if there is major observation related to process control effectiveness, and 25% if there are multiple significant observations

(3) Based on calculations (including formulas), assumptions, explanations, and supporting documentation

(4) Based on a) creation of Basis of Schedule (BoS), b) Review and completeness of BoS, c) Schedule review by Project Manager and Project Team, and d) Schedule level of detail as designed in the PDM

(5) Based on received inputs, and Schedule review with project team

(6) Based on a) Quality Assurance of Schedule Development, and b) Quality Assurance of Schedule Monitoring

(7) Reports include a) Performance Level / Control Accounts report, b) Variance report, c) 3-week look-ahead schedule report, d) Critical Path report

(8) Including Work Plan, Schedule, previous cost estimate, previous Basis of Estimate, Engineering deliverables, etc.

(9) Includes availability of a) Basis of Construction Estimate (BoCE), b) Cash Flows, Interest and Overhead, c) Contingency, d) Escalation

(10) Based on a) The meeting as prescribed by PDM was held, b) Minutes of meeting issued, c) Meeting Terms of Reference used in meeting, d) Objective achieved as expected in the Terms of Reference, e) Action plans, accountability and deadline are available in meeting minutes

Capital Project Review – Internal Audit Report
Background

The Transmission Capital Efficiency Program, also referred to as the Project Delivery Model, was developed in 2017 with the objective to build best-in-class project definition and execution capabilities, and deliver projects in a more streamlined manner to serve a growing capital program that is expected to increase gradually from an annual net spend of $0.7 billion to $1.0 billion in 2024.

Management requested Internal Audit to assess the effectiveness of key project management processes through a review of three major capital projects, identified as following the Project Delivery Model (refer to Figure 1 in the Additional Information section below). The projects selected for this review have a cumulative budget of $220 million (total project lifecycle).

The key processes that were reviewed in this engagement are highlighted in red in the In-Scope Capability Map below:

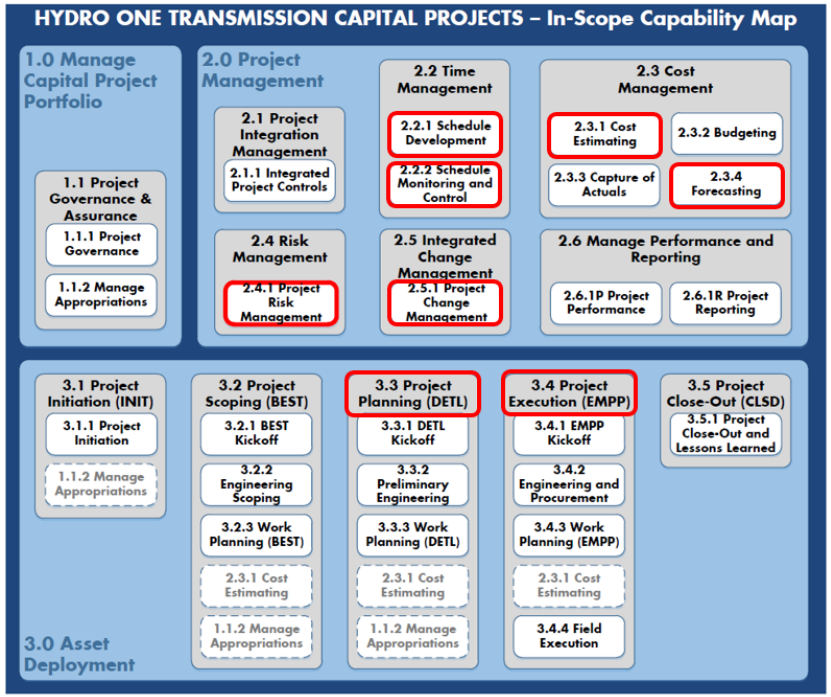


Figure 1 – Hydro One Transmission Capital Project Delivery Model

This business overview is included for information purposes only and intended to provide the reader further context into the area reviewed.

Capital Project Review – Internal Audit Legend

Audit Opinion	Definition
Needs Significant Improvement	Pervasive or multiple control weaknesses detected may cause non-achievement of enterprise objectives.
Needs Improvement	Numerous control weaknesses detected which may lead to non-achievement of specific key business objectives.
Needs Minor Improvement	Partially effective control environment, which may lead to a moderate risk of not achieving business objectives.
Satisfactory	Internal controls are appropriately designed, implemented, and are operating effectively to support related objectives.

Recommendation Priority Rating

Critical priority recommendation

Urgent action required to avoid immediate negative and pervasive impacts. Oversight by the Executive Leadership Team and the Board is advised.

High priority recommendation

High impact issues that require timely management action to avoid damages. Oversight by Senior Management is advised.

Medium priority recommendation

Major weaknesses detected that could impact business effectiveness if not remediated over time. Oversight by Line of Business management is advised.

Opportunity for improvement

Weaknesses identified impacting operational efficiency and effectiveness, which should be addressed where feasible.

Regulatory Account Reconciliation Review Internal Audit Report

Client:	**Kamil Baig** Director, Corporate Accounting & Reporting **Samir Chhelavda** Vice President & Corporate Controller **Joe Cornacchia** Senior Vice President, Finance	**Business Risk Area:**	Financial Risk
		Primary Lines of Business Affected:	Finance
		Lead Auditor: **Audit Manager:**	Adrienne Pieri Kristopher Wentzel
		Report Number:	2019-32
Executive:	**Chris Lopez** Executive Vice President, Chief Financial Officer	**Date Issued:**	January 31, 2020

Regulatory Account Reconciliation Review – Internal Audit Report Executive Summary

Objective and Scope

The objective of this engagement was to provide assurance over the processes and controls relied upon by Management to ensure the integrity of the completeness, accuracy and valuation of regulatory asset and liability balances presented within the consolidated financial statements of Hydro One Limited.

This is an extension of the Financial Control Assurance internal control certification program and expands upon and complements existing internal and external assurance activities over the related financial statement accounts.

Audit Opinion

- Needs Significant Improvement
- Needs Improvement
- **Needs Minor Improvement** ◀
- Satisfactory

Conclusion

Although the controls in place to support the timely, accurate and complete valuation and presentation of regulatory assets and liabilities within the consolidated financial statements of Hydro One Limited are generally effective; the overall process related to the accounting for regulatory assets and liabilities **needs minor improvement** to formalize the key handoffs of critical information required to support the accuracy and completeness of regulatory accounts.

Summary of Key Observations and Management Actions

The key observations and management actions arising from this review are summarized as follows:

- **Enhancing the formalization of the processes for communicating key information that supports regulatory accounting** – Management has committed to the following actions to address key findings within this report:
  - Formalize the review and analysis of all OEB notifications that impact financial reporting
  - Define critical information resulting from the rate application process to be formally provided or confirmed by Regulatory
  - Identify key information provided by other lines of business that is utilized to support regulatory accounting and define a requirement for appropriate review and approval prior to a timely handoffs of this information to the Financial Reporting group

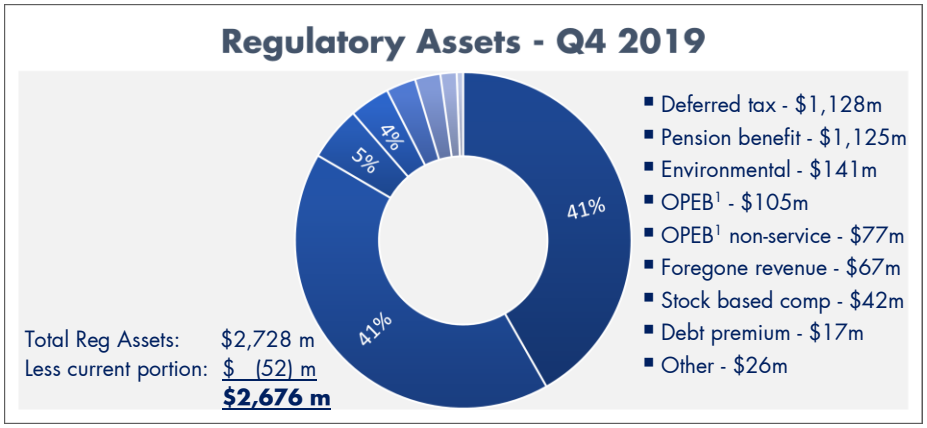
Internal Audit and the Financial Control Assurance team will continue to support Management on these initiatives and monitor the completion of the action plans.

Regulatory Account Reconciliation Review – Internal Audit Report Background

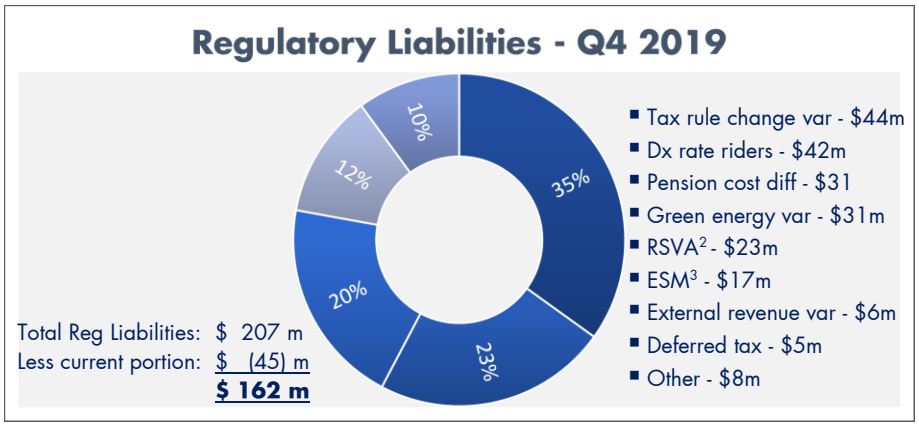
Regulatory assets and liabilities recorded in the consolidated financial statements of Hydro One Limited represent amounts that are probable to be recovered in future rates, as represented by a regulatory asset, or are refundable to customers, as represented by a regulatory liability. Regulatory assets and liabilities have either been approved by the OEB to be recoverable from customers / refundable to customers or management has determined it will be likely these amounts will be recoverable from customers / refundable to customers.

The valuation of regulatory assets and liabilities is considered high risk for financial reporting due to their materiality; uniqueness of underlying transactions; reliance on various lines of business to provide current and complete information to the Financial Reporting group in a timely manner; and degree of judgment involved in the process.

$2.7 billion of total regulatory assets and $207 million of total regulatory liabilities were recorded within the consolidated financial statements of Hydro One Limited.



[1] Post-retirement and post-employment benefits



This business overview is included for information purposes only and intended to provide the reader further context into the area reviewed.

Regulatory Account Reconciliation Review – Internal Audit Report Legend

Audit Opinion	Definition
Needs Significant Improvement	Pervasive or multiple control weaknesses detected may cause non-achievement of enterprise objectives.
Needs Improvement	Numerous control weaknesses detected which may lead to non-achievement of specific key business objectives.
Needs Minor Improvement	Partially effective control environment, which may lead to a moderate risk of not achieving business objectives.
Satisfactory	Internal controls are appropriately designed, implemented, and are operating effectively to support related objectives.

Recommendation Priority Rating

Critical priority recommendation

Urgent action required to avoid immediate negative and pervasive impacts. Oversight by the Executive Leadership Team and the Board is advised.

High priority recommendation

High impact issues that require timely management action to avoid damages. Oversight by Senior Management is advised.

Medium priority recommendation

Major weaknesses detected that could impact business effectiveness if not remediated over time. Oversight by Line of Business management is advised.

Internal Audit Services – Memorandum

Subject Area:
In-Service Additions Assurance

Key Enterprise Risk:
Financial Risk

Client:
Chris Lopez, Chief Financial Officer
Joe Cornacchia, Senior Vice President, Finance
Samir Chhelavda, Vice President & Corporate Controller
Ryan Lee, Director, Business Analysis

Engagement Objective:

The primary objective of this engagement was to provide assurance over the reasonableness of 2019 reported in-service additions (ISAs) through a review of a sample of work completed during the year and the examination of supporting documentation to validate that the reported additions meet the regulatory conditions ("used and useful") for recognition and inclusion in the rate base.

This review was performed in parallel with KPMG, the external auditor, given the alignment of this work with their year-end financial review.

Engagement Approach & Results:

Of the $1.5b[1] ISAs recorded during 2019, a sample of 16 projects and programs brought in-service were judgmentally selected, in conjunction with KPMG and represented approximately 20% of the total population in scope. For the sampled ISAs, the following was performed:

- Walked through of the in-servicing process with the accountable Project/Program Manager;
- Examined evidence to support the cost and timing of assets placed in-service; and
- Assessed Management's determination of the ISA meeting "used and useful" criteria.

Results of the review are summarized within Appendix A – ISA Test Results.

Conclusion:

Sampled ISAs met Management's determination of "used and useful" criteria as of the declared in-service date, with some exceptions as outlined within Appendix A. The following opportunities for improvement to ensure a consistent and documented approach to support ISA declaration, particularly with respect to partial assets, were identified:

- Clarify when an electrical asset is deemed used and useful for intended purposes (i.e. when the asset is energized or is used for the customer benefit)

[1] This value does not include Niagara Reinforcement Project in-service additions recorded during 2019. Due to the unique financial treatment of this project, this in-service addition was excluded from the scope of this review.

- Formalize approach and documentation required to support partial assets being declared in-service and the allocated costs for the partial asset that meets "used and useful" criteria
- Enhance prescriptive guidance on common cost allocation methodologies
- Formalize approach for initial project set-up to support phased in-servicing of multi-year projects
- Provide current training on the functional location hierarchy to project and program managers

Next Steps:

Management has committed to facilitate a multi-line of business workshop to review the in-servicing process and address the items identified above. Internal Audit will support this initiative and incorporate the results into 2020 planning.

Appendix A – ISA Test Results

Project / Program Description	2019 ISA ($ millions)	"Used and Useful" as of ISA date
T Lines Insulator Replacement Program	$ 46.8	Yes
Dx Capital Storm Damage	35.9	Yes
Transport and Work Equipment (TWE)	31.4	Yes
Leamington DESN2: Build Second 230/27.6 kV DESN	27.9	Yes[2]
Bronte TS; T5/T6 DESN Refurbishment	26.7	Yes
Bruce A 230kV- Replace Breakers & Upgrade Station	25.0	Yes
Private Cloud Data Center - Capital	22.0	Yes
Cherrywood TS 230kV BULK; ABCB & Component Repl.	20.8	Yes[3]
DS Station Refurbishment Program	16.6	Yes
Stewartville TS - ISCR	16.0	Yes
New Facilities and Service Centers Improvements DX	5.0	Yes
Dx Modernization	4.4	Yes
Tx Stations Security Upgrades	3.6	Yes[4]
HR & Payroll Transformation	3.2	Yes
King Edward TS T3 and PCT Replacement	2.8	Yes[5]
Minden TS	2.4	Yes[6]
Total	**$ 290.5**	

[2] This project was brought forward from planned in-service in January 2020 to in-service in December 2019 to meet load demand. At the time of our review, the associated IROV had not been finalized.
[3] This project was partially in-serviced for $20.8M for the installation of cable trenches and building in support of future work related to 12 air-blast circuit breaker replacement that will occur by 2023. This approach aligned with the phased project plan.
[4] This project was related to installation of security cameras for physical security at Burlington TS but the in-service cost were capitalized as telecom assets by the project manager.
[5] This project was in-serviced for $2.8M but the life-to-date cost review indicated that this included approximately $1M of engineering cost of which the project manager confirmed was too high and the allocation will be corrected.
[6] This project was partially in-serviced for $2.4M to cover the cost of 7 out of 11 planned switches that went in-service. The separation of costs for remaining 4 switches was assumed by project manager as 30% of the total project cost.

Load Forecasting Review
Internal Audit Report

Client:	**Henry Andre** Director, Pricing and Load Forecasting	**Business Risk Area:**	Financial Risk Government Policy Uncertainty
		Primary Lines of Business Affected:	Regulatory Affairs
		Lead Auditor: **Audit Manager:**	Atul A. Solanki Jeff Schaller
		Report Number:	2020 -15
Executive:	**Frank D'Andrea** Vice President, Reliability Standards and Chief Regulatory Officer **Paul Harricks** Chief Legal Officer	**Date Issued:**	July 15, 2020

Load Forecasting Review – Internal Audit Report
Executive Summary

Objective and Scope

To provide assurance that processes and controls pertaining to the Load Forecasting function are effective for preparing accurate, credible and defendable load forecasts in support of the transmission and distribution rate applications as well as internal revenue and investment planning needs. The scope included a review of load forecasting process governance, input data collection/validation, forecasting model changes, sensitivity analysis of output and variance analysis of actual vs. forecast loads.

Audit Opinion

Conclusion

The Load Forecasting group has consistently produced transmission and distribution system load forecasts and has defended the forecasts in support of rate applications for many years. However, these results are highly dependent on long-serving individuals with specialized subject matter knowledge and experience. **Minor improvements** are needed to the documentation of process governance, management of internal records and succession planning.

Summary of Key Observations and Management Actions

Given the complexity of the load forecasting process, comprehensive documentation is needed to ensure that the process is consistent, repeatable and not fully reliant on individual staff.

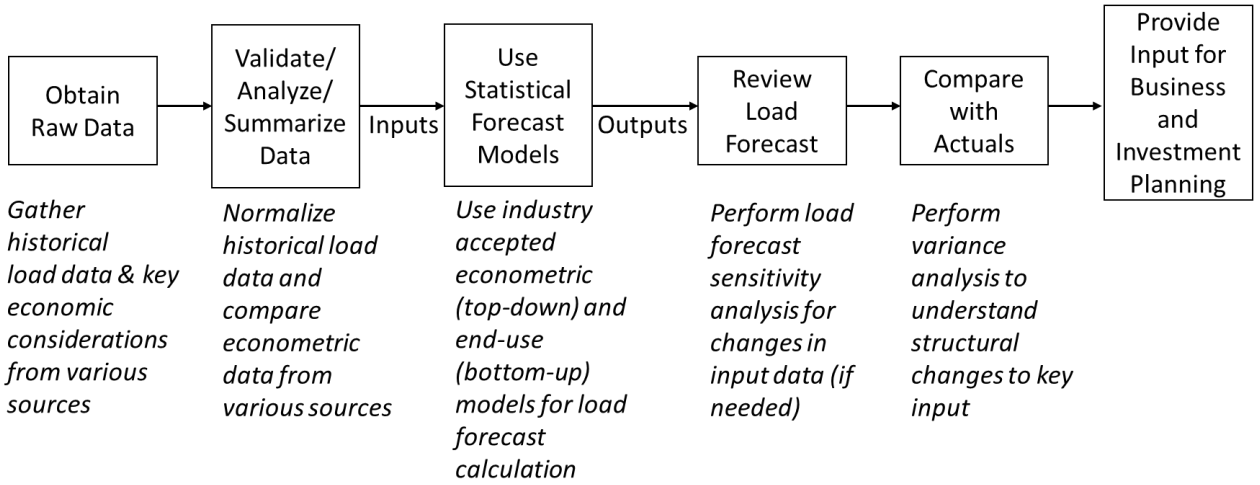
During this review, Internal Audit Services documented the key process steps and management has agreed to review and strengthen documentation of the load forecasting policies, processes, procedures, standards and accountabilities and record management practices. Management has also agreed to identify and codify key knowledge, skills and experience needed and develop a detailed succession plan that will ensure continuity of the load forecasting function and reduce reliance on key individuals.

Load Forecasting Review – Internal Audit Report Background

Hydro One's transmission rate application is based on the hourly demand load forecast by customer delivery point while Hydro One's distribution rate application is based on forecast of total distribution load and number of customers. Hydro One uses weather-corrected historical loads along with a number of methods, such as econometric models, end-use models, load shape analysis, and customer forecast surveys to produce weather-normal load forecasts. Similar forecasting methods are used by major utilities throughout North America. Hydro One has significant experience in preparing load forecasts using a consistent methodology that has been accepted by Ontario Energy Board following scrutiny by OEB staff and Intervenors as part of prior transmission and distribution rate filings.

The Load Forecasting group within Regulatory Affairs is accountable for developing load forecasts for rate filing purposes, to support Finance with revenue planning as part of the annual business planning process, and to support the Asset Planning group with delivery point/region specific load forecast for investment planning purposes.

The following high-level load forecast process was established during a process walk-through meeting with the Load Forecasting group during the planning stage of this review:



This business overview is included for information purposes only and intended to provide the reader further context into the area reviewed.

Load Forecasting Review – Internal Audit Report Legend

Audit Opinion	Definition
Needs Significant Improvement	Pervasive or multiple control weaknesses detected may cause non-achievement of enterprise objectives.
Needs Improvement	Numerous control weaknesses detected which may lead to non-achievement of specific key business objectives.
Needs Minor Improvement	Partially effective control environment, which may lead to a moderate risk of not achieving business objectives.
Satisfactory	Internal controls are appropriately designed, implemented, and are operating effectively to support related objectives.

Recommendation Priority Rating

Critical priority recommendation

Urgent action required to avoid immediate negative and pervasive impacts. Oversight by the Executive Leadership Team and the Board is advised.

High priority recommendation

High impact issues that require timely management action to avoid damages. Oversight by Senior Management is advised.

Medium priority recommendation

Major weaknesses detected that could impact business effectiveness if not remediated over time. Oversight by Line of Business management is advised.

2020 In-Service Additions – Assurance Review Internal Audit Report

Client:	**Samir Chhelavda** Vice President & Corporate Controller **Joe Cornacchia** Senior Vice President, Finance **James Mardegan** Director, Project Delivery **Andrew Spencer** Vice President, Transmission & Stations **CK Ng** Vice President, Distribution **Brad Bowness** Chief Information Officer	**Business Risk Area:**	Disclosure Risk Regulatory Risk
		Primary Lines of Business Affected:	Finance Distribution Transmission & Stations Information Solutions Division
		Audit Manager:	Adrienne Pieri
		Report Number:	2021–04
Executive:	**Chris Lopez** Chief Financial Officer	**Date Issued:**	May 20, 2021

2020 In-Service Additions Assurance Review – Internal Audit Report Executive Summary

Objective and Scope

The objective of this engagement was to provide assurance over the accuracy and validity of the 2020 reported in-service additions (ISAs). The scope of this engagement focused on material ISAs completed in the last quarter of 2020. A sample of ISAs and supporting project documentation was reviewed to validate that the regulatory conditions ("used and useful") for recognition and inclusion in Hydro One's consolidated Financial Statements as of December 31, 2020.

Internal Audit performed this review jointly with KPMG, the external auditor, given the alignment of this work with the external auditor's year-end activities.

Audit Opinion

- Needs Significant Improvement
- Needs Improvement
- **Needs Minor Improvement** ◀
- Satisfactory

Conclusion

While there was **satisfactory** evidence to support the balances for ISAs reviewed during this engagement; controls over the process **need minor improvement.** Specifically, standardizing processes would improve evidence of compliance with the in-service criteria; demonstrate operational confirmation for the assets and reasonability of associated costs.

Summary of Key Observations and Management Actions

Although supporting evidence for sampled ISAs was obtained; to improve the process, management has agreed the following actions:

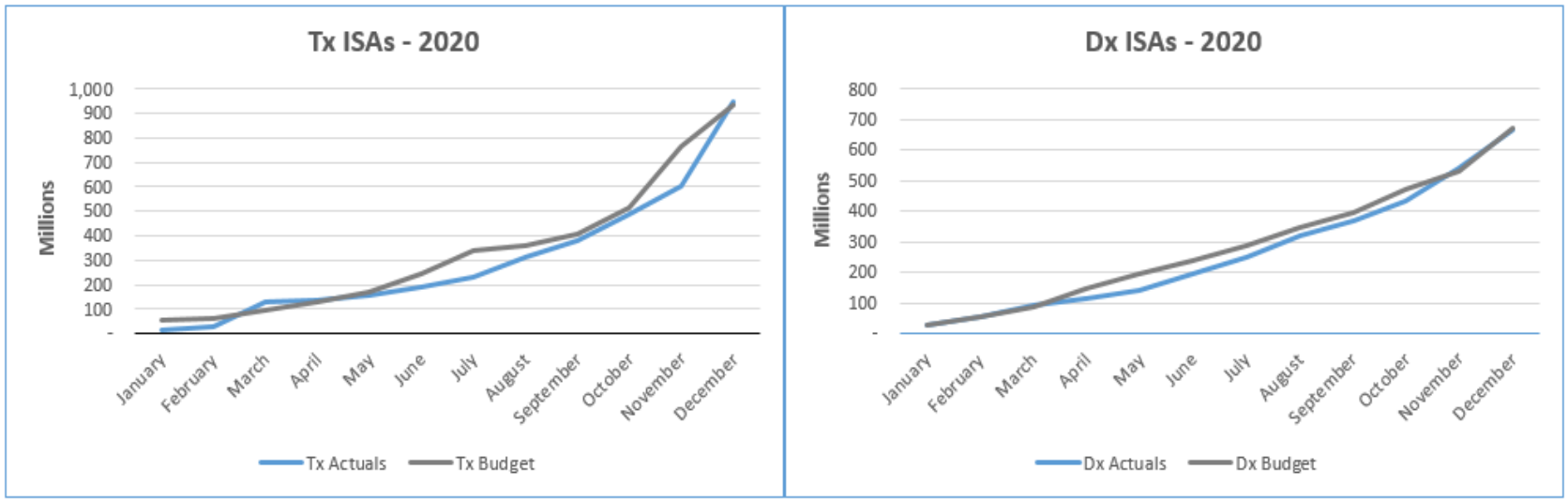
- A risk assessment will be conducted with Finance and representatives from the lines of businesses engaged in the in-servicing process to identify opportunities for increased oversight and control requirements for higher risk ISAs (e.g., partials, unplanned) and enhance guidance to reduce the subjectivity of the application of in-service criteria for management; and
- Transmission & Stations will further formalize their in-servicing process to ensure management can easily demonstrate appropriate review and approval of assets placed in service and maintain evidence to support the rationale for assets meeting in-service criteria and deviations from the original plan; a direct link to operational evidence supporting the ISA; the reasonability of costs of each ISA and associated remaining costs (partial/trailing).

Management is in agreement with these recommendations and has developed appropriate action plans.

2020 In-Service Additions Assurance Review – Internal Audit Report Background

ISAs increases the rate base as a result of capital work being declared in-service and ready for use. Hydro One revenue requirements are approved based on commitments made to the OEB related to increases in our rate base due to ISAs. Accurate budgeting, forecasting, and tracking actual ISAs are critical to ensure that we do not over or under-collect our rate payers.

Accurate reporting of ISAs also directly impacts internal and external financial reporting related to assets under construction accounts, depreciation, taxes, and other regulatory requirements. The following graphs show budgeted, forecasted, and actual ISAs as at the end of 2020:



2020 In-Service Additions Assurance Review – Internal Audit Report Legend

Audit Opinion	Definition
Needs Significant Improvement	Pervasive or multiple control weaknesses detected may cause non-achievement of enterprise objectives.
Needs Improvement	Numerous control weaknesses detected which may lead to non-achievement of specific key business objectives.
Needs Minor Improvement	Partially effective control environment, which may lead to a moderate risk of not achieving business objectives.
Satisfactory	Internal controls are appropriately designed, implemented, and are operating effectively to support related objectives.

Recommendation Priority Rating

Critical priority recommendation

Urgent action required to avoid immediate negative and pervasive impacts. Oversight by the Executive Leadership Team and the Board is advised.

High priority recommendation

High impact issues that require timely management action to avoid damages. Oversight by Senior Management is advised.

Medium priority recommendation

Major weaknesses detected that could impact business effectiveness if not remediated over time. Oversight by Line of Business management is advised.

Distribution Vegetation Management Optimal Cycle Protocol Effectiveness Review

Internal Audit Report

Client:	**Teri French** Vice President, Forestry Services & LDC Integration **David Price** Director, Forestry Services **Bruno Jesus** Vice President, Planning **Peter Faltaous** Director, Distribution Asset Management	**Business Risk Area:**	Work Program Accomplishment Cost/Productivity Disclosure Risk Public Safety
		Primary Lines of Business Affected:	Forestry Services and Distribution Asset Management
		Lead Auditor:	Henrique Dantas Rocha
		Audit Manager:	William Chan
Executive:	**David Lebeter** Chief Operating Officer	**Report Number:**	2021-07
		Date Issued:	June 9, 2021

Dx Vegetation Mgmt OCP Effectiveness – Internal Audit Report Executive Summary

Objective and Scope

The objective of this review was to provide independent and objective assurance on the effectiveness of the processes and controls related to the Distribution Vegetation Management work program between Planning and Forestry Services, to verify that they are designed to fulfill Hydro One's goals and expectations given that the program underwent substantial changes in 2017 with the adoption of the Optimal Cycle Protocol (OCP) approach.

This review included an assessment of the overall program governance, establishment of the vegetation management strategy and key metrics, monitoring of work execution and accomplishments, and quality assurance and controls on defect identification to drive continuous improvement. The timeframe of this review was January to April 2021.

Audit Opinion

Conclusion

The established OCP approach to the Distribution Vegetation Management program **needs minor improvement**, as there are opportunities to enhance roles and reporting processes regarding the OCP strategy including key program metrics, and improve oversight of the Tree-Caused Outage investigation process to analyze and validate outage data to drive continuous improvement of the program.

Summary of Key Observations and Management Actions

The key observations and management actions arising from this review are summarized as follows:

Better clarity on the overall roles and reporting processes of the Distribution Vegetation Management program is needed to ensure clear alignment between lines of business on respective roles and responsibilities for the management and reporting of the program to minimize potential inconsistencies pertaining to the program approach, metrics and targets.

Management has been working to define and formalize roles between Planning and Forestry Services and these efforts will continue to ensure a consistent approach to the oversight and management of the program.

Dx Vegetation Mgmt OCP Effectiveness – Internal Audit Report Executive Summary

Increased oversight and validation of *Tree-Caused Outage* reliability information used by Forestry Services is necessary in order to provide consistent, and repeatable reliability metrics for the OCP program[1].

Management has committed to document and validate calculations/assumptions on the reported reliability metrics for the OCP program and to share any reported discrepancies from the Tree-Caused Outage investigation process to drive continuous improvements to the corporate reliability metrics.

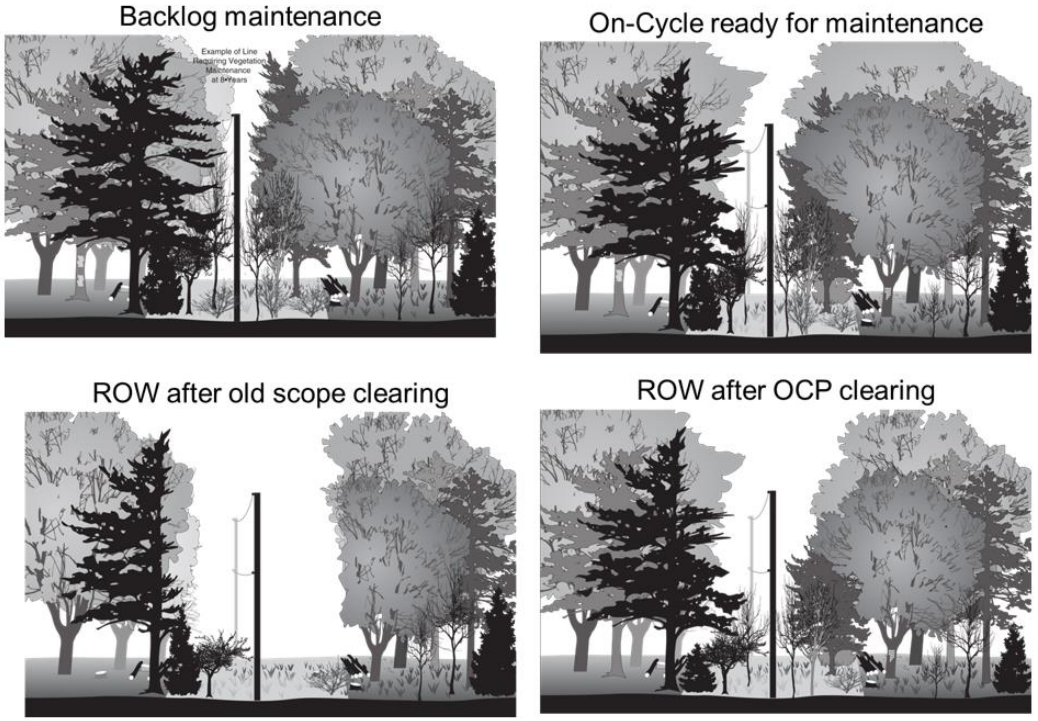
Additional opportunities for improvement were provided for Management's consideration on further enhancements to the OCP program specification and work execution. Throughout this review, Internal Audit Services recognized Management's efforts to re-evaluate the program strategy and reinforce the principles of the OCP approach with a focus on reliability and reduced unit costs, and to provide direct value to customers. The recommendations from this review are aligned with Management's intentions to further enhance the OCP program. Internal Audit Services will continue to support Management and monitor the status of the management action plans through to their completion.

[1] "OCP program" is the Distribution Vegetation Management work program using the Optimal Cycle Protocol (OCP) strategic approach.

Dx Vegetation Mgmt OCP Effectiveness – Internal Audit Report Background

In late 2017, a new strategic approach called Optimal Cycle Protocol[2] was established to drive improvements in the Vegetation Management program. This approach was presented as part of the Distribution rate filing that was underway during that time (EB-2017-0049) which included commitments to beneficial outcomes, including reducing safety risks, improving reliability, improving unit cost and increasing customer satisfaction.

As we approach the end of the first cycle of this program and prepare for the upcoming regulatory Joint Rate Application process, it is important that Hydro One determines whether performance is on track to achieve the previously committed outcomes, understand the rationale for potential deviations from the original plan, and identify improvement opportunities for the next OCP cycle.



[2] Comparison of Full Corridor Clearing to OCP Clearing. Extracted from *Asset Management Strategy Document*.

Dx Vegetation Mgmt OCP Effectiveness – Internal Audit Report Legend

Audit Opinion	Definition
Needs Significant Improvement	Pervasive or multiple control weaknesses detected may cause non-achievement of enterprise objectives.
Needs Improvement	Numerous control weaknesses detected which may lead to non-achievement of specific key business objectives.
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Satisfactory	Internal controls are appropriately designed, implemented, and are operating effectively to support related objectives.

Recommendation Priority Rating

Critical priority recommendation

Urgent action required to avoid immediate negative and pervasive impacts. Oversight by the Executive Leadership Team and the Board is advised.

High priority recommendation

High impact issues that require timely management action to avoid damages. Oversight by Senior Management is advised.

Medium priority recommendation

Major weaknesses detected that could impact business effectiveness if not remediated over time. Oversight by Line of Business management is advised.

Opportunity for improvement

Weaknesses identified impacting operational efficiency and effectiveness, which should be addressed where feasible.

Productivity Savings Review

Internal Audit Report

Client:	**Joe Cornacchia** Senior Vice President, Finance **Joel Jodoin** Director, Strategic Finance	**Business Risk Area:**	• Regulatory • Cost/Productivity • Disclosure Risk
		Primary Line of Business Affected:	Finance
		Lead Auditor:	Atul A. Solanki
		Audit Manager:	Jeff Schaller
Executive:	**Chris Lopez** Chief Financial Officer	**Reference Number:**	2021-18
		Date Issued:	June 25, 2021

Productivity Savings Review – Internal Audit Report Executive Summary

Objective and Scope

The primary objective of this engagement was to review the design effectiveness of internal processes and controls for achieving budgeted corporate productivity savings for ratepayer and shareholder benefits. This review was executed concurrently with the OEB directed third party review focused on program methodology. The focus of this audit engagement was on the execution of governance, processes and controls related to reporting, validation, and communication of Productivity Savings program results.

Audit Opinion

Conclusion

The governance, process and control design of the Productivity Savings program are **generally effective** and continue to improve since the program's inception in 2016. However, the design of the existing controls over the monthly and semi-annual reviews of actual and forecast savings reported by the Lines of Business (LoBs) **need minor improvement** to strengthen the validation process and record keeping.

Summary of Key Observations and Management Actions

The Productivity Savings program is an integral part of Hydro One's corporate strategy, to identify sustainable internal efficiencies with the goal of offsetting inflation. Management has developed and implemented this program with effectively designed governance, processes and controls consisting of:

- an experienced and cross-trained team within the Strategic Finance group to:
  - oversee the governance of the Productivity Savings program; and
  - review and approve productivity initiatives that have been identified by Lines of Business (LoBs) using an approved methodology along with appropriate baselines and assumptions.
- detailed actual and forecast savings being reported by LoBs against established targets that are reviewed by the Strategic Finance team prior to results being communicated to the executive on a monthly basis.

Recognizing the importance of productivity savings being reported, Management has developed action plans to:

- further strengthen controls related to the monthly and semi-annual detailed reviews of LoB reported savings; and
- ensure that records of independent review for all Productivity Savings program reported results are being consistently maintained.

Productivity Savings Review – Internal Audit Report Background

Productivity is a measure that quantifies the incremental value that Hydro One is providing to ratepayers and shareholders through efficiencies in work execution over time. Hydro One measures the performance of approved productivity initiatives that have been identified by the lines of business. Currently, approximately 80 discrete initiatives are underway across all lines of business. Each initiative is measured using a methodology that will demonstrate savings in unit costs, relative costs, or in the ways work is completed to achieve outcomes. Operation, Maintenance and Administration (OM&A) savings are achieved through process efficiencies, innovation and reduction in maintenance cycles and overhead. Capital savings are achieved through procurement savings, labour efficiencies and improved work methods to more efficiently deliver business outcomes.

As of 2020 year-end, Hydro One has communicated $738M of cumulative productivity savings since the its IPO launch in 2015 (47% OM&A, 53% Capital).

Productivity Savings (M$)[1]	2016	2017	2018	2019	2020	Total at 2020 YE
OM&A	20	44	53	85	143	345
Capital	5	46	82	118	143	394
Total	**25**	**90**	**136**	**202**	**286**	**738**

[1] As confirmed with Management on May 27, 2021. Due to rounding, the presented totals may not foot and crossfoot.

Productivity Savings Review – Internal Audit Report Legend

Audit Opinion	Definition
Needs Significant Improvement	Pervasive or multiple control weaknesses detected may cause non-achievement of enterprise objectives.
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Recommendation Priority Rating

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Medium priority recommendation

Major weaknesses detected that could impact business effectiveness if not remediated over time. Oversight by Line of Business management is advised.

Opportunity for improvement

Weaknesses identified impacting operational efficiency and effectiveness, which should be addressed where feasible.

UNDERTAKING JT-1.15

Reference:

I-22-E-SEC-196

Undertaking:

With reference to IR E-SEC-196, to provide additional detail to explain the increase in external factors.

Response:

As stated in Exhibit E-03-04, page 6, the increase in Third Party Support OM&A in 2021 and beyond is primarily due to a renewed focus on customer experience and the expansion of customer programs and services, which are required to meet customers' evolving needs and help them manage their energy consumption.

This includes the need to make service enhancements to digital customer channels, such as the myAccount portal, the online outage map, the Hydro One mobile app, and the Hydro One website, to present customers with more choice and convenient solutions to interact with their electricity provider. The use of these digital channels has increased in recent years, and customer engagement results show that it is important to customers that Hydro One provides quality customer service (Exhibit B-1-1, SPF Section 1.6, Attachment 7, page 14).

Furthermore, customers have expressed that they expect Hydro One to provide advice on conservation and energy savings (Exhibit B-1-1, SPF Section 1.6, Attachment 7, page 14) and support technology investments that help customers better manage their electricity usage (Exhibit B-1-1, SPF Section 1.6, Attachment 1, page 18). In 2021, Hydro One has launched the MyEnergyInsights Online Marketplace and dashboard to provide customers with better insights on their energy consumption and personalized energy savings advice.

Communicating these personalized insights to customers is part of the proactive customer outreach to help customers make informed decisions about their energy consumption and lower their bill. Hydro One is also increasing its proactive outreach to customers to provide outage and service alerts via email and text messages and to inform customers about available services and programs.

Witness: GILL Spencer

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UNDERTAKING JT-1.16

Reference:

I-18-B1-PP-006

Undertaking:

a) Why is Hydro One using 2018 as its baseline for measuring emissions reductions when policy benchmarks, including Ontario, use 2005 as the baseline?

b) How will hydro one be able to compare its progress against policy objectives if it does not use the same 2005 baseline as the Ontario government?

Response:

a) Hydro One was not collecting emissions data in 2005. Hydro One uses 2018 as the baseline reference for the company's greenhouse gas (GHG) emissions because that is the first year for which the company has emissions data with a sufficient level of rigour to serve as an appropriate comparison for subsequent years. 2018 is also the first year that a third-party verifier validated Hydro One emission data.

b) Hydro One's objective is to achieve net-zero GHG emissions by 2050 with a target of a 30% GHG reduction by 2030. While the company's work toward this goal will support the achievement of broader emissions targets in Ontario and beyond, the company's success in this endeavour does not require Hydro One to compare its progress against the policy goals of the Ontario government or any other entity.

1 This page has been left blank intentionally.

UNDERTAKING JT-1.17

Reference:

I-24-E-VECC-072

Undertaking:

To provide clarification as to the basis on which LEAP funding was reduced in 2020.

Response:

Attachment 2, page 2 to Exhibit I-24-E-VECC-072 states the following:

> A key consideration in eligibility for LEAP Emergency Financial Assistance is that the consumer be disconnected, or be facing disconnection, for non-payment. While the LEAP Manual does provide discretion for agencies to consider approving LEAP funds when a consumer is not immediately facing disconnection, OEB staff are asking agencies not to utilize that discretion at this time to ensure there are LEAP funds available when the disconnection ban has lifted.

Hydro One followed this direction and did not refer customers to LEAP agencies between May 2020 and March 2021. Instead, Hydro One connected customers requiring assistance to COVID-19 Energy Assistance Program (CEAP) funding, as soon as it became available.

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UNDERTAKING JT-1.18

Reference:

I-03-B1-AMPCO-001

Undertaking:

To file the 2021 Innovative Research Group Survey Report, if possible.

Response:

The 2021 Customer Satisfaction Survey Report for Key Accounts (Large Distribution Accounts and Large Transmission Customers) is appended as Attachment 1.

1 This page has been left blank intentionally.

INNOVATIVE RESEARCH GROUP

2021 Key Accounts Customer Satisfaction

Understanding Dimensions of Satisfaction and Dissatisfaction

hydro one

December 2021 | REVIEW DRAFT

Table of Contents

Methodology

INNOVATIVE RESEARCH GROUP

Methodology

The findings presented in this report are based on a customer survey carried out by Innovative Research Group (INNOVATIVE) for Hydro One.

The survey was conducted among large transmission (LTX) customers, large distribution (LDA) customers, and Commercial & Industrial customers of Hydro One. This report presents results among LTX and LDA customers.

This report presents results from June 29th to November 23rd, 2021 (a breakdown of customer segments is included in the tables below). Participants were able to complete the survey online or schedule a phone interview. In total, 139 LTX and LDA participants completed the survey—all of them chose the online option.

Segment Size	TOTAL LTX	LDCs	Generators	End-Users
Invites Sent	196	57	76	63
Surveyed	90	31	31	28
% Captured	46%	54%	39%	44%
Margin of Error*	±10.5%	±18.3%	±18.3%	±19.4%

Segment Size	TOTAL LDA
Invites Sent	165
Surveyed	49
% Captured	30%
Margin of Error*	±14.4%

*The margin of error around an estimate is calculated at a 95% confidence level.

NOTE: *Graphs may not always total 100% due to rounding values rather than any error in data.*
Sums are added before rounding numbers.

Executive Summary

Key Findings

1

Overall, satisfaction has improved directionally for LTX customers, but declined with LDA customers.
The script has flipped, wherein last year LDA customers were more satisfied than LTX customers, LTX customers are now more satisfied than LDA customers by 13-points. Increased satisfaction amongst LDCs and generators is driving increased satisfaction with LTX customers.

2

As with satisfaction, biggest gains in overall impression have come from LTX customers.
Overall impression has marginally improved by 6-points with LTX customers, while decreasing by 25-points with LDA customers. After reaching 100% last year, positive impression amongst end-users is down directionally – but important to note that overall impression is very strong across all LTX customer types.

3

While satisfaction with reliability is up, communications and customer service are down directionally.
This year, satisfaction with reliability saw improvements with LTX customers, and continues to be stable with LDA customers. That said, satisfaction with both communications and customer service are down directionally with both customer groups.

4

Key brand measures including understanding needs and value for money remain consistent.
This year, as with last, key measures including brand measures have remained relatively unchanged – this includes being a trusted business partner and understanding needs. While ease of doing business is steady for LTX customers, it's down directionally for LDA customers. Generally, LTX customers rate Hydro One more positively on brand measures than LDA customers.

5

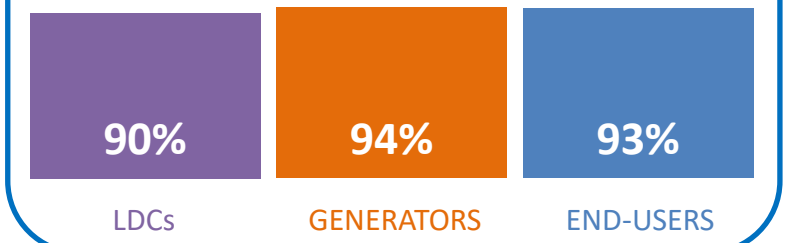
More than ever, customers feel well-protected with respect to price, reliability, and quality of service.
The sense of protection in the sector has increased significantly since last year. After increasing last year, the proportion of organizations that say their hydro bill is impacting their bottom line has remained relatively unchanged.

Key Metrics | LTX Customers

OVERALL SATISFACTION

Overall, how satisfied or dissatisfied are you with the service your organization receives from Hydro One?

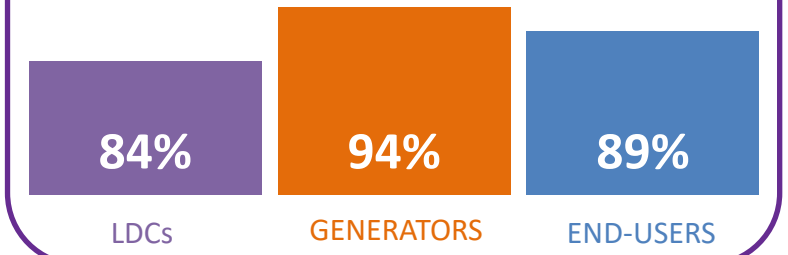
92% of respondents are either **very** or **somewhat satisfied** with service from Hydro One.



OVERALL IMPRESSION

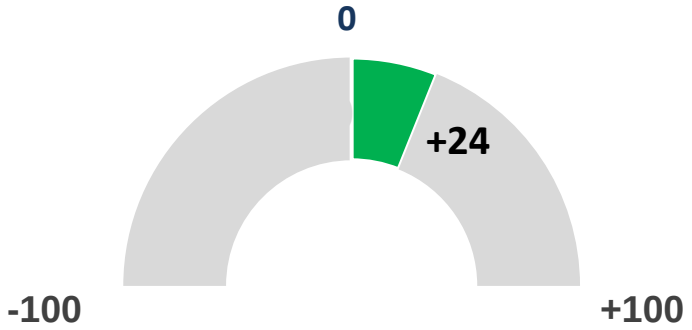
Now, thinking about your impression of Hydro One more broadly, how would you describe your view of the company?

89% of respondents have either a **very** or **somewhat favourable impression** of Hydro One.



NET PROMOTER SCORE

If you had a choice between several possible providers of electricity, how likely would you be to recommend Hydro One to your colleagues and peers as the preferred electricity utility?

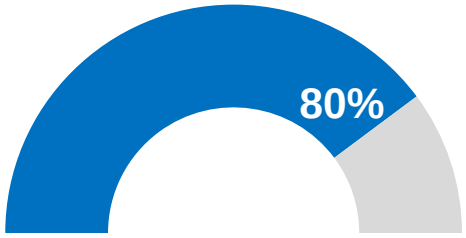


An NPS* of **+24** means that respondents are **more likely to be a promoter than detractor** of Hydro One. Passive respondents are not used in the calculation of NPS, but represent 37% of the sample.

Key Metrics | LDA Customers

OVERALL SATISFACTION

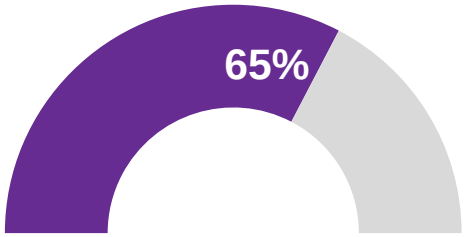
Overall, how satisfied or dissatisfied are you with the service your organization receives from Hydro One?



80% of LDA respondents are either **very** or **somewhat satisfied** with service from Hydro One.

OVERALL IMPRESSION

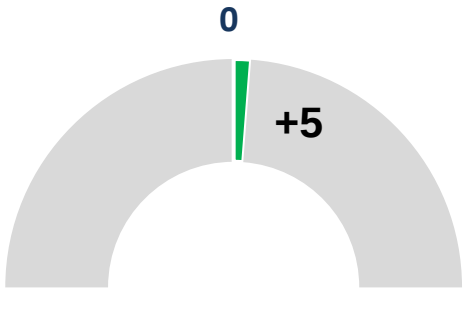
Now, thinking about your impression of Hydro One more broadly, how would you describe your view of the company?



65% of respondents have either a **very** or **somewhat favourable impression** of Hydro One.

NET PROMOTER SCORE*

If you had a choice between several possible providers of electricity, how likely would you be to recommend Hydro One to your colleagues and peers as the preferred electricity utility?

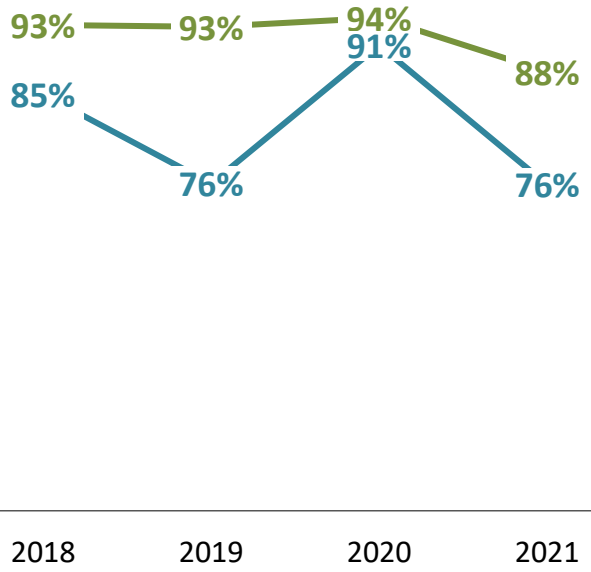


An NPS* of **+5** means that respondents are **slightly more likely to be a promoter than detractor** of Hydro One. Passive respondents are not used in the calculation of NPS, but represent 41% of the sample.

Dimensions of Satisfaction | LTX versus LDA

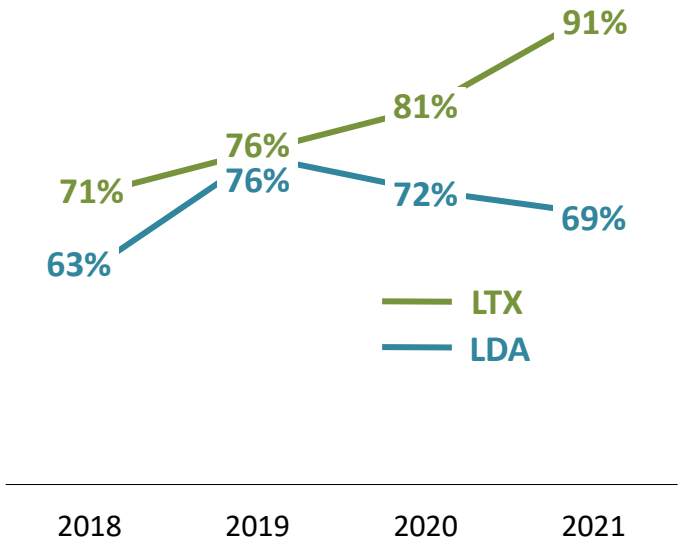
Overall Satisfaction with Customer Service

Overall, how satisfied or dissatisfied are you with the customer service provided to your organization by Hydro One?



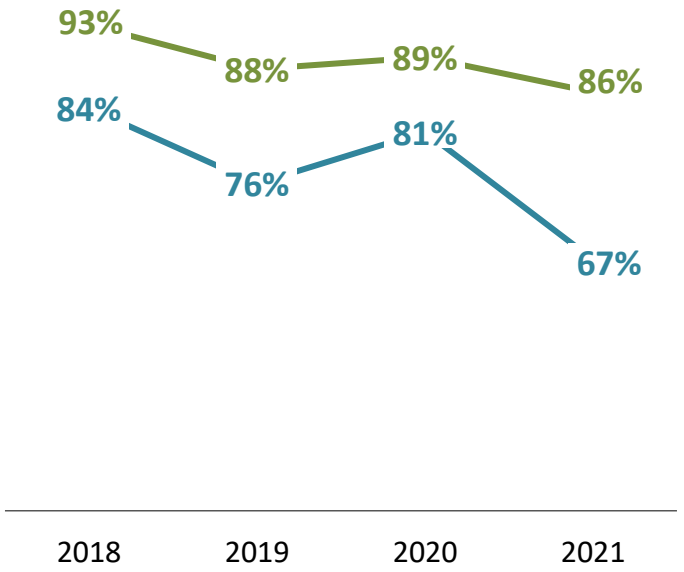
Overall Satisfaction with Reliability

For each statement, please indicate your level of satisfaction or dissatisfaction: The reliability of your electricity service (as judged by the number of unplanned power outages your organization experiences).



Overall Satisfaction with Communications

Thinking about your organization's interactions with Hydro One over the past year – how satisfied or dissatisfied are you with the way Hydro One communicates with you and your organization?

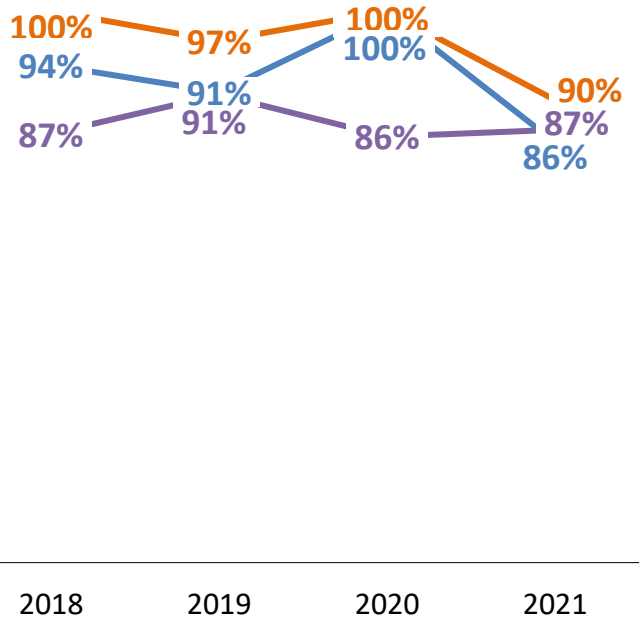


Total satisfied

Dimensions of Satisfaction | LTX Customer Types

Overall Satisfaction with Customer Service

Overall, how satisfied or dissatisfied are you with the customer service provided to your organization by Hydro One?



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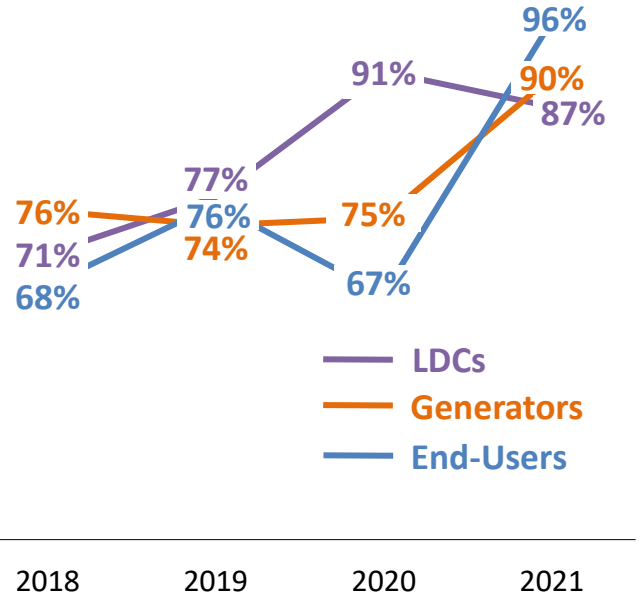
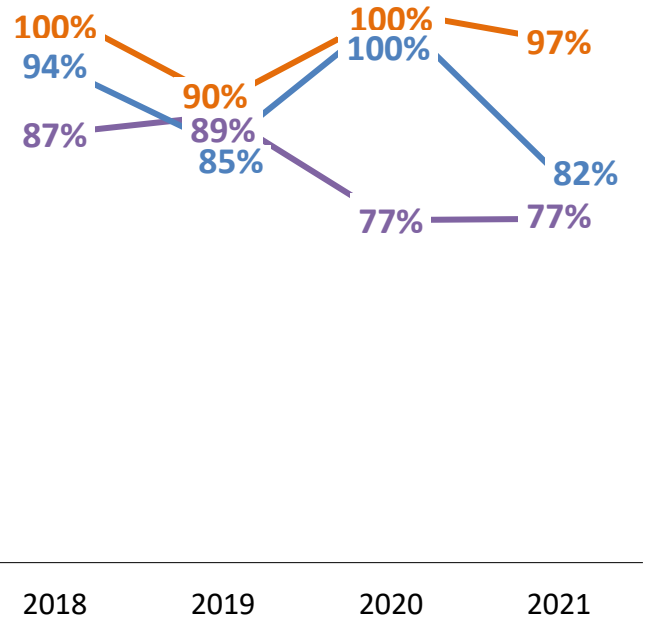


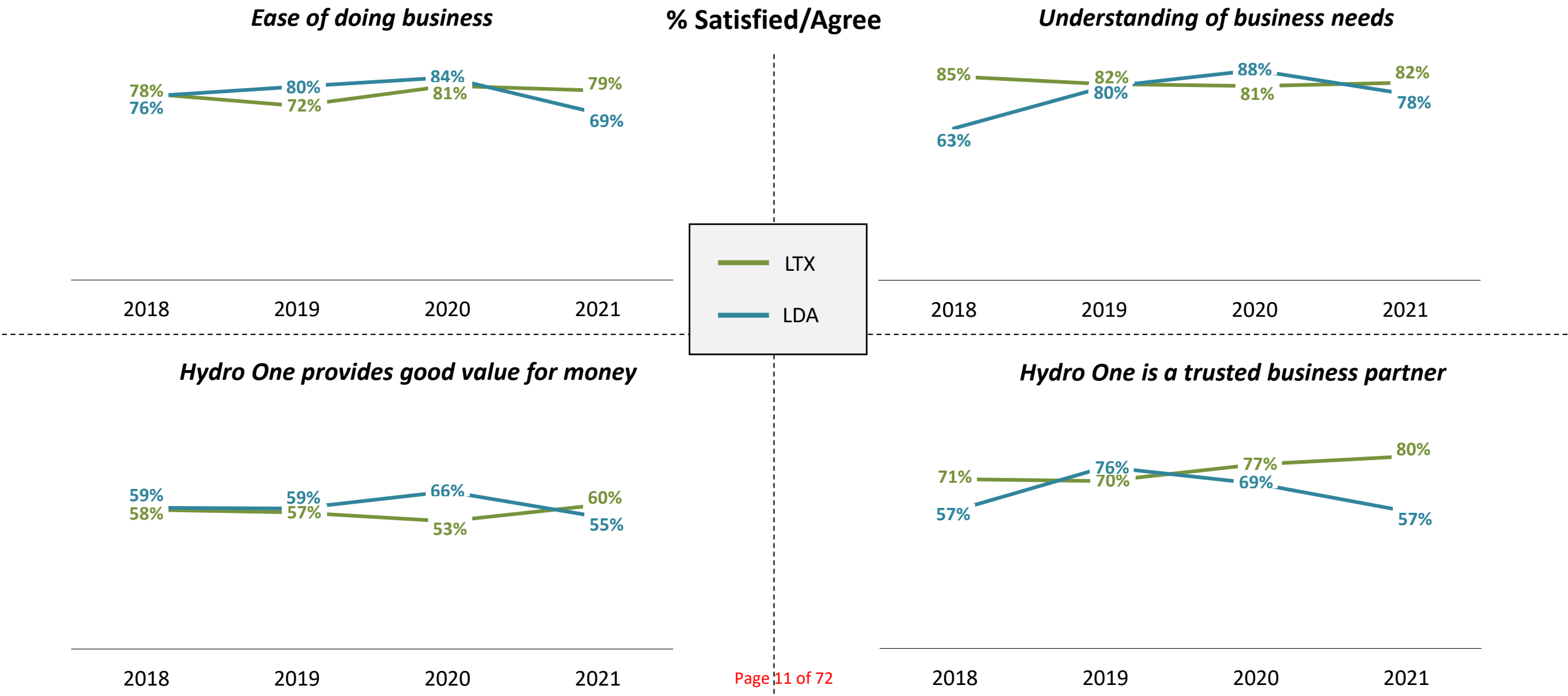
Overall Satisfaction with Communications

Thinking about your organization's interactions with Hydro One over the past year – how satisfied or dissatisfied are you with the way Hydro One communicates with you and your organization?



Total satisfied

Key Brand Measures | LTX versus LDA



Overall Satisfaction

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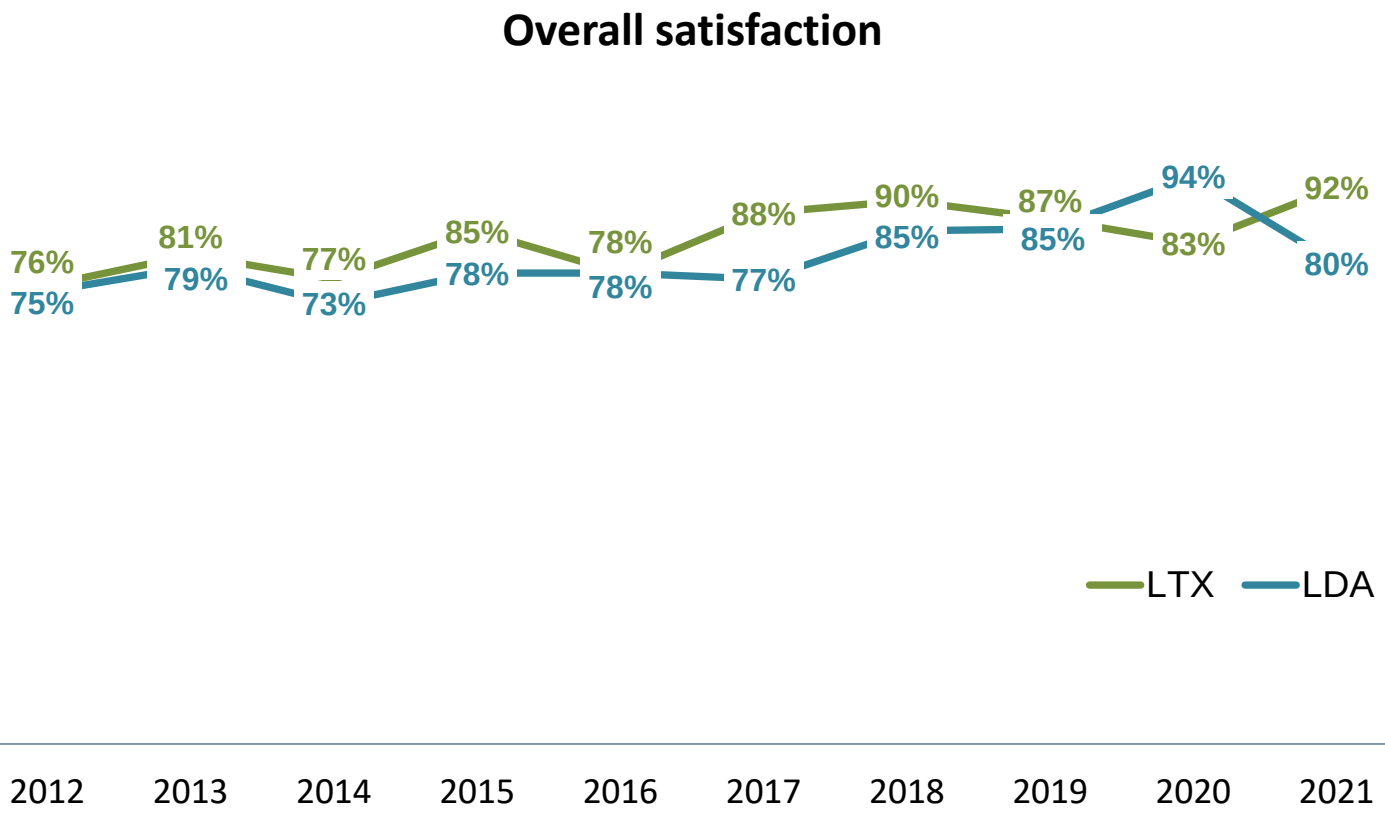
Overall Satisfaction | LTX versus LDA

Q Overall, how satisfied or dissatisfied are you with the service your organization receives from Hydro One?

[Asked of all respondents, LTX n=90, LDA n=49]



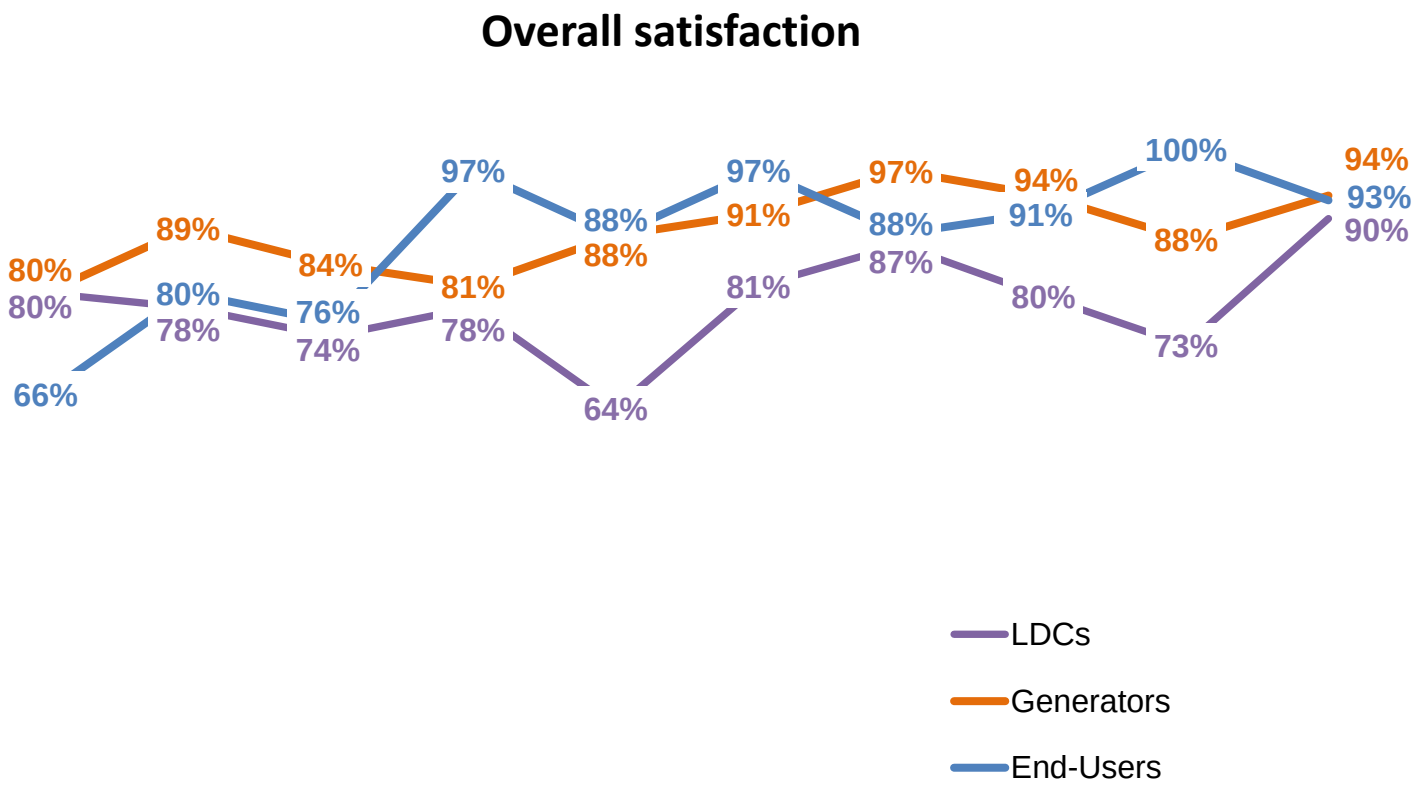
Key Insights

- Overall satisfaction for LTX customers is up directionally from 83% in 2020 to 92% in 2021 while for LDA customers, it's down directionally 14 points from 94% to 80%

Overall Satisfaction | LTX Customer Types

Q Overall, how satisfied or dissatisfied are you with the service your organization receives from Hydro One?

[Asked of all respondents; LTX total n=90, LDCs n=31, End Users n=28, Generators n=31]

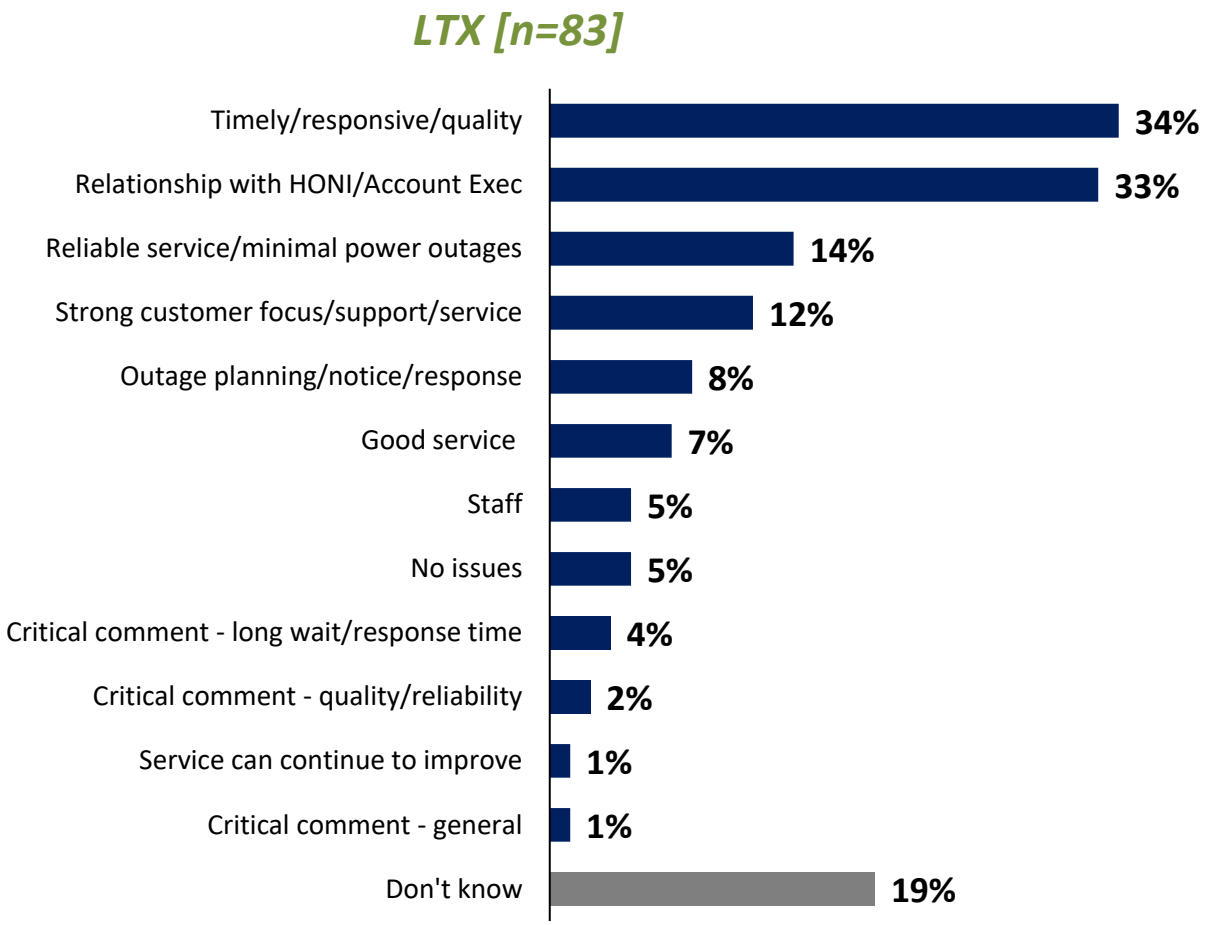


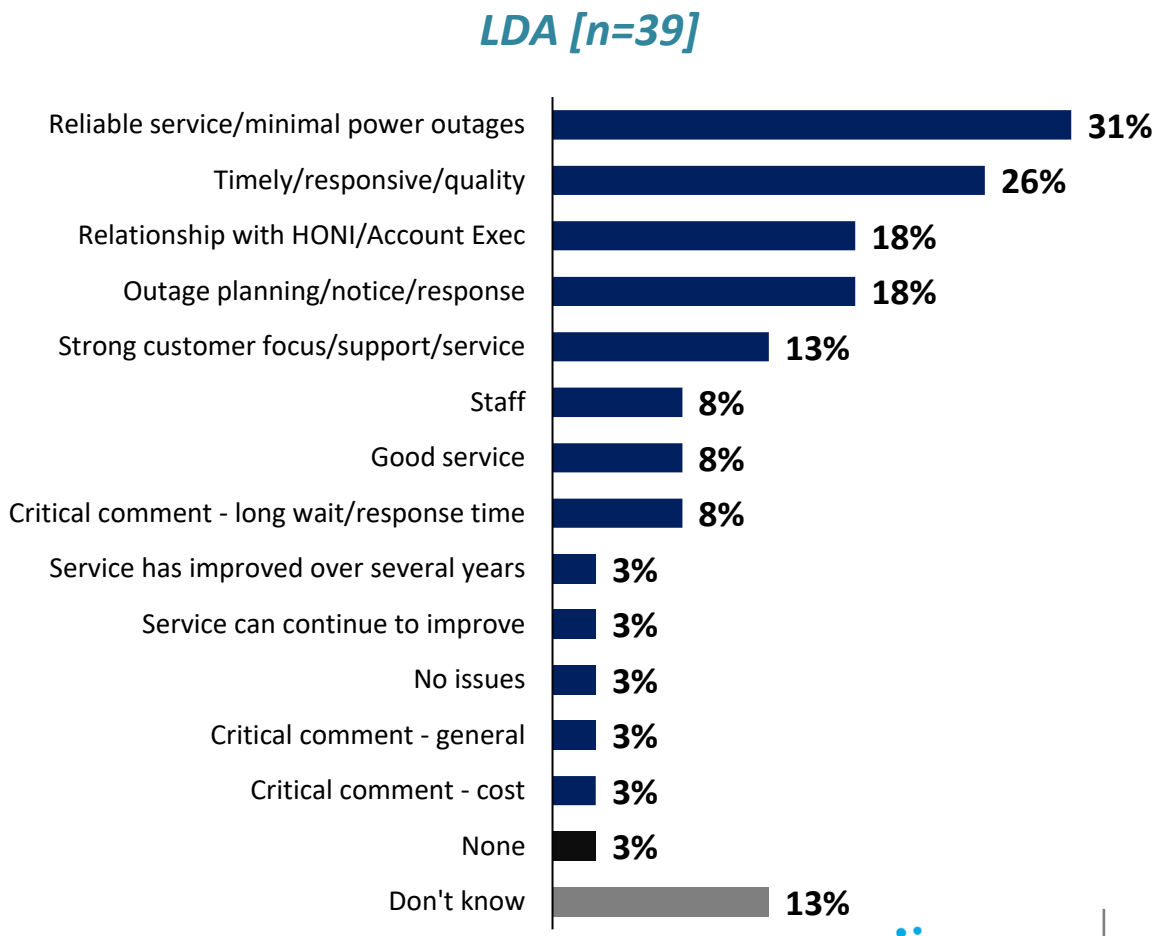
Key Insights

- Overall satisfaction is up directionally for LDCs and generators while it is down from 100% of End-Users satisfied in 2020 to 93% in 2021
- Nearly all LTX customers are satisfied with the service they receive

Reasons for Satisfaction: For LTX customers, top reason for satisfaction is responsiveness and for LDA customers it's reliability

Q Is there any particular reason why you're satisfied with the service your organization receives from Hydro One?
[Asked of those that are somewhat or very satisfied, open-ended; multiple mentions allowed]





Reasons for Satisfaction | Selection of Verbatims

Q Is there any particular reason why you're satisfied with the service your organization receives from Hydro One?

[Asked of those that are somewhat or very satisfied, open-ended]

LTX Customers

Verbatim
"The most important service metric to us is the reliability of supply. Throughout 2020 we did not experience any outages and are therefore relatively happy."
"Hydro One personnel has keep up with the communications that allow us to be aware of what is coming and what we need to do at our substation. Also, the response to any of our projects needs have been more than satisfied."
"Our account representative provides us with excellent service. Responding to calls and emails within 24hrs, and getting us in touch with the people at HONI we need to talk to if he cannot help us."
"Good teamwork and constructive interaction across our two organizations."
"I have not had a lot of interaction with Hydro one and am fairly new to role. I have had no negative comments as yet."
"HONI folks are very professional and take the time to explain requests or issues that you need to correct or work collectively on."
"We are satisfied because 2021 has been an excellent year (best in past five) for transmission reliability performance to us."
"Electricity supply has been very reliable and questions we ask of Hydro One are followed up with responses within a reasonable time. Cost for work performed seem high however."
"Timely responses to issues; regular engagement concerning load forecasting; readily helps with reliability."

LDA Customers

Verbatim
"The service provided is well planned and service is always prompt."
"Hydro One Account Manager always responds to our needs."
"Local contacts are always decent to deal with and have answers for me when we speak in time of crisis."
"In contact with a good representative from HONI but processes take very long."
"Hydro outages have been greatly reduced at our factory."
"Over the last few years we have enjoyed a marked improvement in the quality of supply with only a few brownouts in a given year."
"Some of your employees that I have dealt with have been very accommodating and helpful others have an attitude problem."
"We were being advised rather quickly as to the reason for an interruption, but that service seem to longer happen."
"Good cooperation at coordinating needed maintenance on feeding distribution lines."
"I recently purchased this company from CCAA protection. The previous ownership had class A status. While my application required minister approval, Hydro One was very easy to communicate with to guide me through the process of status changeover."
"Rates are good but could be lower compared to Hydro-Québec. We had power quality events in the last year so there is always room for improvement."

Reasons for Dissatisfaction

Q Is there any particular reason why you're dissatisfied with the service your organization receives from Hydro One?

[Asked of those who were somewhat or very dissatisfied, open-ended]

LTX Customers [n=2]

Verbatim
"Cancellation of planned outages very close to an actual outage and no explanation given at all. LDCs spend time and effort to prepare for Hydro One planned outages and if Hydro One cancels the outage (particularly if it so close to an actual outage date) they need to be aware of this effort and at least provide the reason for the cancellation. Booking planned outages that are affecting connected LDCs without the consideration of whether the planned outages have impacts on simultaneous potential loss of"
"We have been experiencing issues with Interruptions and Brown Outs causing production losses and unnecessary equipment disruptions."

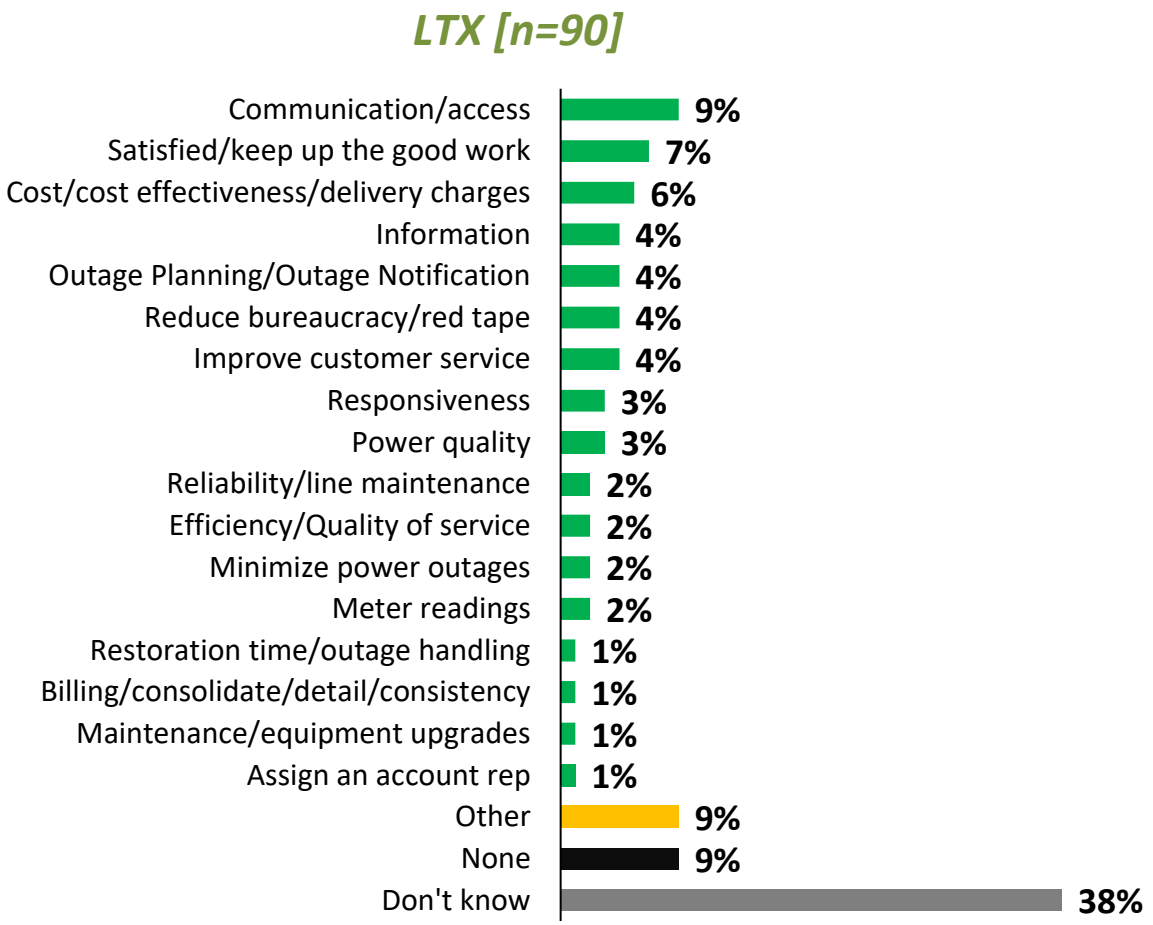
LDA Customers [n=7]

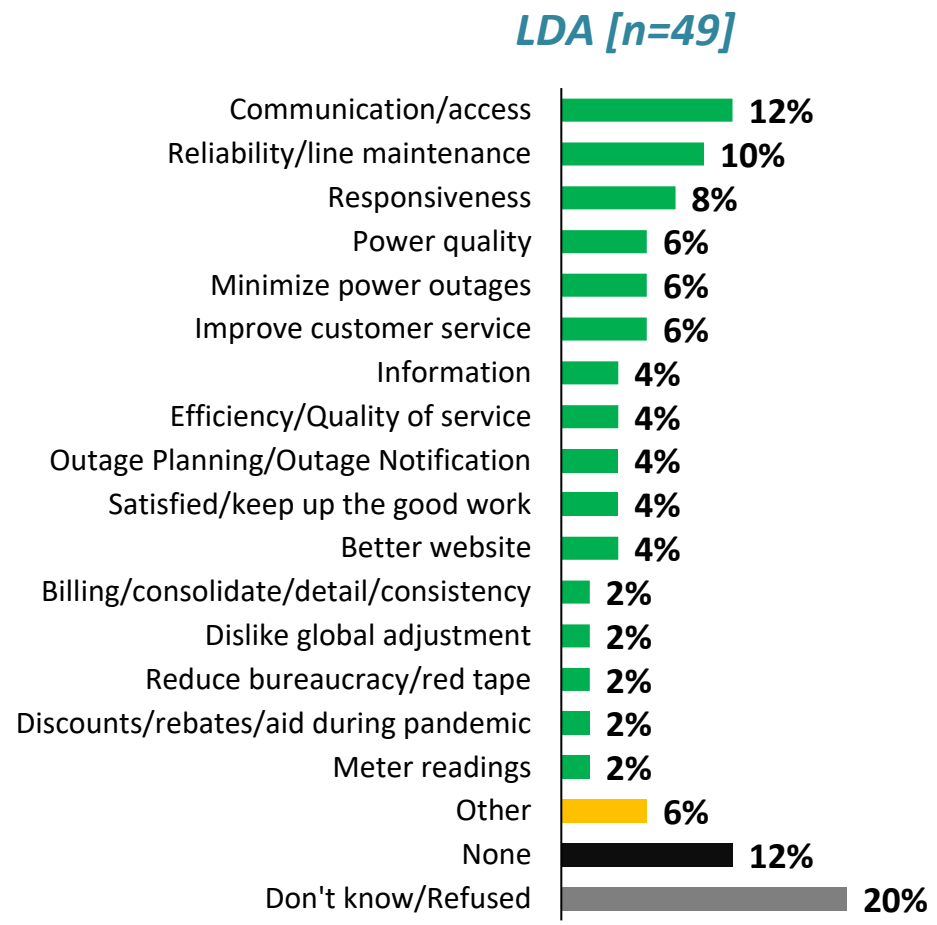
Verbatim
"Any weather changes and the hydro has a tendency to shut off for short terms causing large business interruptions."
"We experience frequent small power disruptions that take down our equipment and electronics. These sometimes lead to significant downtime and costs. It feels like hydro one does not care to respond to these so we don't bother trying to improve that part of our business and just accept the loss. When we experience significant power failures it can be a struggle to get a crew out as typically our equipment gets blamed. When we finally get a crew out, and can normally point them right to the switch that norm."
"We as a manufacturing site continue to have power quality issues that inspect our operations ability to maintain production and avoid costly start ups and maintenance repairs."
"It appears to me that within HO the right hand does not know what the left hand is doing and visa versa."
"Delays in getting things done."
"Previous years, no notice provided when scheduled outages would occur. No input from large customers or direct communication."
"Our operation relies very heavily on the continuous supply of power. We have had several occurrences where the power has gone out and there has been little to no communication as to the nature of the outage, the expected resolution and whether any further disruptions are expected. In one incident this past summer we had a day where the power went out 5 times during the day, all without warning, and one more extended outage at 2:00AM that apparently had been planned but again we were not advised."

Overall Areas of Improvement: Both LTX (9%) and LDA customers (12%)[18] say that communication/access is something that can be improved

Q Is there anything in particular that Hydro One can do to improve its services to your organization?

[Asked of all respondents, open-ended; multiple mentions allowed]





Overall Areas of Improvement | Selection of Verbatims

Q Is there anything in particular that Hydro One can do to improve its services to your organization?
[Asked of all respondents, open-ended]

LTX Customers

Verbatim
"Communication on certain items needs improve. As a major industrial site of an energy intensive industry the planning cycle needs to look out 2-3 years."
"In general, I believe that hydro One can improve it's flexibility around changes to the project schedule due to outside impacts."
"Costs for doing work at stations such as implementing transfer trip schemes at stations seems much higher than expected and those cost often cause customers to abandon projects."
"Yes, Hydro One could be more cooperative in sharing/leasing their telecom facilities."
"Hydro One deals with the same levels of bureaucracy as, us which tends to slow things down. Need to keep communication high with a willingness to work together."
"Hydro One can improve its service to us by improving capital project execution: 1) cost--Hydro One continues to ask for significant sums in true-ups due to changes in constructions costs and 2) timelines--delays in in-service date cause a cascading negative impact to our own capital projects"
"Being able to provide a ballpark estimate based on experience for the installation of MSO to our connections. this should not have been a big deal and would have been non-binding for our decision-making only."

LDA Customers

Verbatim
"In regards to information request by more responsive and quicker time lines."
"Hydro One can implement a power quality metric to their mandate and provide regular, routine updates as to actions being taken to address identified issues."
"The account management and Business Customer Centre could be quicker to act and more customer focused."
"Have better communication for any mutual agreement. Try to respect the timelines set. These are important for us to make decision and deliver to our expectations for future contracts."
"Help us navigate the future electrification of our buildings and water heating, with incentives and know how."
"Increase the electricity available to companies that have project to grow in the future."
"Creating live readings access from the Hydro meters."
"Update us as they would previously. We are a large resort in a very remote area."
"Advise, consult and inform of potential upgrades or scheduled down times in order to work in conjunction with their customers to avoid damage or loss of production."
"Meet commitments."

Overall Impression

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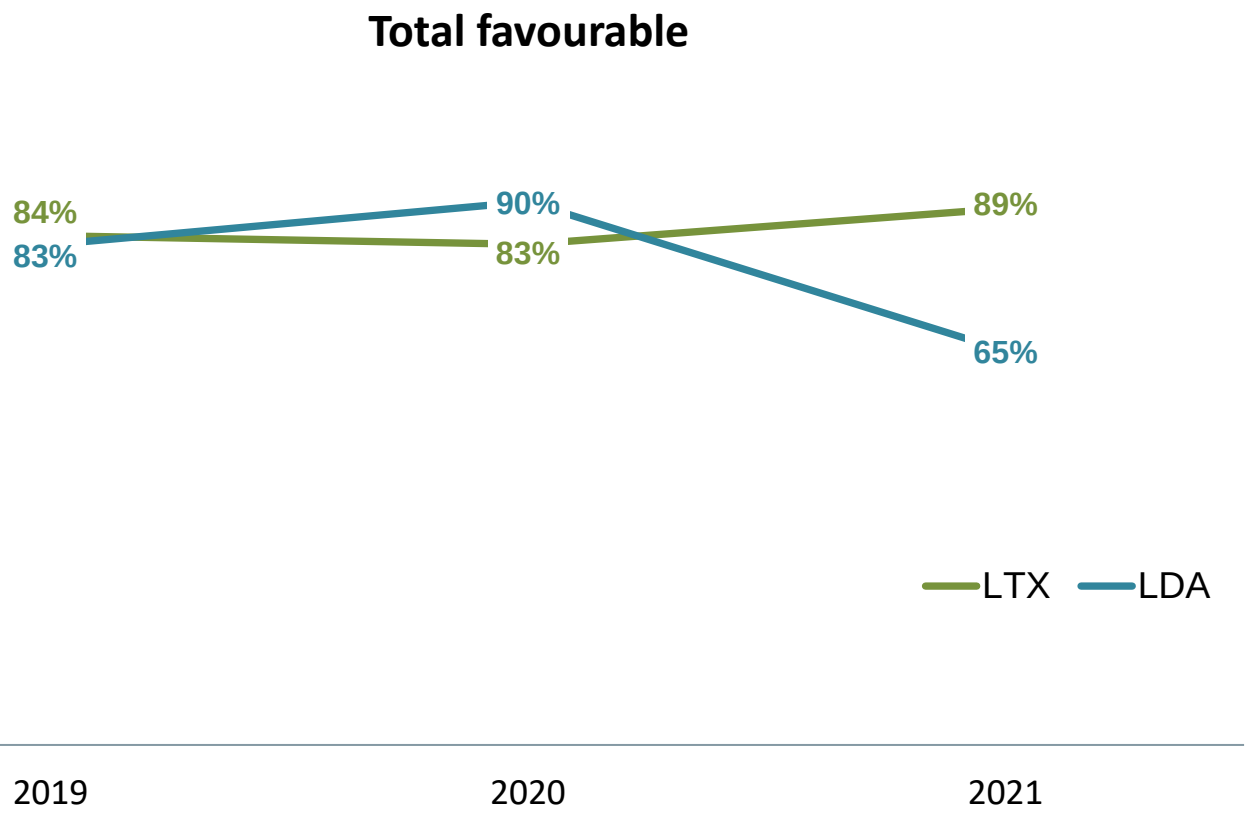
Overall Impression | LTX versus LDA

Q Now, thinking about your impression of Hydro One more broadly, how would you describe your view of the company?

[Asked of all respondents; LTX n=90, LDA n=49]



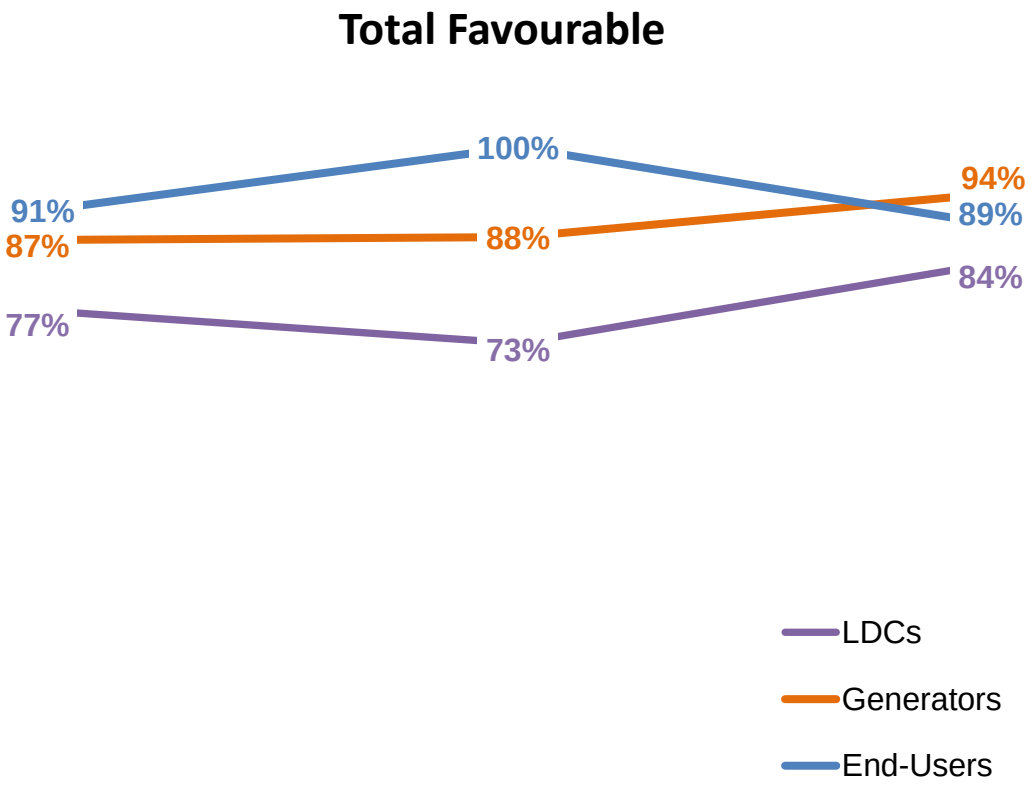
Key Insights

- While overall favourable impression of Hydro One is up directionally for LTX customers from 83% to 89%, it is down for LDA customers from 90% to 65%

Overall Impression | LTX Customer Types

Q Now, thinking about your impression of Hydro One more broadly, how would you describe your view of the company?

[Asked of all respondents; LTX total n=90, LDCs n=31, End-Users n=28, Generators n=31]



Key Insights

- Generators and LDCs are up directionally this year on total favourable impression while End-Users are down directionally this year after reaching 100% favourable in 2020
- All three types of LTX customers are strongly favourable of Hydro One

Detailed Results

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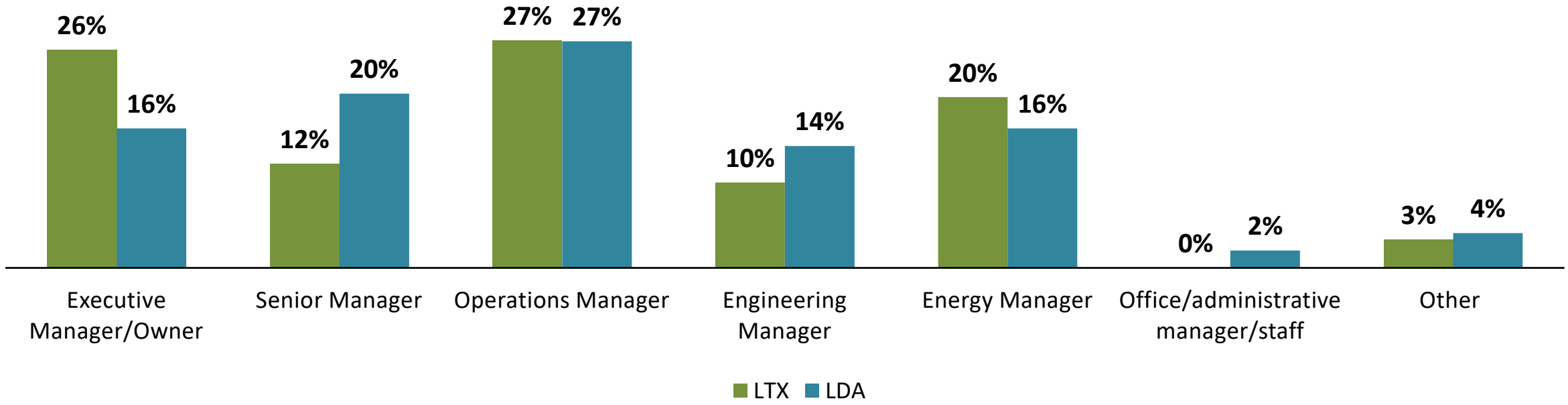
Firmographics: *Customer Profile*

Role at Organization



NOTE: Response "Don't know" (0% for LDA; 2% for LTX) not shown.

Drivers of CSAT outside of Hydro One's control

It is important to distinguish between what is within, and what is outside of Hydro One's influence or control when it comes to drivers of customer satisfaction.

Perceptions of electric companies often tend to move with general perceptions of ***provincial government management in the sector*** rather than in response to the local utility.

In addition, perceptions of utilities are also strongly correlated with **financial circumstances**. In tough times perception and preference can change because customers are struggling with their bills, not because of anything the company has, or has not, done.

Control questions help distributors distinguish between:

a) utility driven programs that impact CSAT; and

b) uncontrollable external drivers that impact CSAT.

When conducting **brand research** in the energy sector, INNOVATIVE often tests multiple environmental control to assess what role predispositions (customer values and beliefs – which can be difficult and costly to change) play in the formation of a utility's brand health and reputation.

However, in **CSAT research**, we usually limit our environmental controls to two key questions to help capture external phenomena:

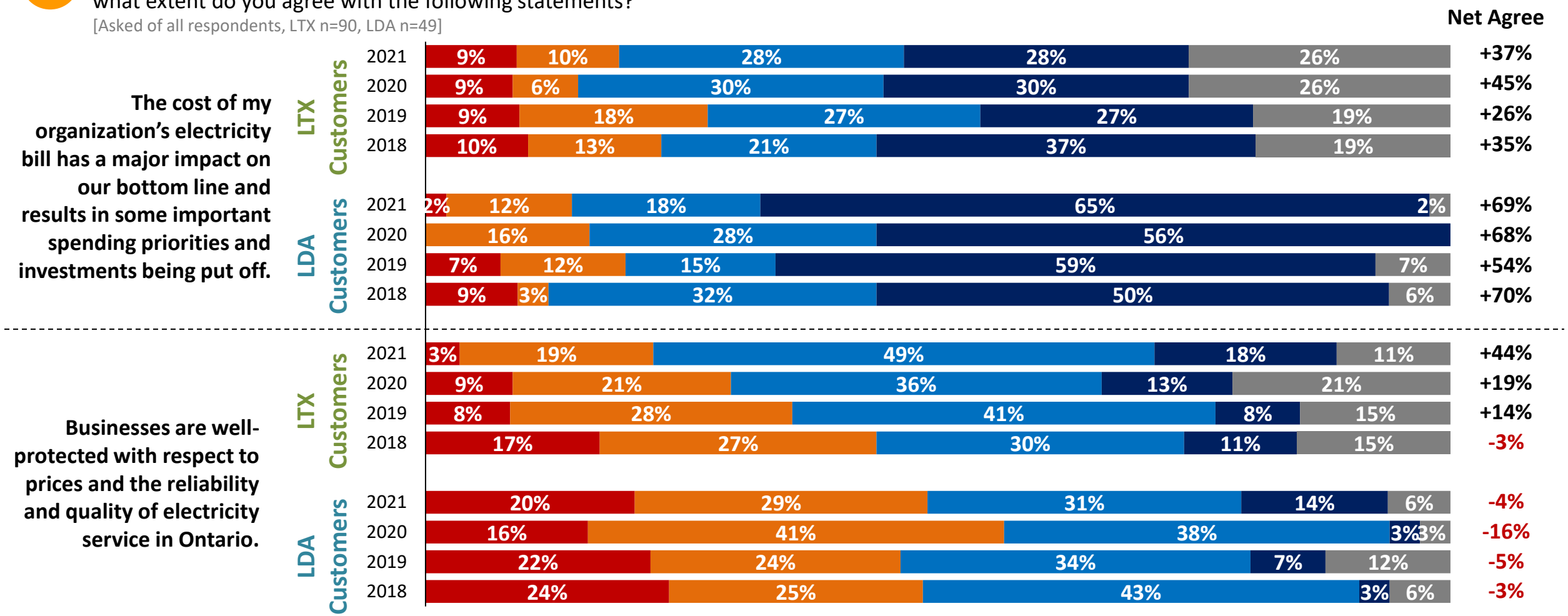
Government Management of the Electricity System:
Businesses are well-protected with respect to prices and the reliability and quality of electricity service in Ontario.

Financial Circumstances:
The cost of my organization's electricity bill has a major impact on our bottom line and results in some important spending priorities and investments being put off.

Environmental Controls

Q The following questions ask about your experience with electricity **in general**, and are NOT specific to your experience with Hydro One. To what extent do you agree with the following statements?

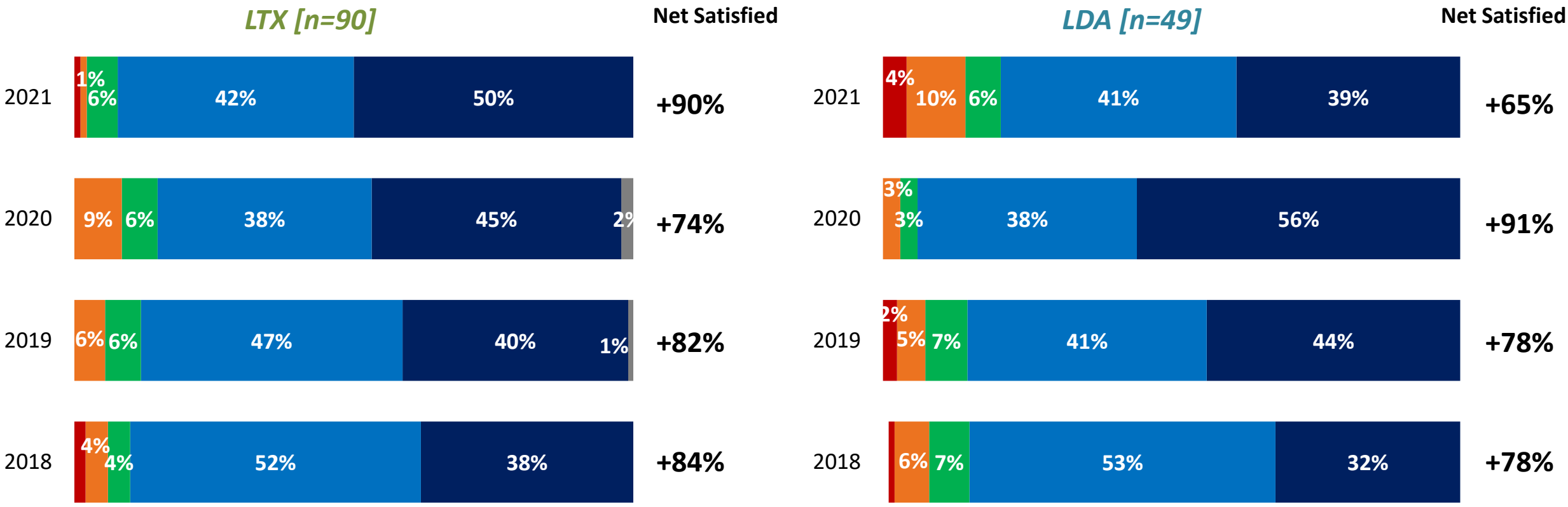
[Asked of all respondents, LTX n=90, LDA n=49]



Key Metrics

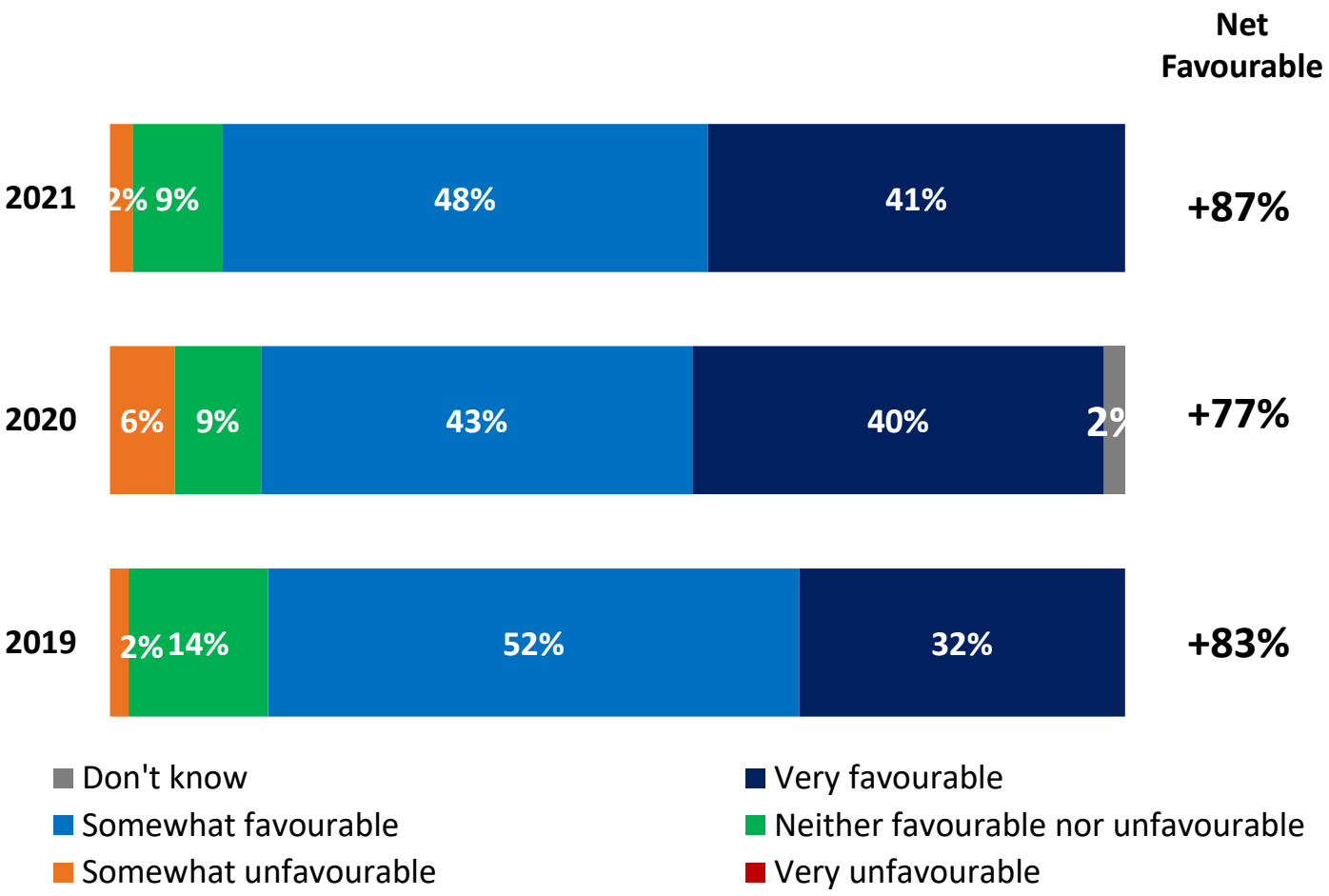
Overall Satisfaction: Satisfaction is up for LTX customers compared to 2020, while satisfaction for LDA customers is down

Q Overall, how satisfied or dissatisfied are you with the service your organization receives from Hydro One?
[Asked of all respondents, LTX n=90, LDA n=49]

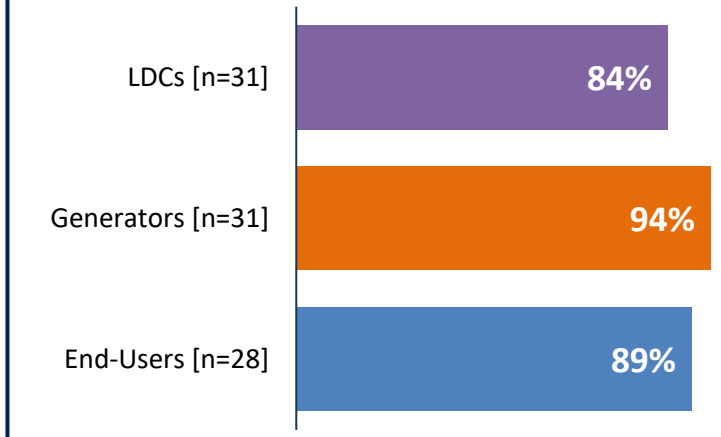


Overall Impression | LTX Customers

Q Now, thinking about your impression of Hydro One more broadly, how would you describe your view of the company?
[Asked of all respondents, n=90]



Favourable by Customer Type

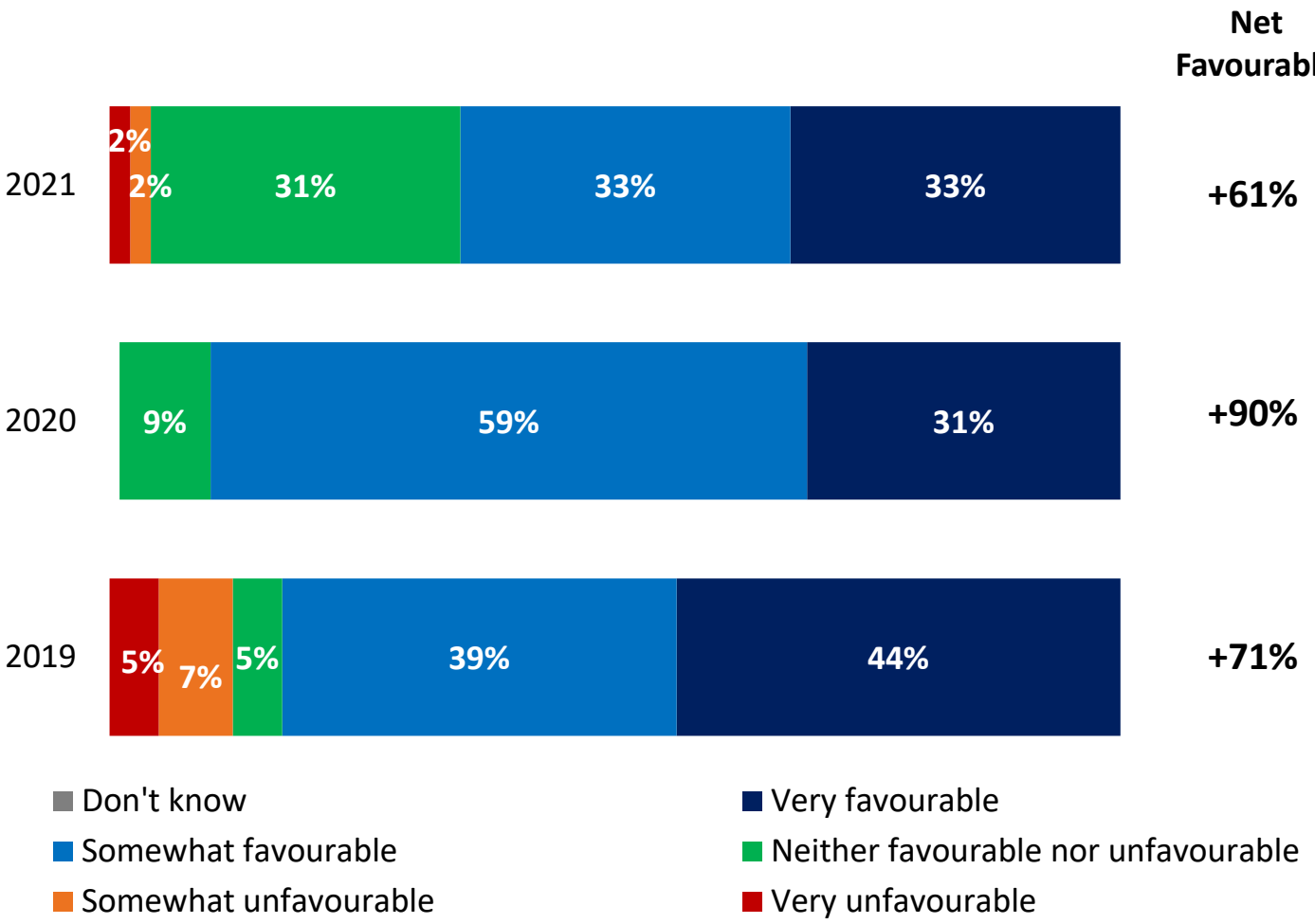


Key Insights

- A strong majority (89%) of LTX customers have a favourable impression of Hydro One. They are about equally likely to have a somewhat favourable (48%) impression as a very favourable (41%) one.
- Net favourability is up 10 points directionally (+77% to +87%) since 2020.
- Favourable impression is highest among Generators

Overall Impression | LDA Customers

Q Now, thinking about your impression of Hydro One more broadly, how would you describe your view of the company?
[Asked of all respondents, n=49]



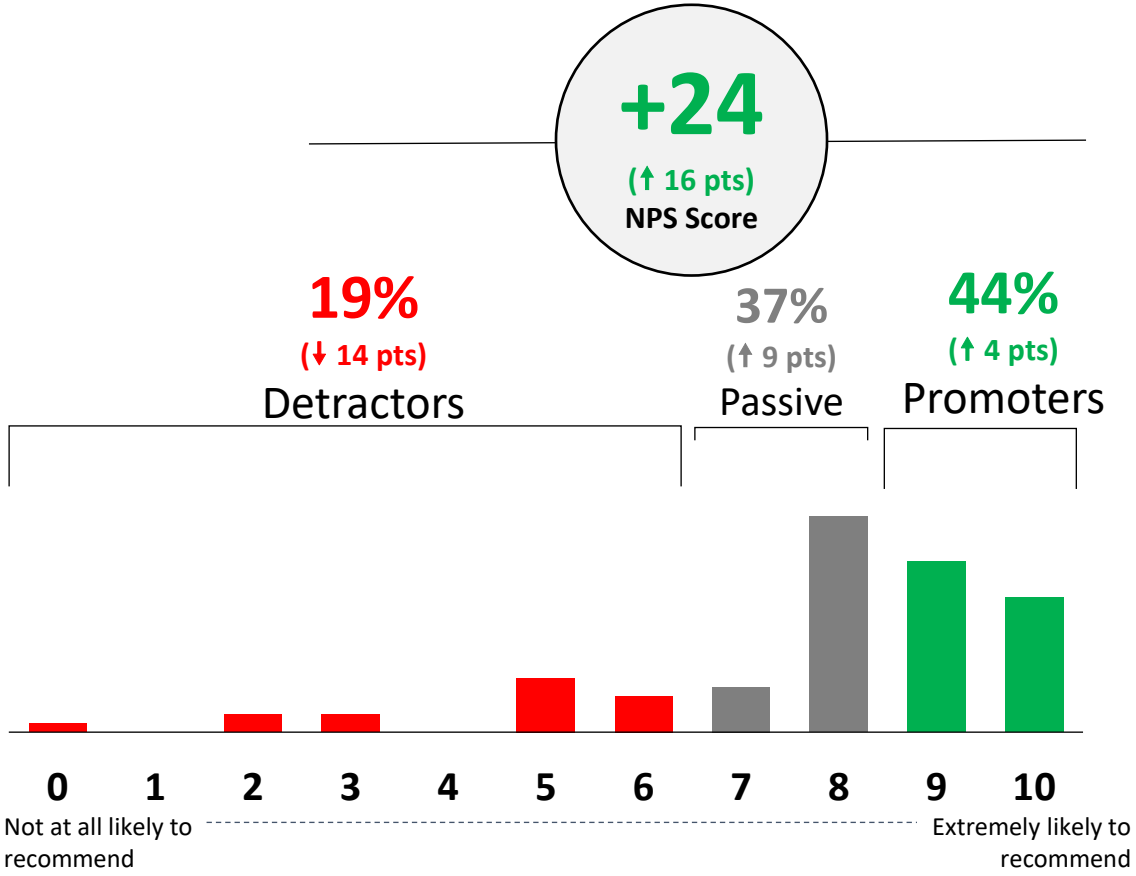
Key Insights

- A strong majority (65%) of LDA customers have a favourable impression of Hydro One. They are equally likely to have a somewhat favourable (33%) impression as a very favourable (33%) one.
- Total favourability has decreased compared to 2020 with customers shifting towards 'neither favourable nor unfavourable'

Net Promoter Score | LTX Customers

Q If you had a choice between several possible providers of electricity, how likely would you be to recommend Hydro One to your colleagues and peers as the preferred electricity utility? Please use a scale from 0 to 10, where 0 means you would not be at all likely to recommend Hydro One to others and 10 means you would be extremely likely to recommend.

[Asked of all respondents, n=90]



	NPS	=	Promoters	-	Detractors	Passive
LDCs	0	=	32%	-	32%	36%
Generators	+30	=	44%	-	15%	41%
End-Users	+42	=	54%	-	12%	35%

Key Insights

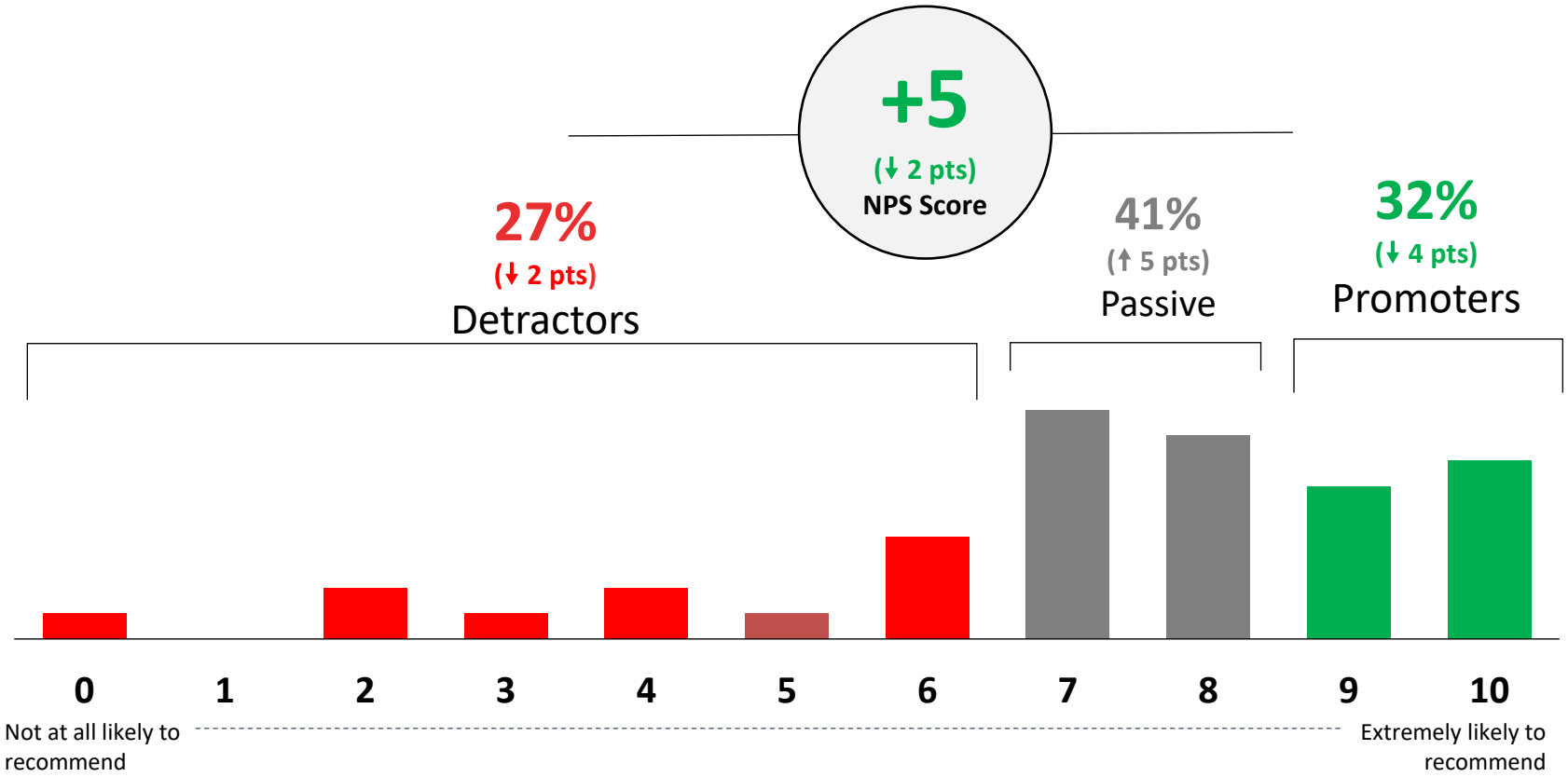
- NPS is positive (+24) and up from 2020 among LTX customers with only 19% being detractors of the Hydro One brand and 44% being promoters
- Among a small subsample, End-Users are most likely to recommend Hydro One; LDCs least likely

NOTE: New question in 2018. NPS scores run on a scale from -100 to +100. Response "Don't know" (13%) is excluded from the calculation of the NPS.

Net Promoter Score | LDA Customers

Q If you had a choice between several possible providers of electricity, how likely would you be to recommend Hydro One to your colleagues and peers as the preferred electricity utility? Please use a scale from 0 to 10, where 0 means you would not be at all likely to recommend Hydro One to others and 10 means you would be extremely likely to recommend.

[Asked of all respondents, n=38]



Key Insights

- LDA customers are more likely to be promoters of the brand than detractors (32% vs 27%, respectively), resulting in a positive NPS of +5.

NOTE: New question in 2018. NPS scores run on a scale from -100 to +100. Response "Don't know" (16%) is excluded from the calculation of the NPS.

Brand Assessment

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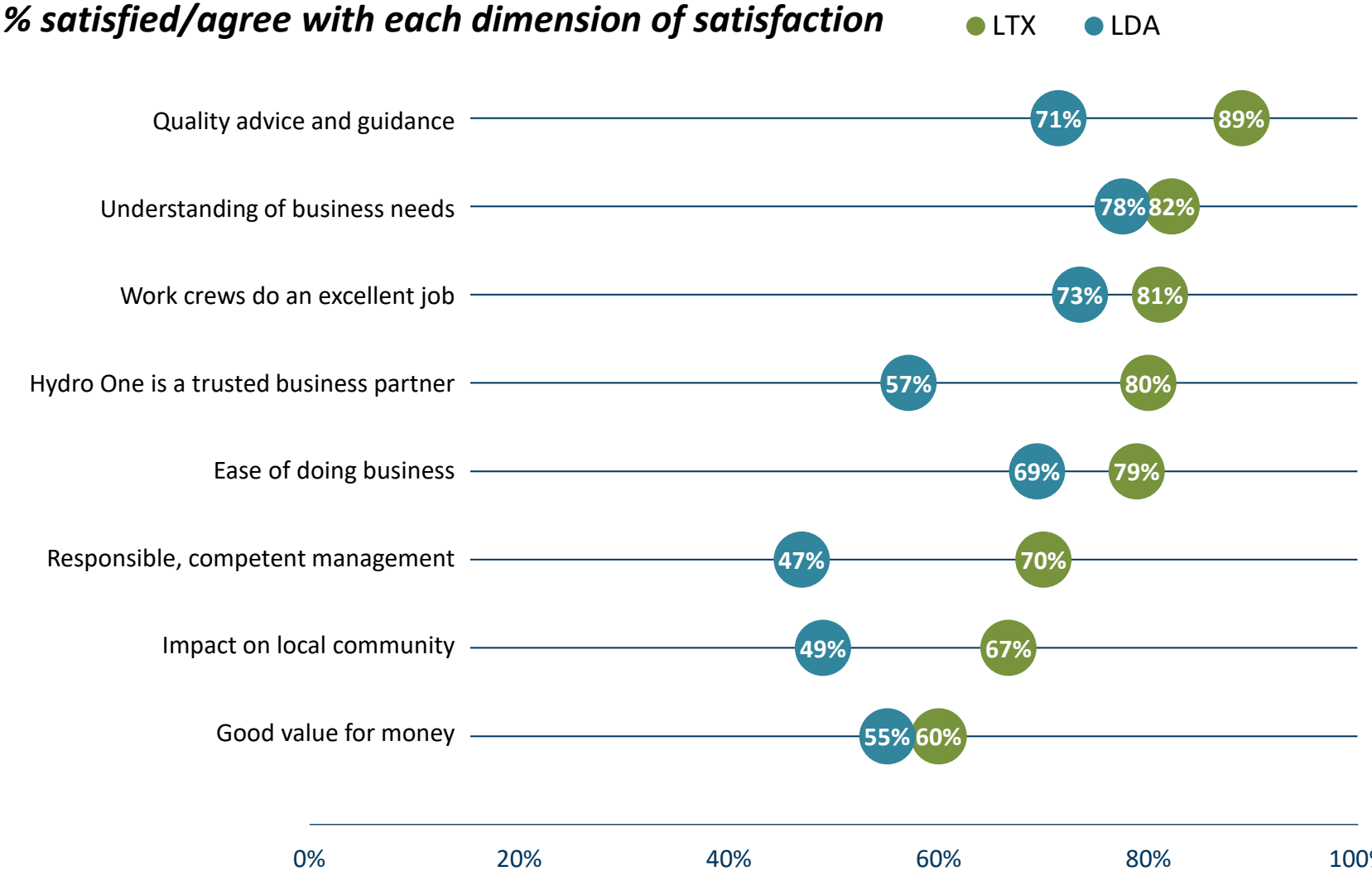
Brand Assessment | Details

% satisfied/agree with each dimension of satisfaction



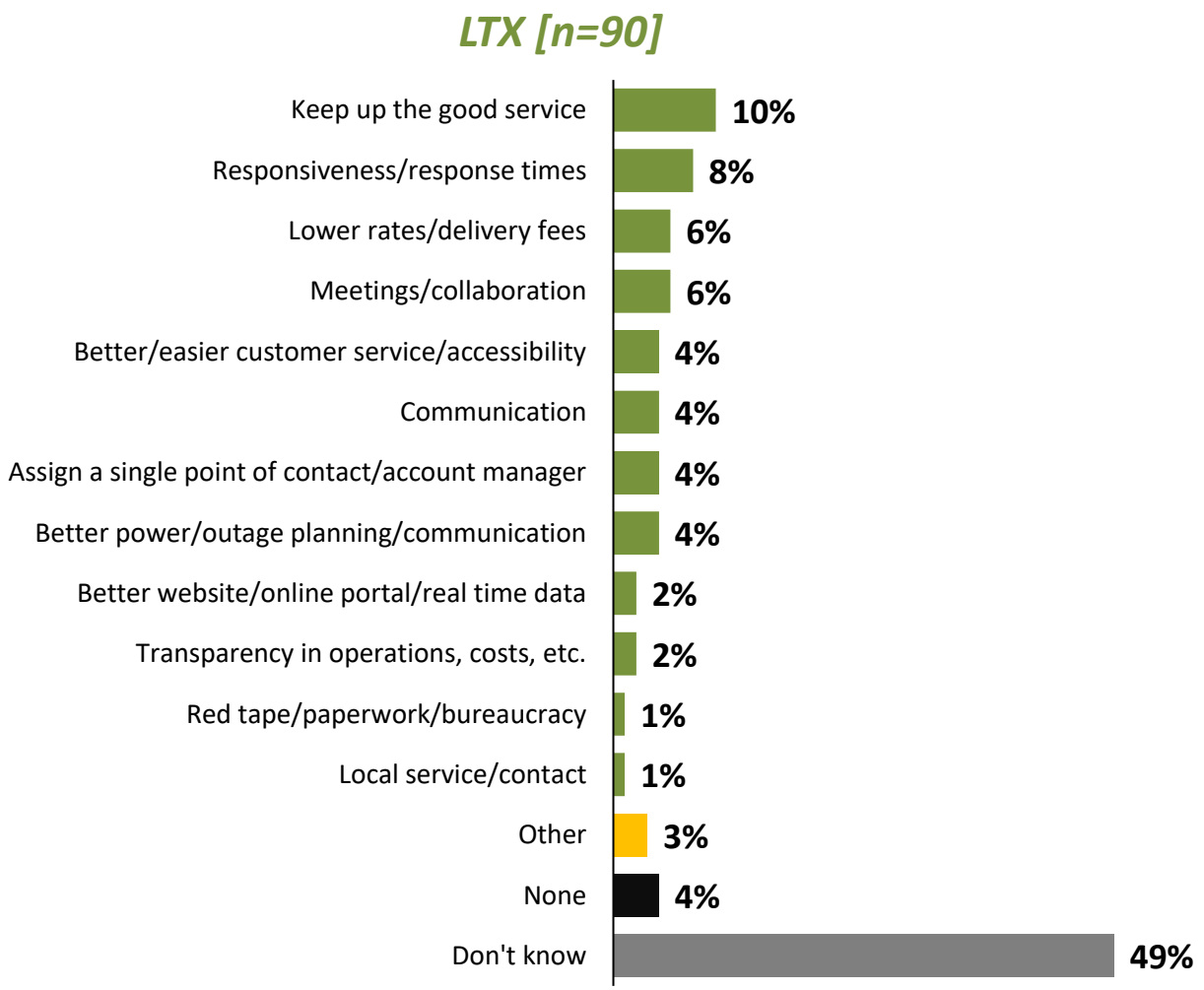
Key Insights

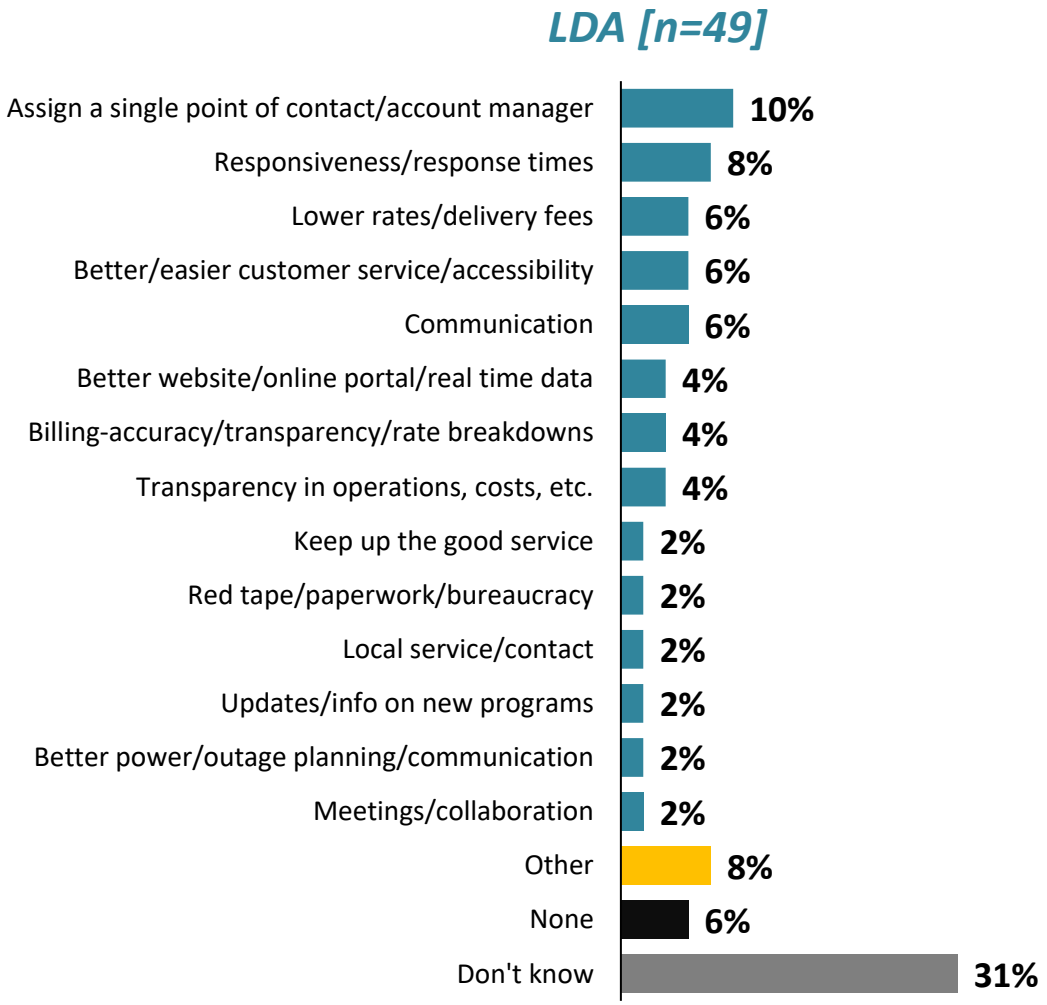
- For LTX customers, agreement is highest that Hydro One provides their organization with quality advice and guidance while it's lowest on 'good value for money'
- For LDA customers, satisfaction is highest on understanding business needs and 'understanding of business needs' while it's lowest on Hydro One having responsible and competent top-level management
- Generally, LTX customers rate Hydro One more positively on brand measures than LDA customers

Note: Percentages represent total satisfied/dissatisfied (very and somewhat) or top/bottom two collapses for 5-point scales.

Ease of Business: For LDA customers, top way to make things easier would be to assign a single point of contact (10%)

Q What would make it easier for your organization to do business with Hydro One?
[Asked of all respondents]





Reliability

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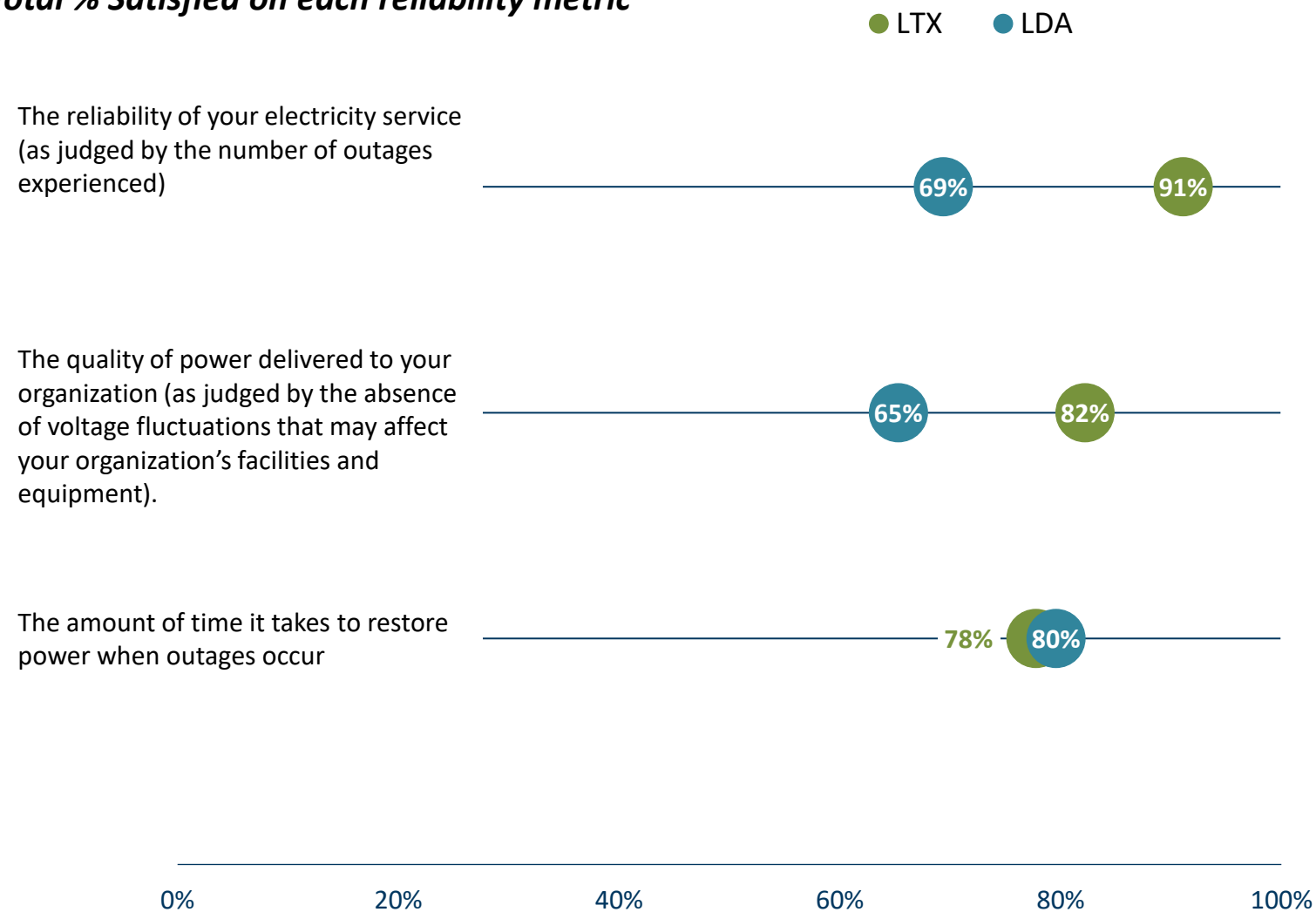
Reliability and Outage Satisfaction | Summary

Total % Satisfied on each reliability metric



Key Insights

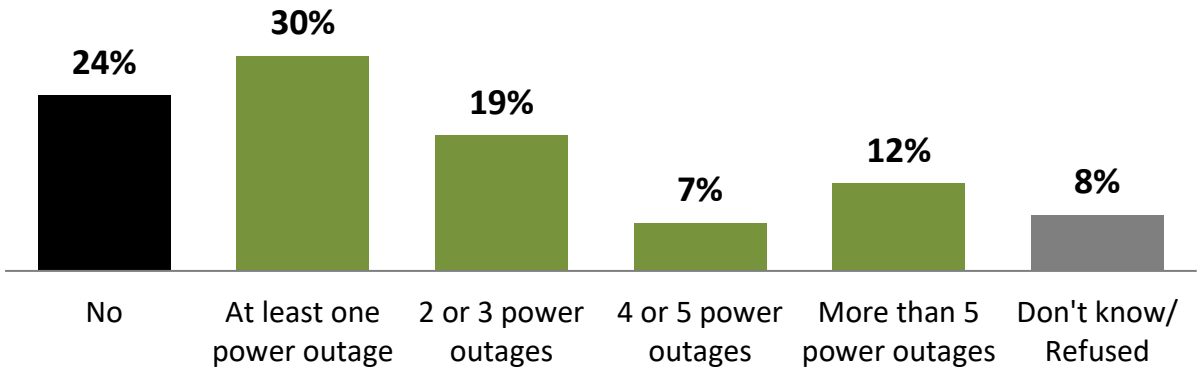
- LTX customers are more satisfied with overall reliability and the quality of power delivered to their organization compared to LDA customers; almost all LTX customers (91%) are satisfied with their overall reliability
- LTX and LDA customers are about equally satisfied with the amount of time it takes to restore power when outages occur at 4-in-5

Note: Percentages represent total satisfied/dissatisfied (very and somewhat) or top/bottom two collapses for 5-point scales.

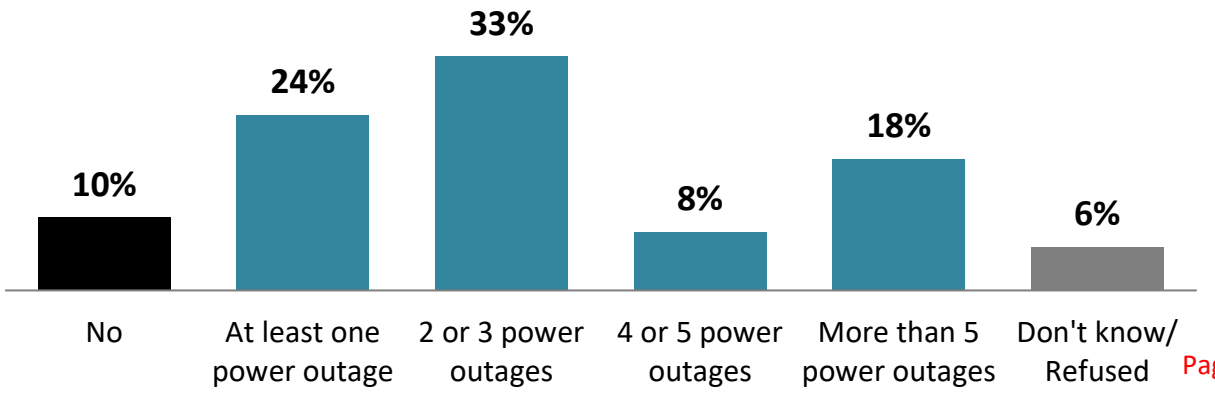
Unplanned Power Outage Experience: LDA customers are more likely to report experiencing an outage; satisfaction is higher for LTX than LDA

Q In the past year, has your organization experienced any **unplanned power outages** with Hydro One?
[Asked of all respondents]

LTX [n=90]

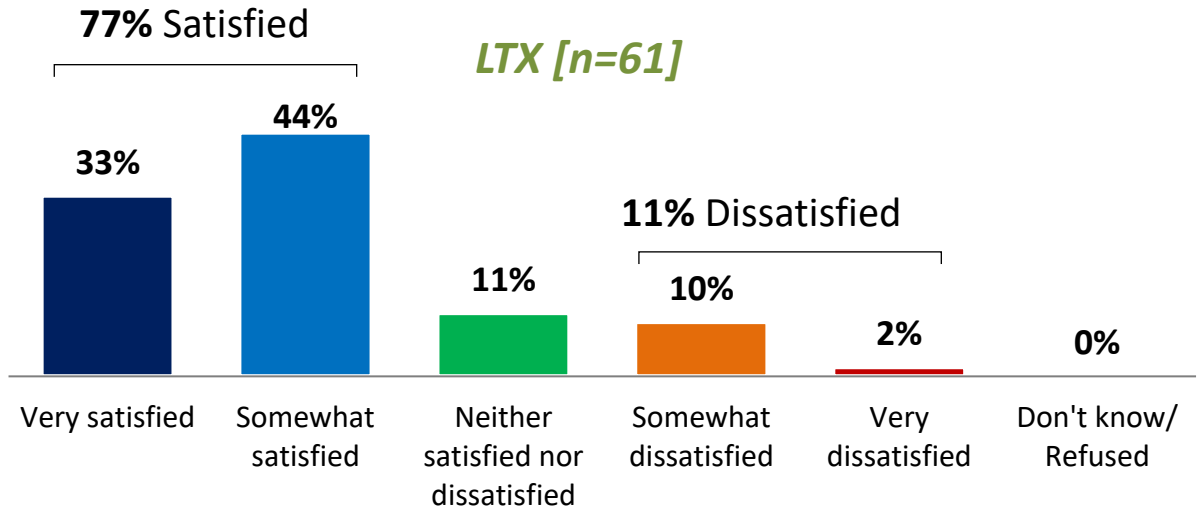


LDA [n=49]

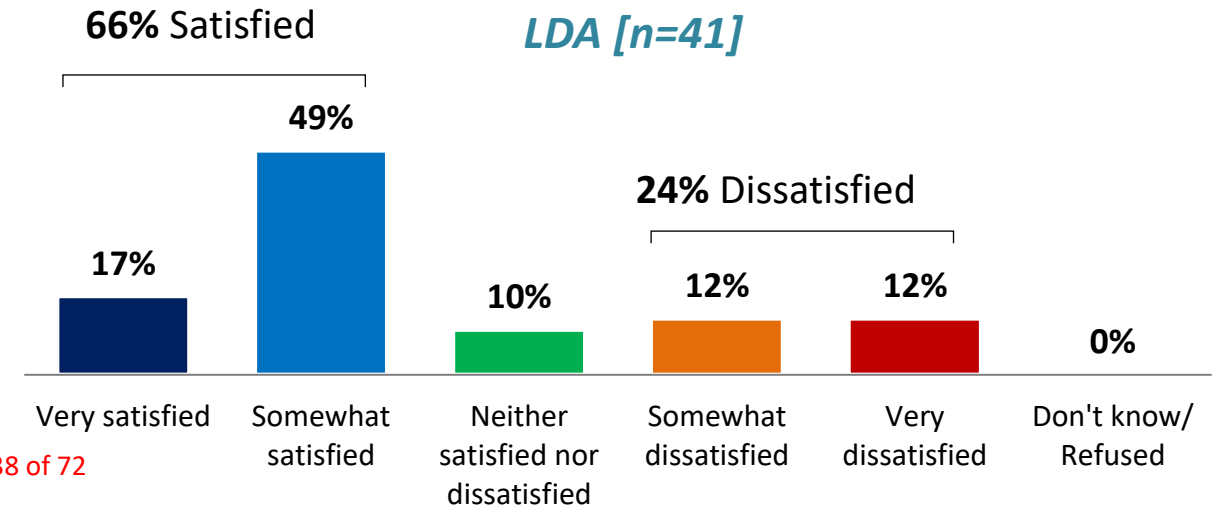


Q Generally, how satisfied or dissatisfied are you with the way your **unplanned power outages** are managed by Hydro One?
[Among those who have had an outage]

LTX [n=61]



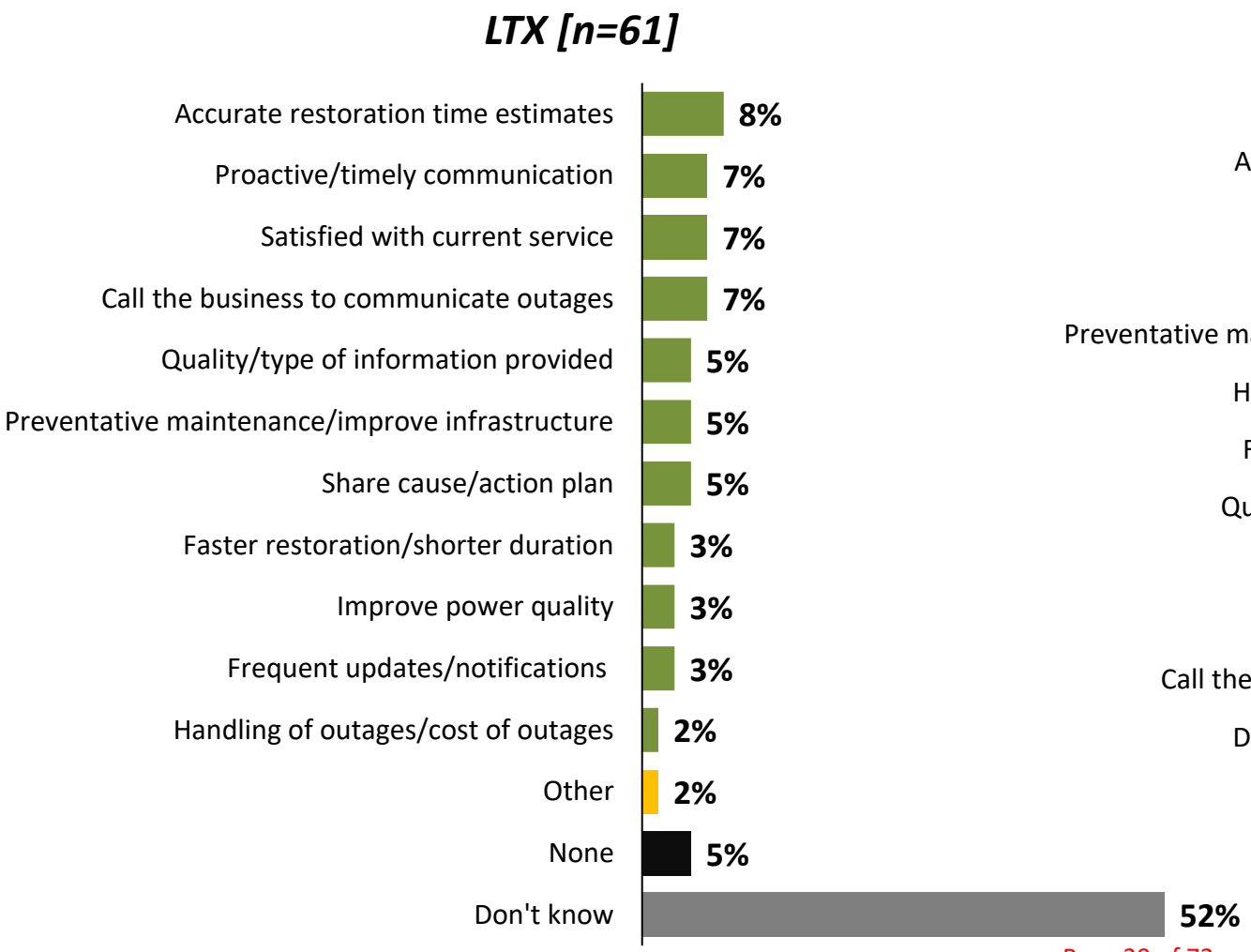
LDA [n=41]

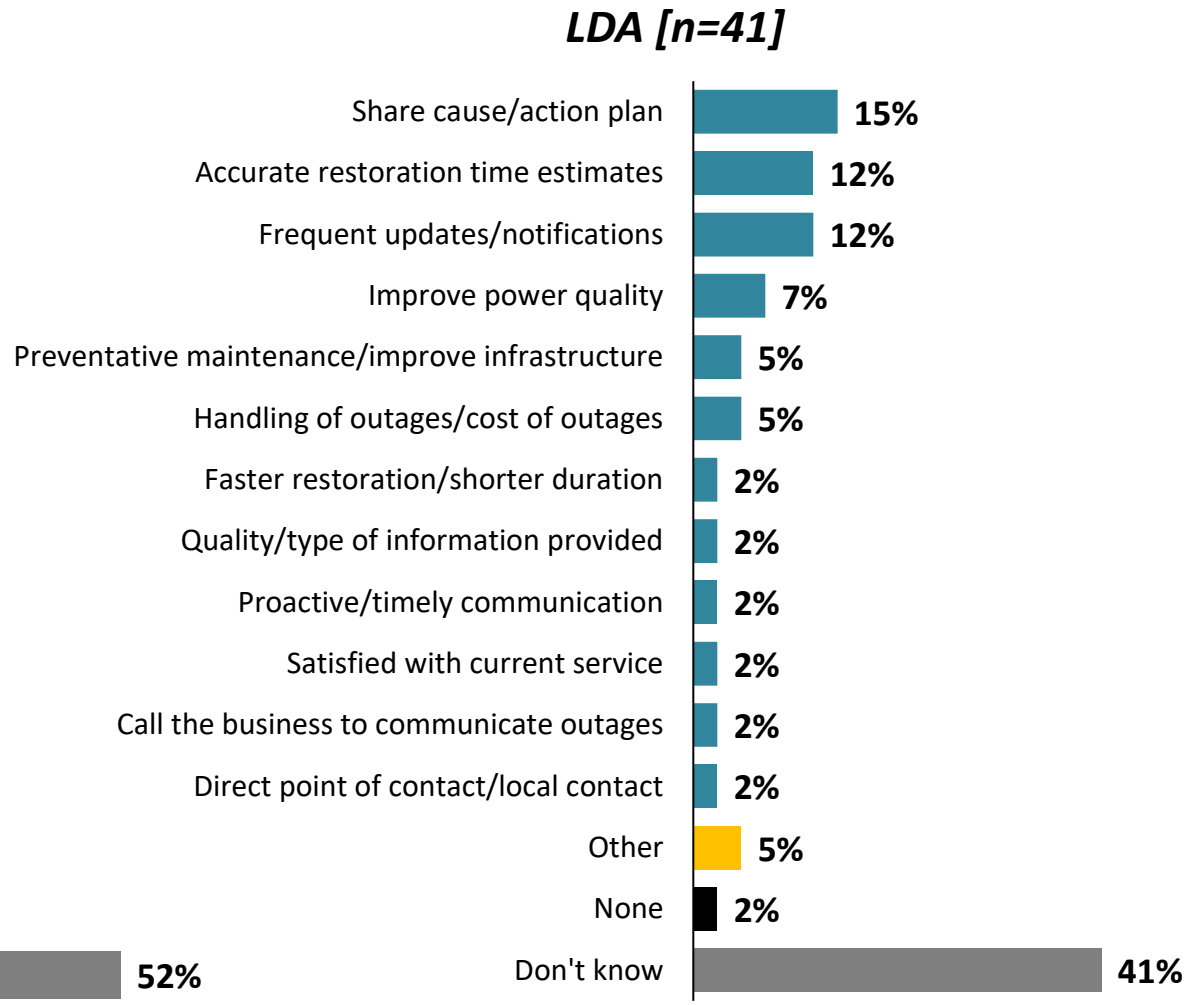


Improvement During Unplanned Outages: Top way to improve outages among LDA customers is to share the cause and an action plan

Q Is there anything in particular Hydro One can do to improve your organization's experience during **unplanned outages**?

[Asked of those who have experienced an unplanned outage]

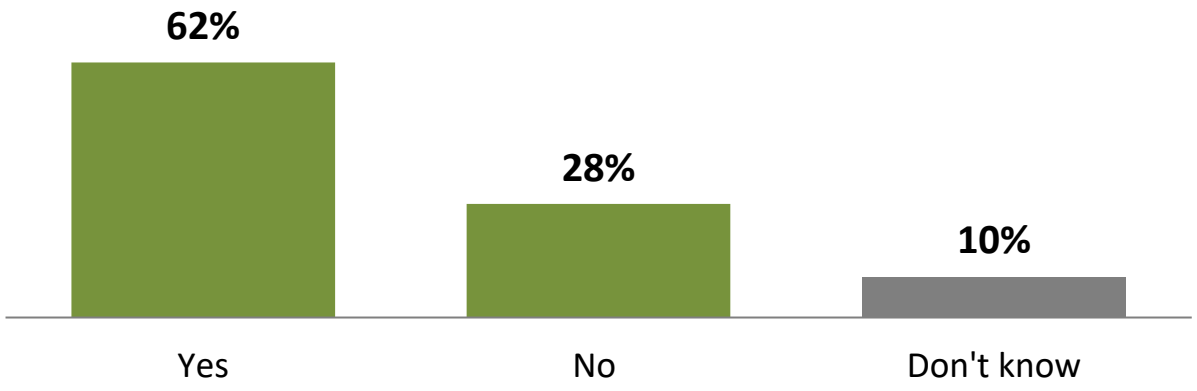




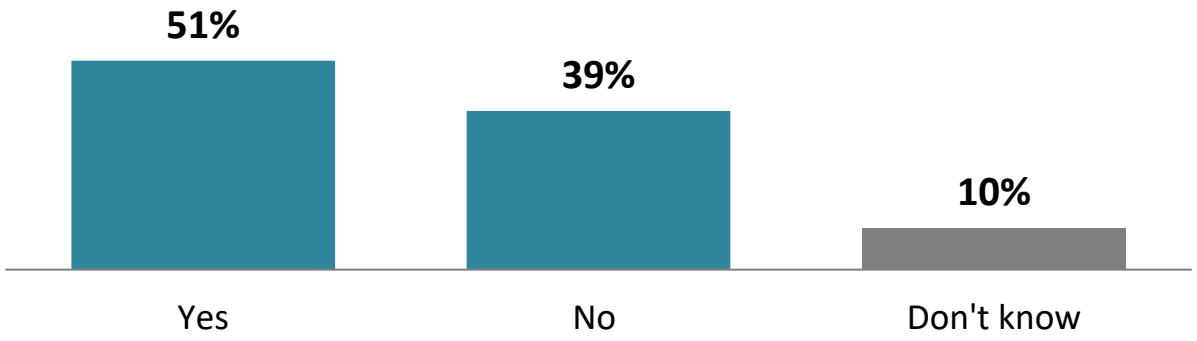
Planned Power Outage Experience: 4-in-5 LTX (82%) and LDA (80%) customers are satisfied with how Hydro One managed planned outages

Q In the past year, has your organization experienced any **planned power outages (or loss of supply)** with Hydro One?
[Asked of all respondents]

LTX [n=90]

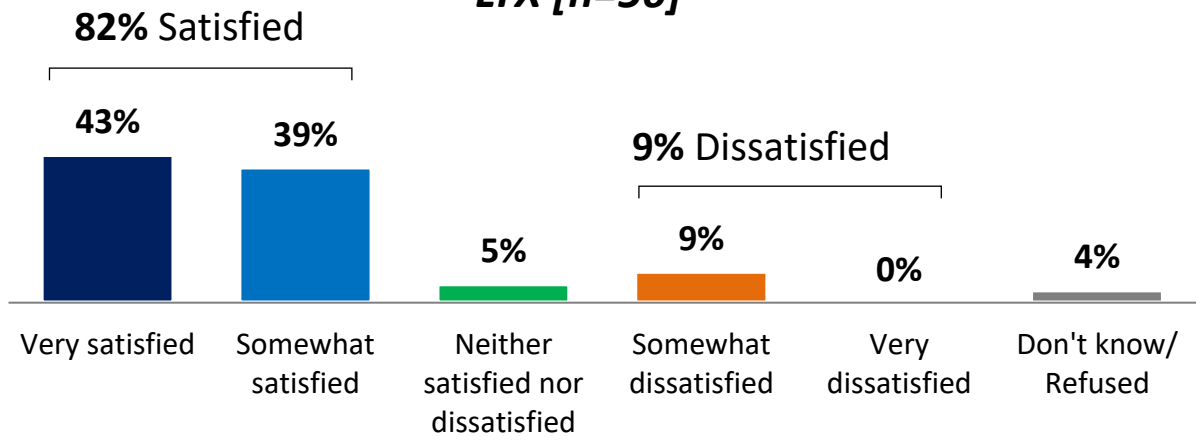


LDA [n=49]

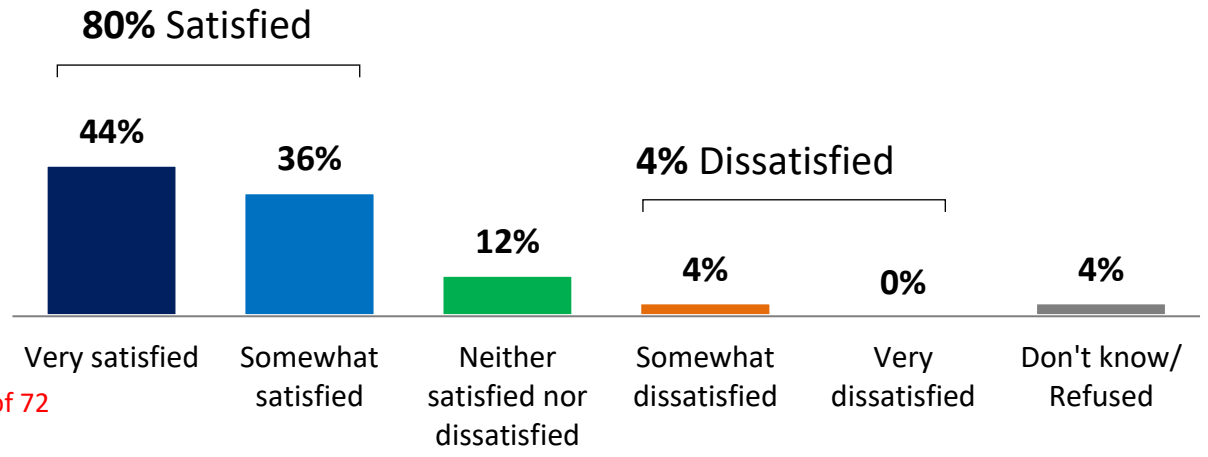


Q Generally, how satisfied or dissatisfied are you with the way your **planned power outages** are managed by Hydro One?
[Among those who have had an outage]

LTX [n=56]



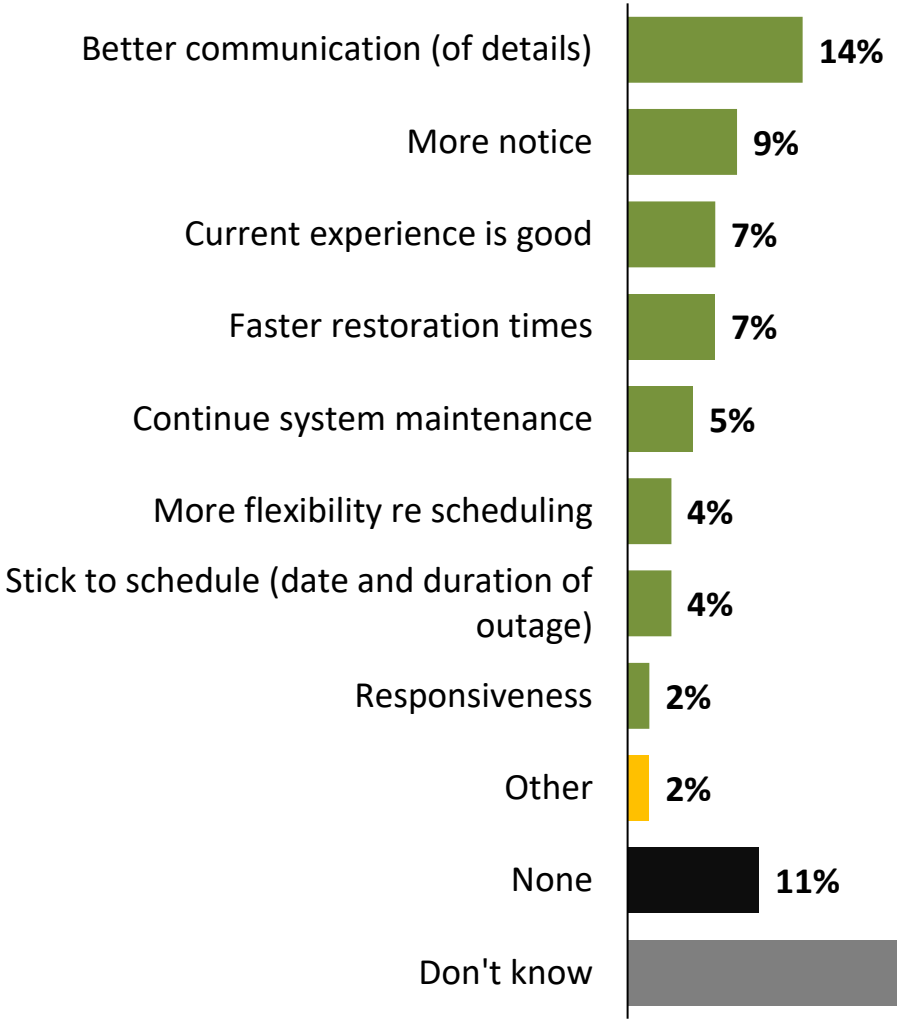
LDA [n=25]



Improvement During Planned Outages: LTX customers say better communication and more notice would help during planned outages

Q Is there anything in particular Hydro One can do to improve your organization's experience during **planned outages**?
[Asked of those who have experienced a planned outage]

LTX [n=56]



LDA [n=25]

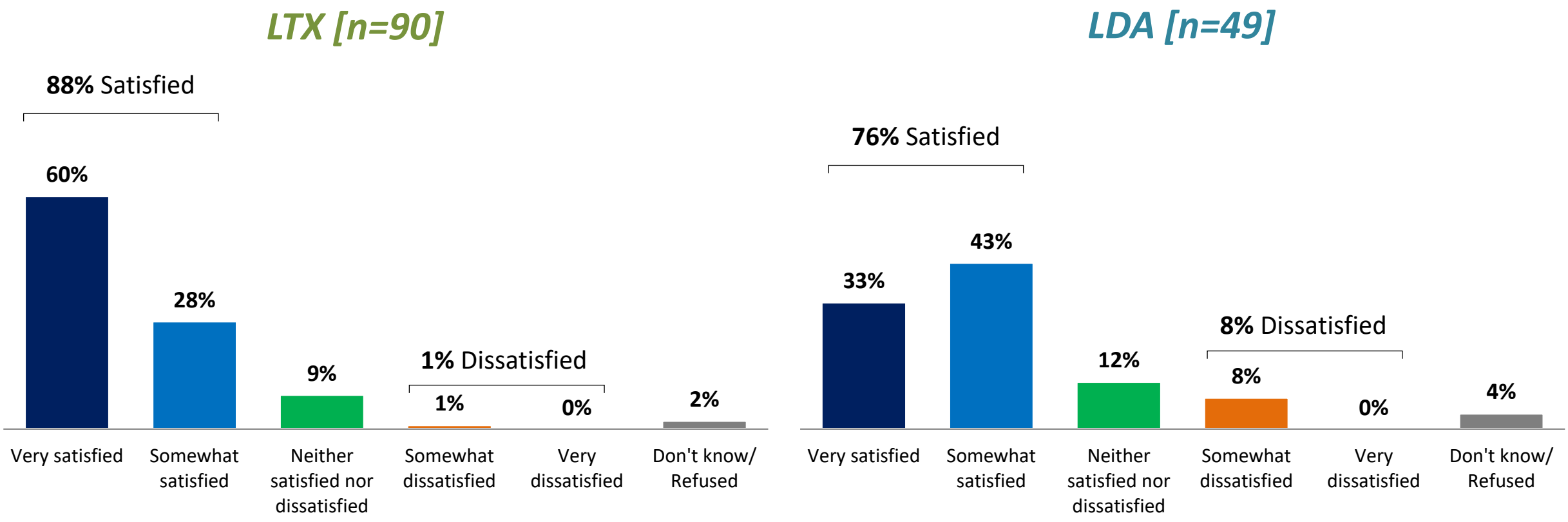
Verbatim (n=18 'Don't know' or 'None')
"Very quick and efficient. This outage was due to our annual power shut down."
"Keep providing same good service."
"No the planned outages are generally on time and done with good communication."
"Don't seem organized in turning power off when requested. Delays in turning off the power cost $$ for contractors waiting to do their work. Who should pay for this wasted time and $$?"
"More flexibility to alter planned dates and avoid interruptions during peak business demand."
"Follow up a week before to ensure nothing changed."
"There was one planned outage that we were notified about. This lasted longer than expected.."

Customer Service

INNOVATIVE RESEARCH GROUP

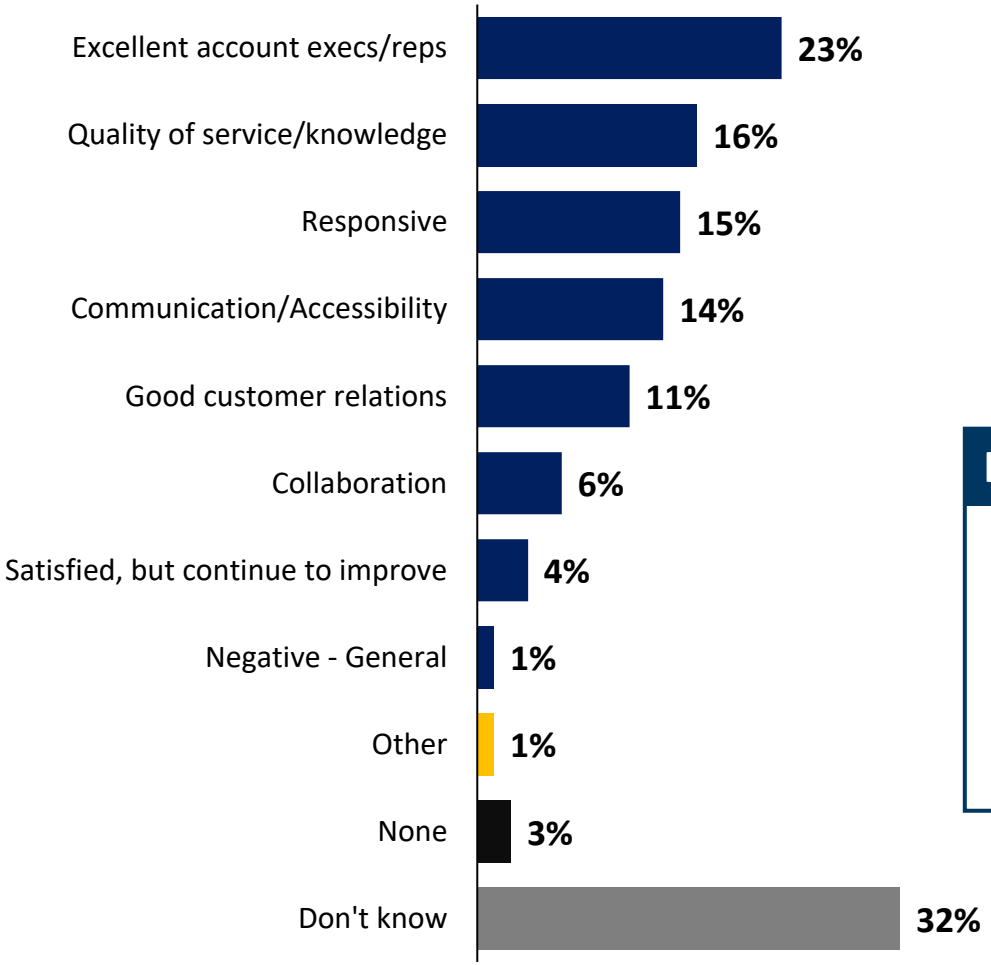
Customer Service Satisfaction: A strong majority of both LTX and LDA customers are satisfied with the customer service they receive

Q Overall, how satisfied or dissatisfied are you with the customer service provided to your organization by Hydro One?
[Asked of all respondents]



LTX Reasons for Customer Service (Dis)satisfaction

Reason for satisfaction with customer service [n=79]



Reason for dissatisfaction with customer service [n=1]

Verbatim

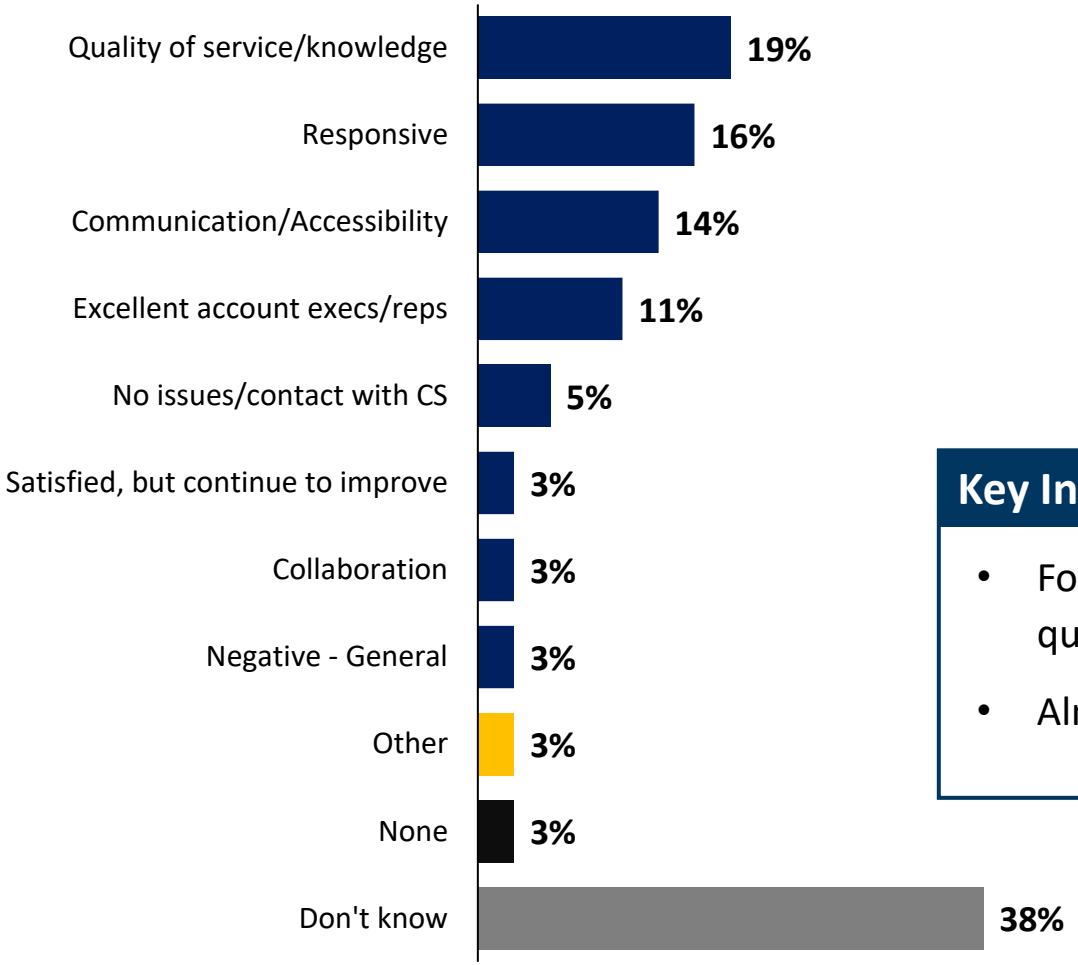
"See previous comments regarding timeliness of information, lack of transparency, and lack of proactiveness."

Key Insights

- The top reasons for satisfaction with customer service for LTX customers is the 'excellent account execs/reps' and quality of service/knowledge
- The one LTX customer who is dissatisfied cites lack of transparency and proactiveness

LDA Reasons for Customer Service (Dis)satisfaction

Reason for satisfaction with customer service [n=37]*



Reason for dissatisfaction with customer service [n=4]

Verbatim
"You contact them and they promise to get back in touch and never call you back."
"See previous answers"
"I don't feel like Hydro One has a stake in my business because they know I have no other choice for power supply."
"Not able to meet commitments."

Key Insights

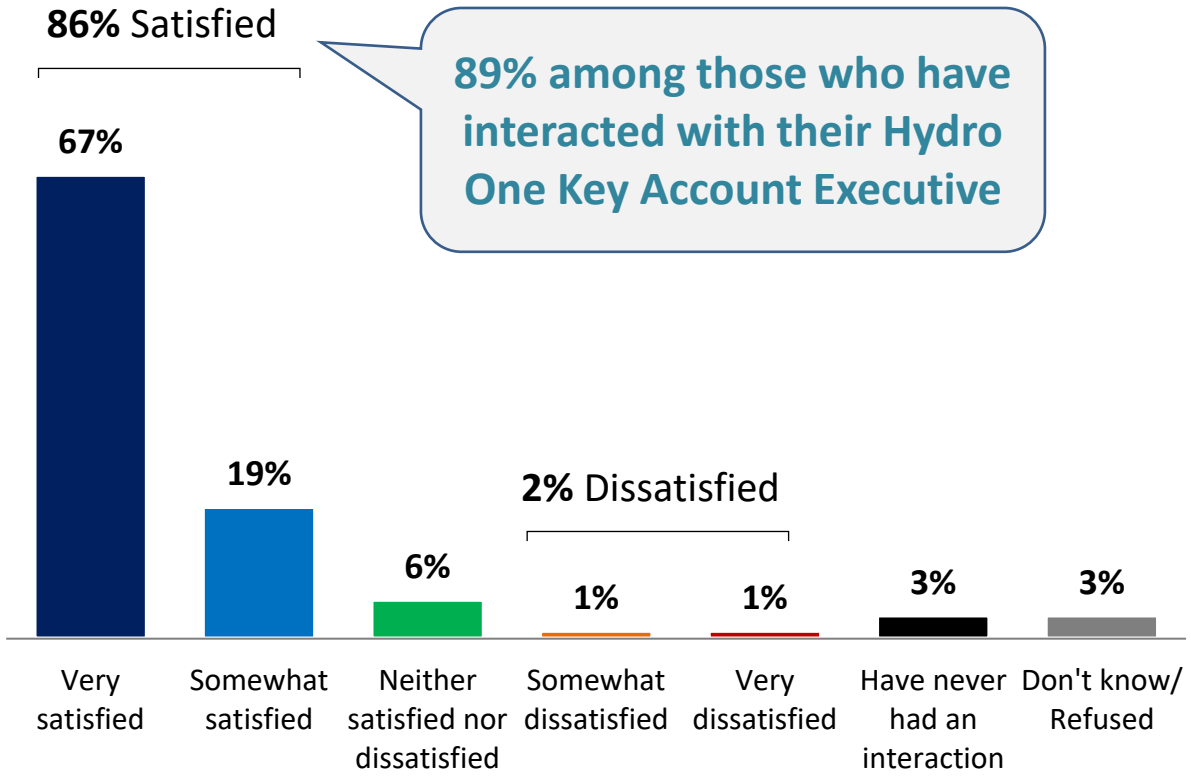
- For LDA customers, the top reason for satisfaction with customer service is the quality of service and responsiveness
- Almost 2-in-5 (38%) say they don't know

***Note**: Small n size, results should be interpreted with caution.

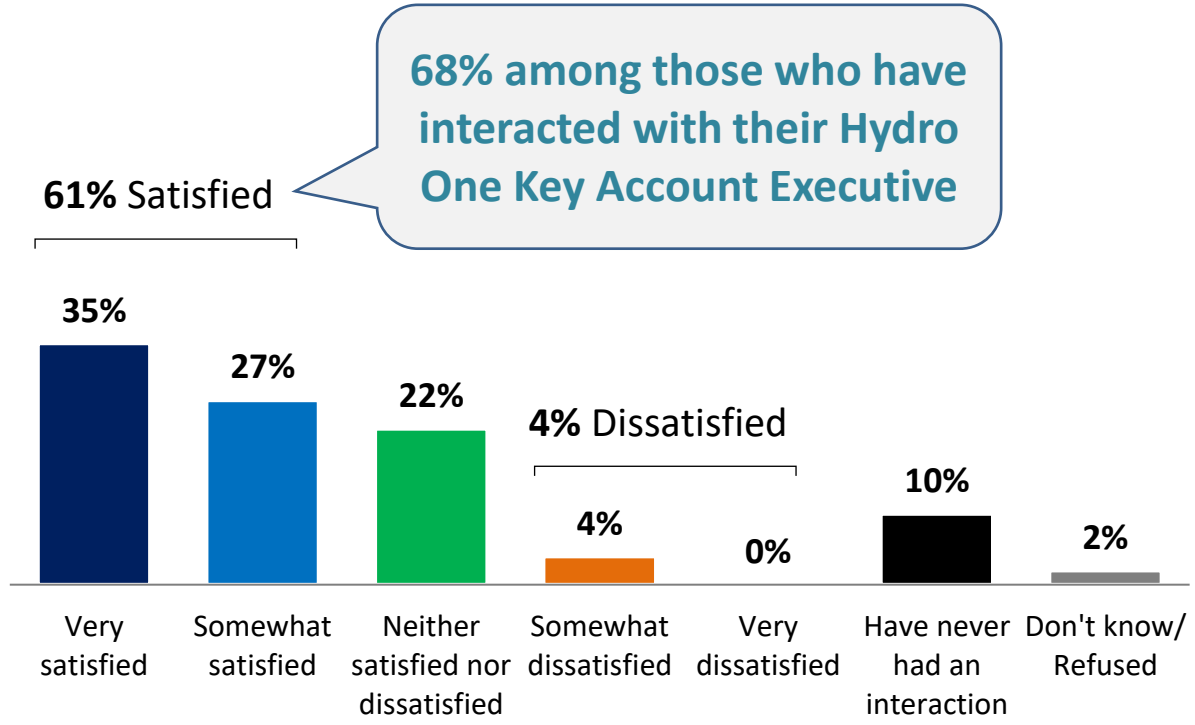
AE Satisfaction: Nearly 9-in-10 (86%) LTX customers are satisfied with their Key Account Executive while it's 61% for LDA customers

Q How satisfied or dissatisfied are you with the service you receive from your Hydro One Key Account Executive?
[Asked of all respondents]

LTX [n=90]

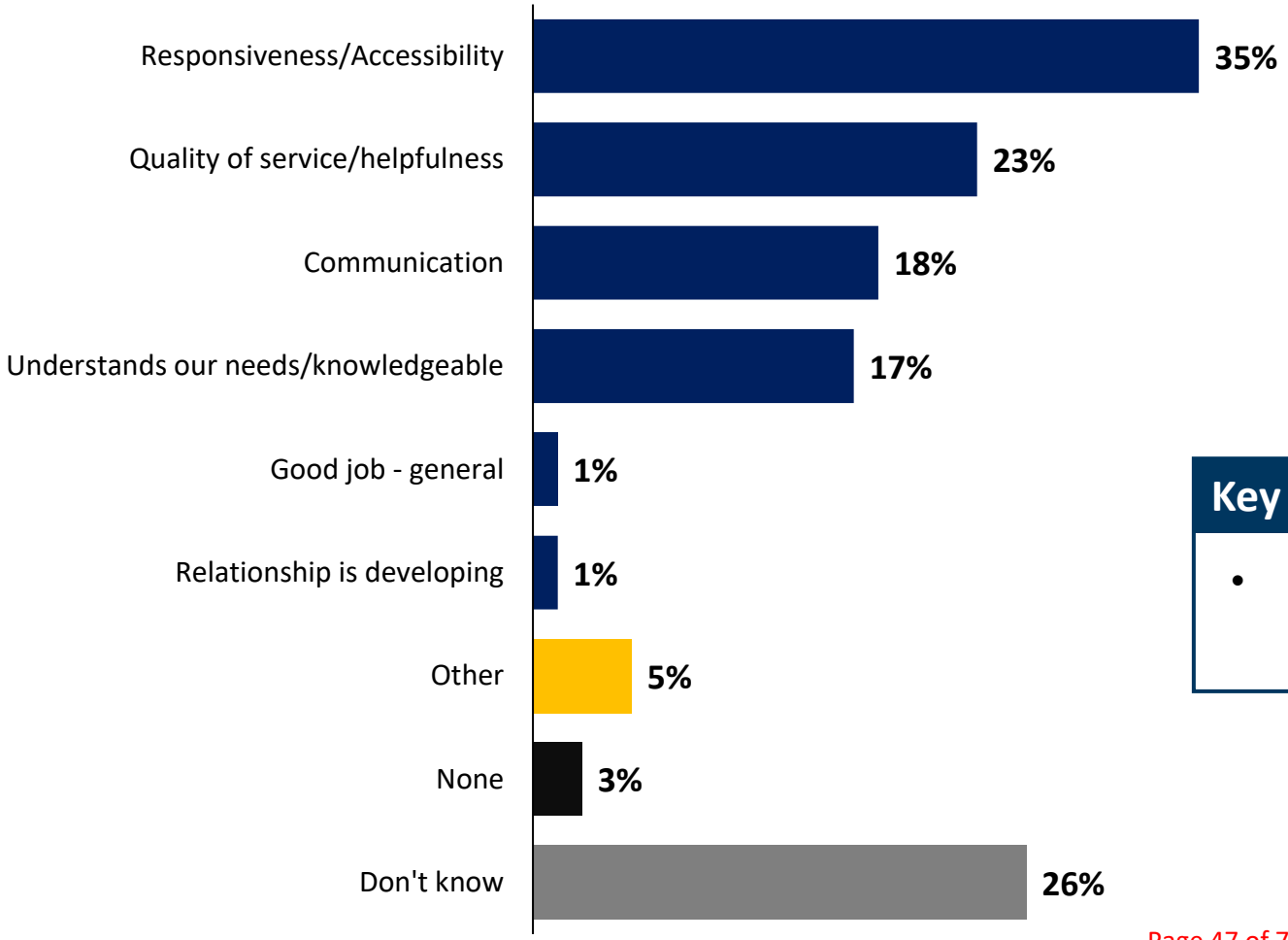


LDA [n=49]



LTX Reasons for AE (Dis)satisfaction

Reason for satisfaction with Key Account Executive [n=77]



Reason for dissatisfaction with Key Account Executive [n=2]

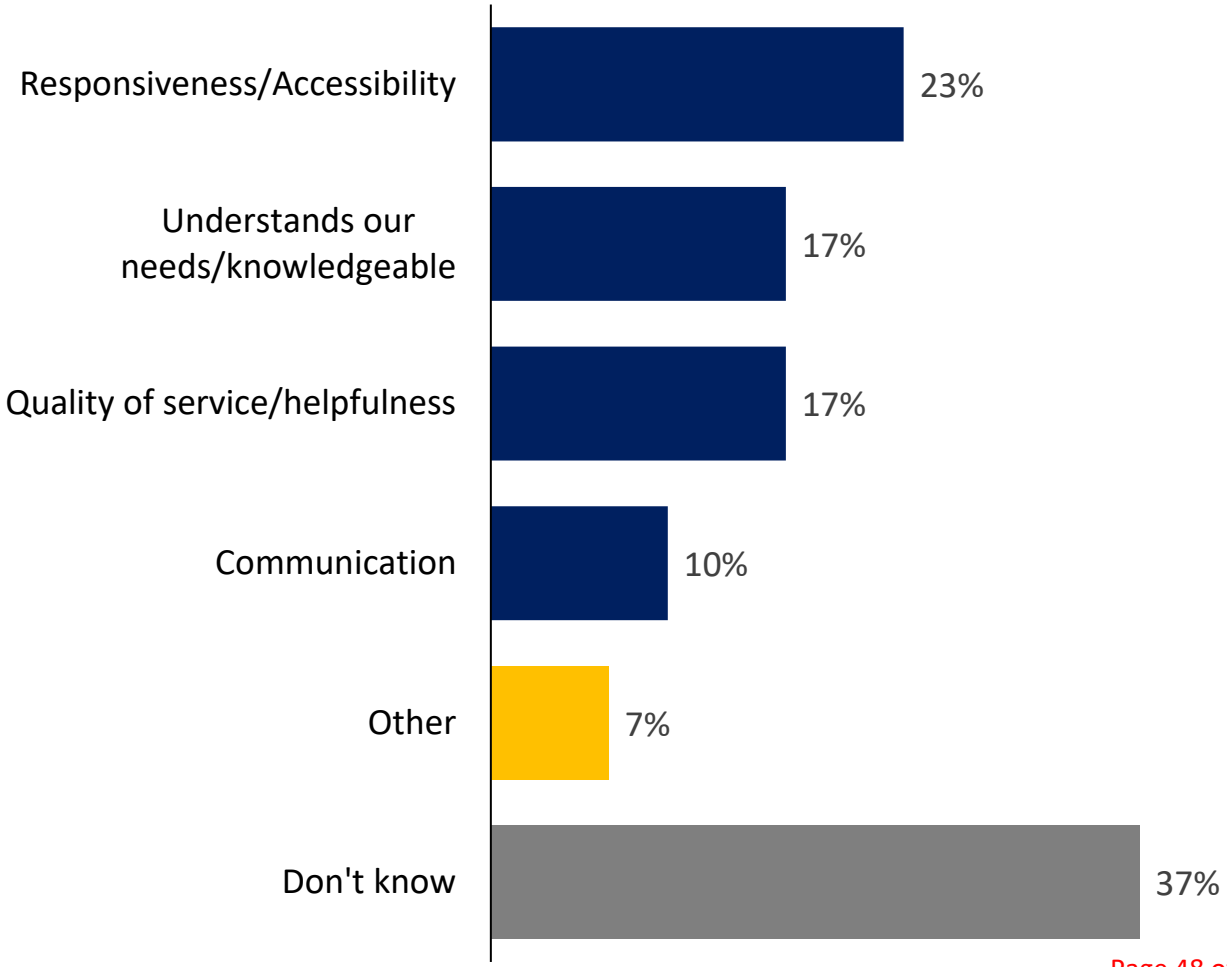
Verbatim
"I have not had contact with the Key Account executive yet."
"Inability to provide a ballpark estimate based on experience for the installation of MSO to our connections. This should not have been a big deal and would have been non-binding for our decision-making only."

Key Insights

- The top two reasons for satisfaction with AEs for LTX customers are responsiveness/accessibility and quality of service

LDA Reasons for AE (Dis)satisfaction

Reason for satisfaction with Key Account Executive [n=30]*



Reason for dissatisfaction with Key Account Executive [n=2]

Verbatim
"See previous answers."
"Same answer as customer service."

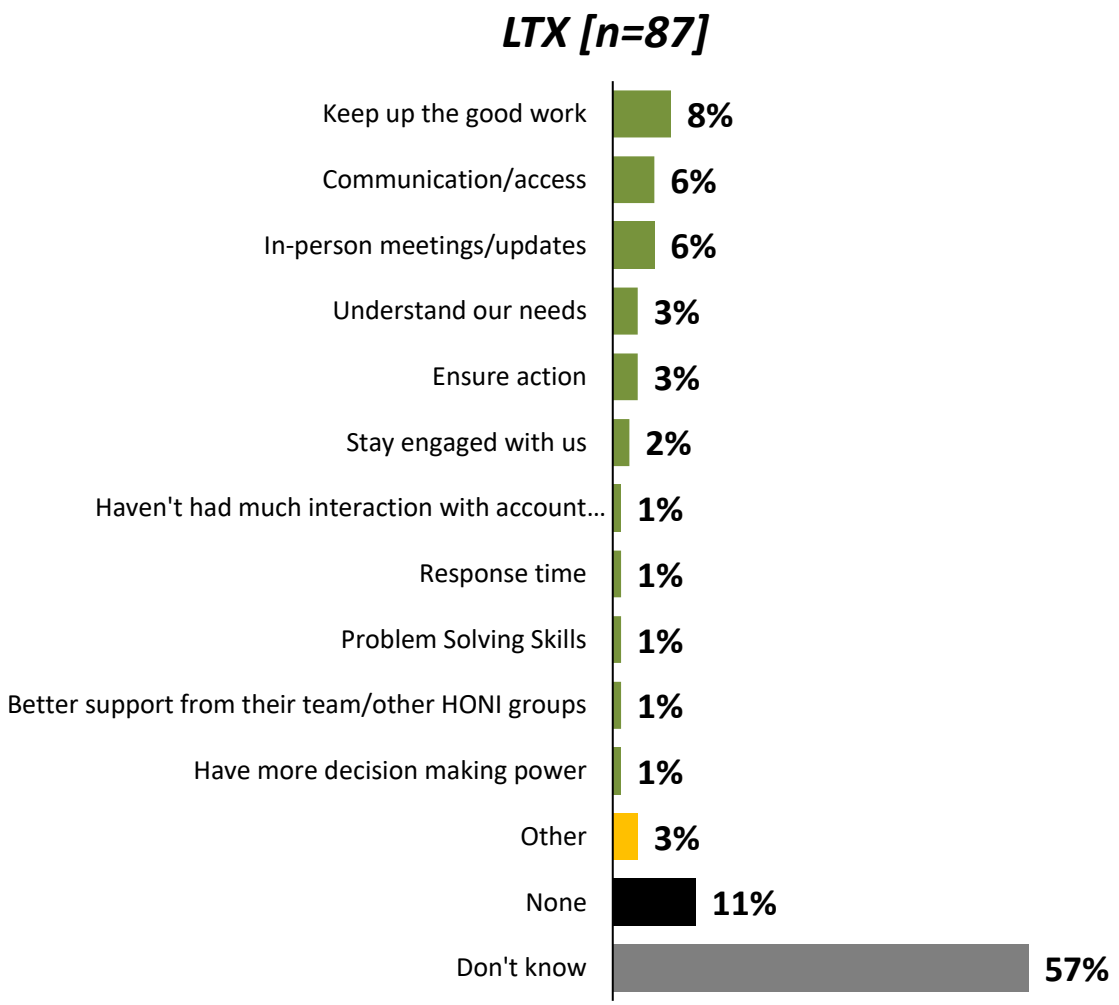
Key Insights

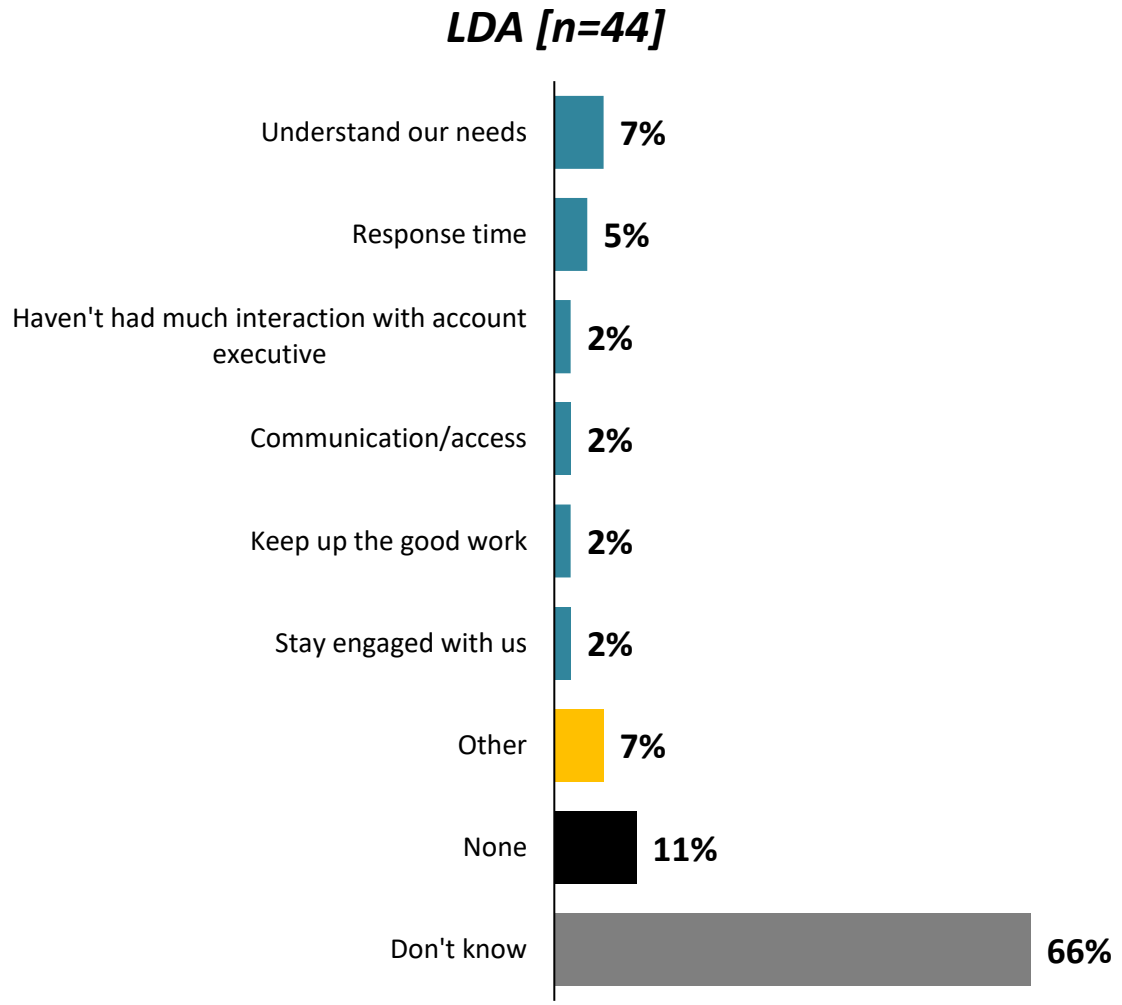
- For LDA customers, their top three reasons for their satisfaction with their Key Account Executive are 'responsiveness/accessibility', 'understands our needs/knowledgeable' and 'quality of service/helpfulness'

***Note**: Small n size, results should be interpreted with caution.

How AE Can Improve Service: LTX customers say to ‘keep up the good work’, while LDA customers say to ‘understand our needs’

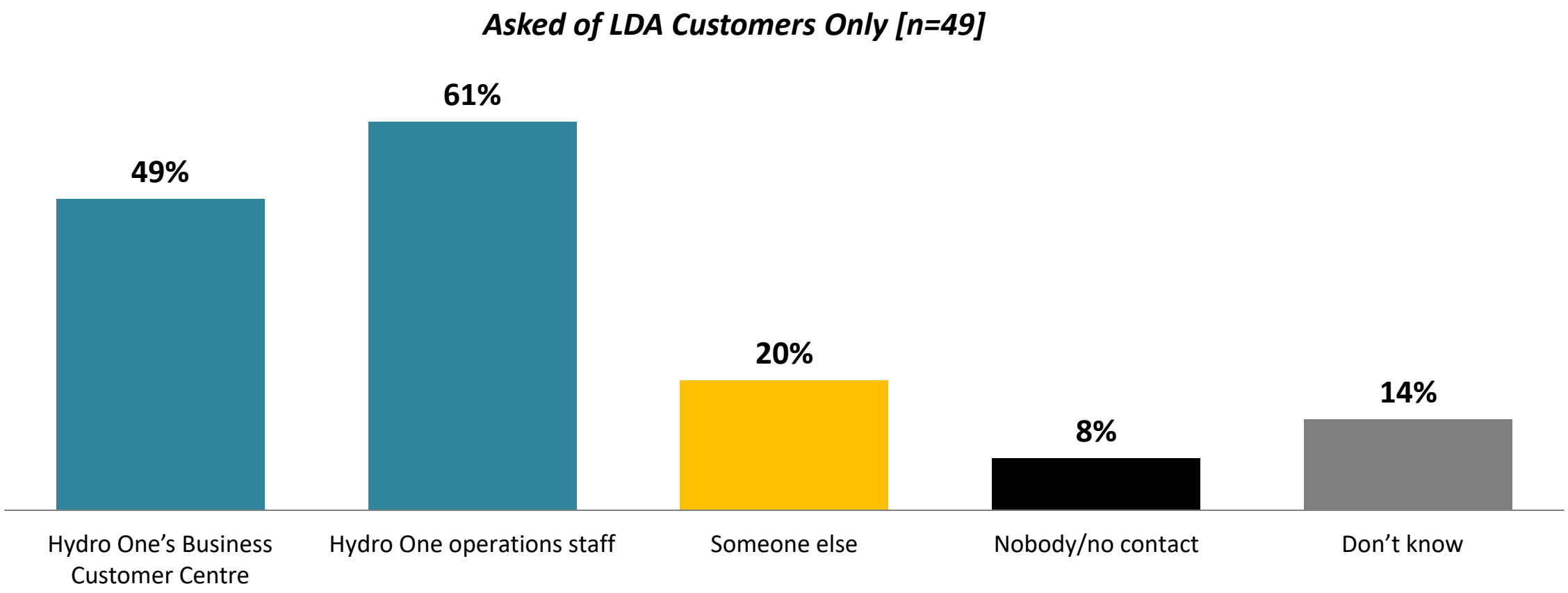
Q What, if anything, can your Key Account Executive do to better serve you and your organization?
[Asked of those that have had an interaction with their Key Account Executive]





Organization Contact: Half (49%) have had contact with the Business Customer Centre and 61% have had contact with operations staff

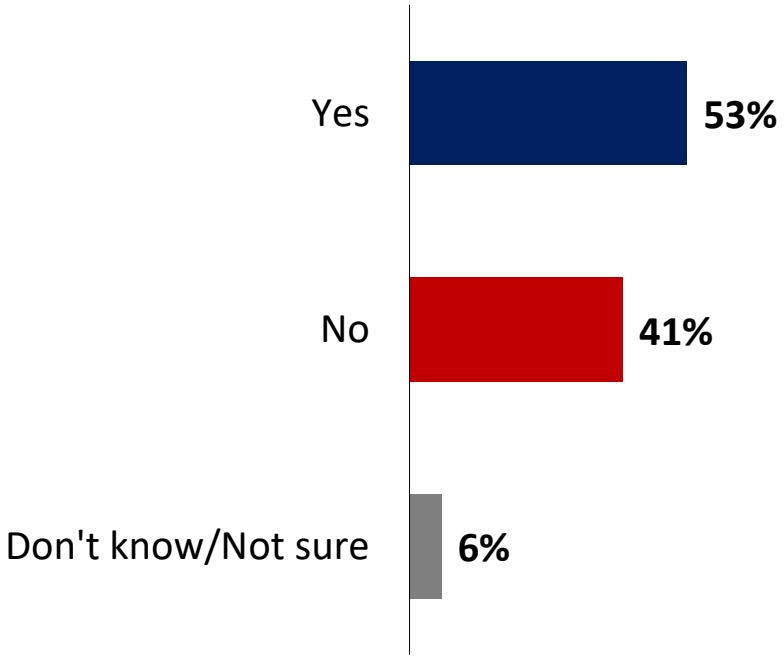
Q Over the past year, who has your organization had contact with (either initiated by your organization or when they contact you)…?
[Asked of LDA respondents only]



Hydro One's Business Customer Centre: Half (53%) of LDA customer have heard of the BCC; among them, 58% are satisfied

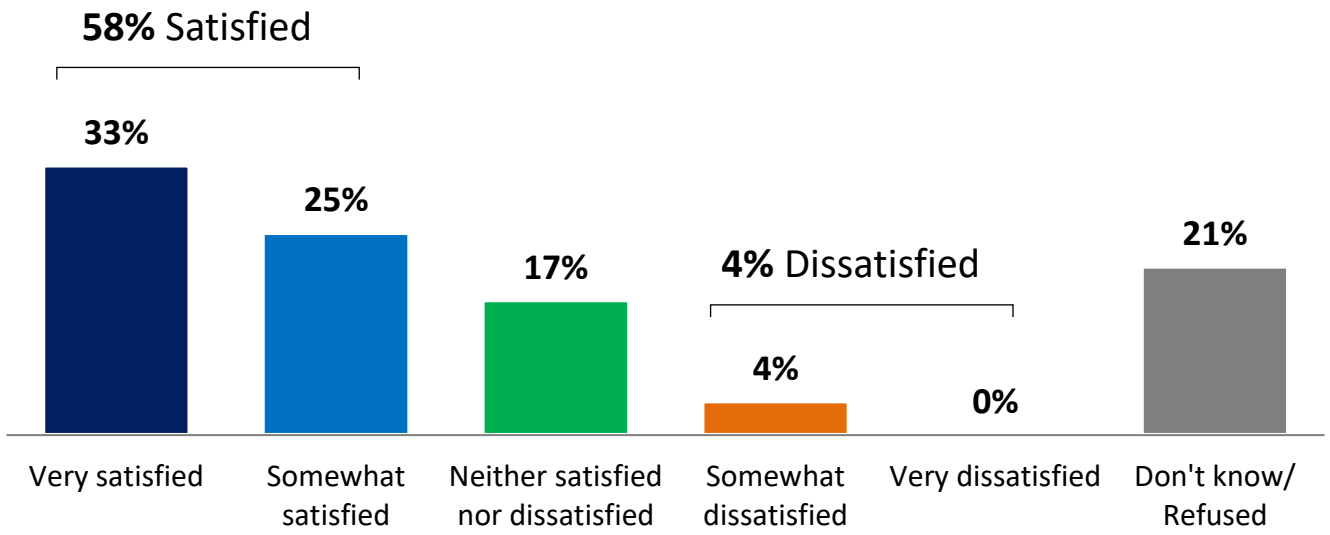
Q Before this survey, had you ever heard of Hydro One's Business Customer Centre?
[Asked of LDA customers only]

Asked of LDA customers only [n=49]



Q Overall, how satisfied or dissatisfied are you with the service provided to your organization by Hydro One's Business Customer Centre?
[Asked of LDA customers who have had contact with the Business Customer Centre]

Asked of LDA customers who have had contact with the Business Customer Centre [n=24]



Reason for Dissatisfaction and Suggestions

Q Is there any particular reason why you're dissatisfied with the Business Customer Centre?
[Asked of LDA customers who are dissatisfied with the Business Customer Centre]

Asked of LDA customers who are dissatisfied with the Business Customer Centre [n=1]

Verbatim
"See previous answers. Also a billing error on hydro's part took several weeks and several reminders to be corrected."

Q Is there anything in particular the Business Customer Centre can do to improve your organization's experience?
[Asked of LDA customers who have heard of the Business Customer Centre]

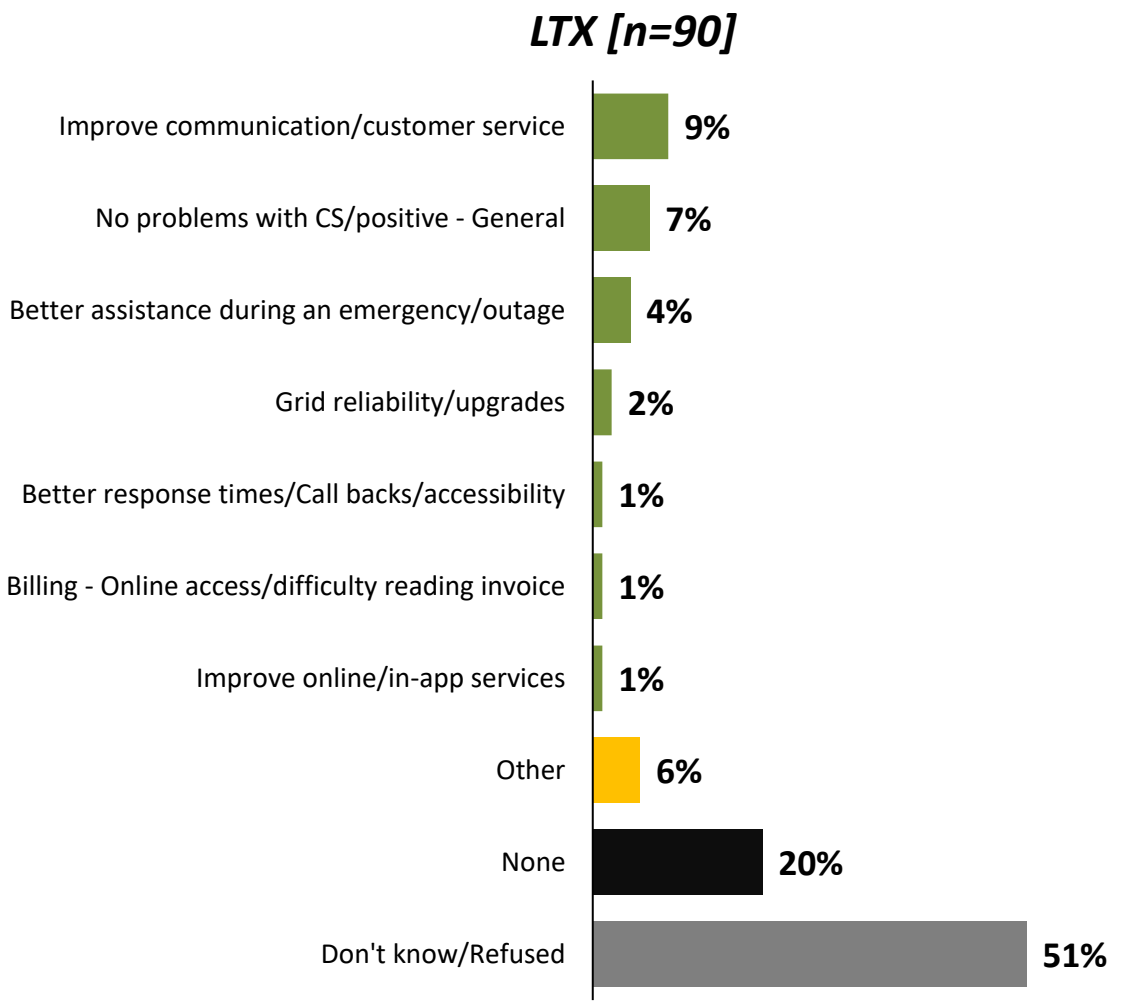
Asked of LDA customers who have heard of the Business Customer Centre [n=24]

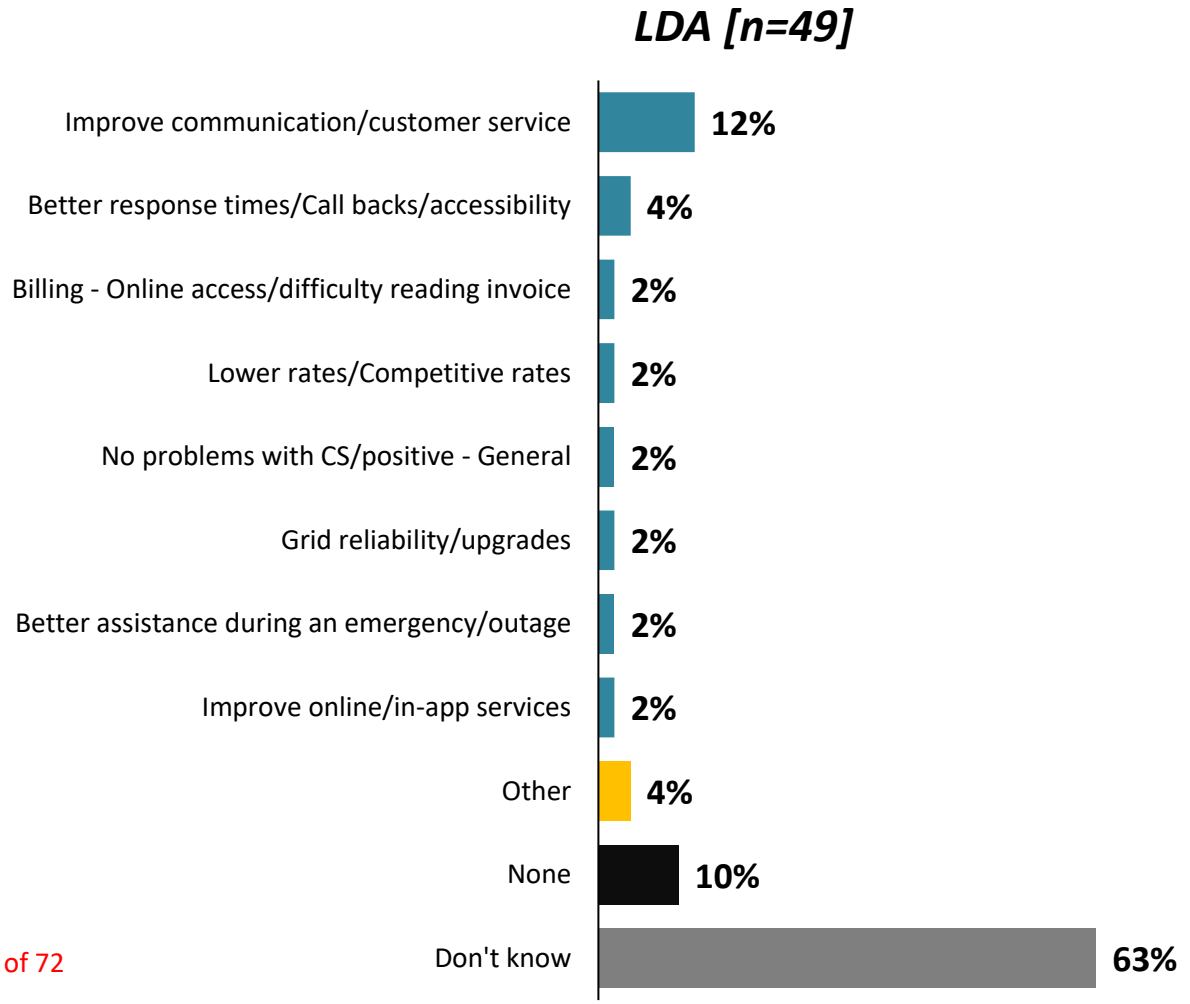
Verbatim (n=21 'Don't know')
"Improve on the turnaround on our requests."
"Live DATA i.e: live meter readings."
"See previous answers."

Customer Service Improvements: Both LTX and LDA customers top response is ‘improving communication’; most ‘don’t know’

Q Thinking about all the different touchpoints you have with Hydro One, is there anything in particular Hydro One can do to improve your organization’s **customer service** experience?

[Asked of all respondents]





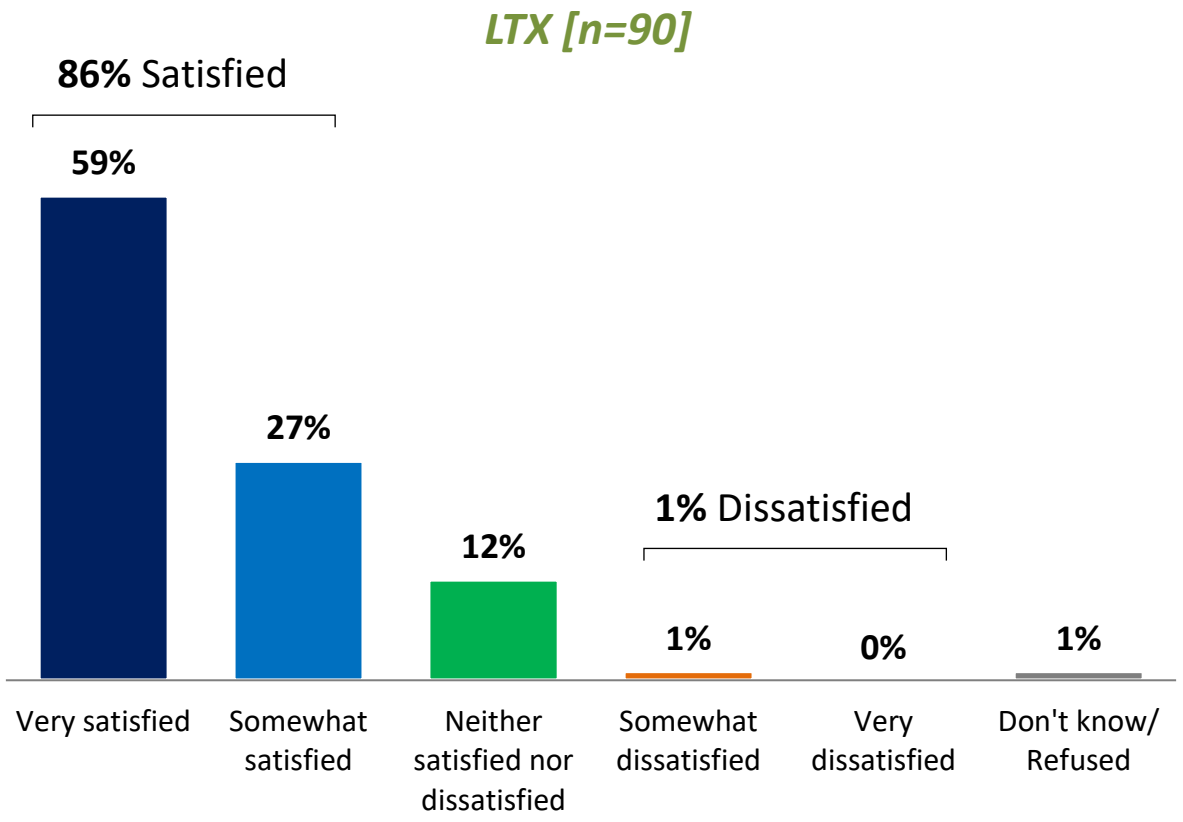
Communications

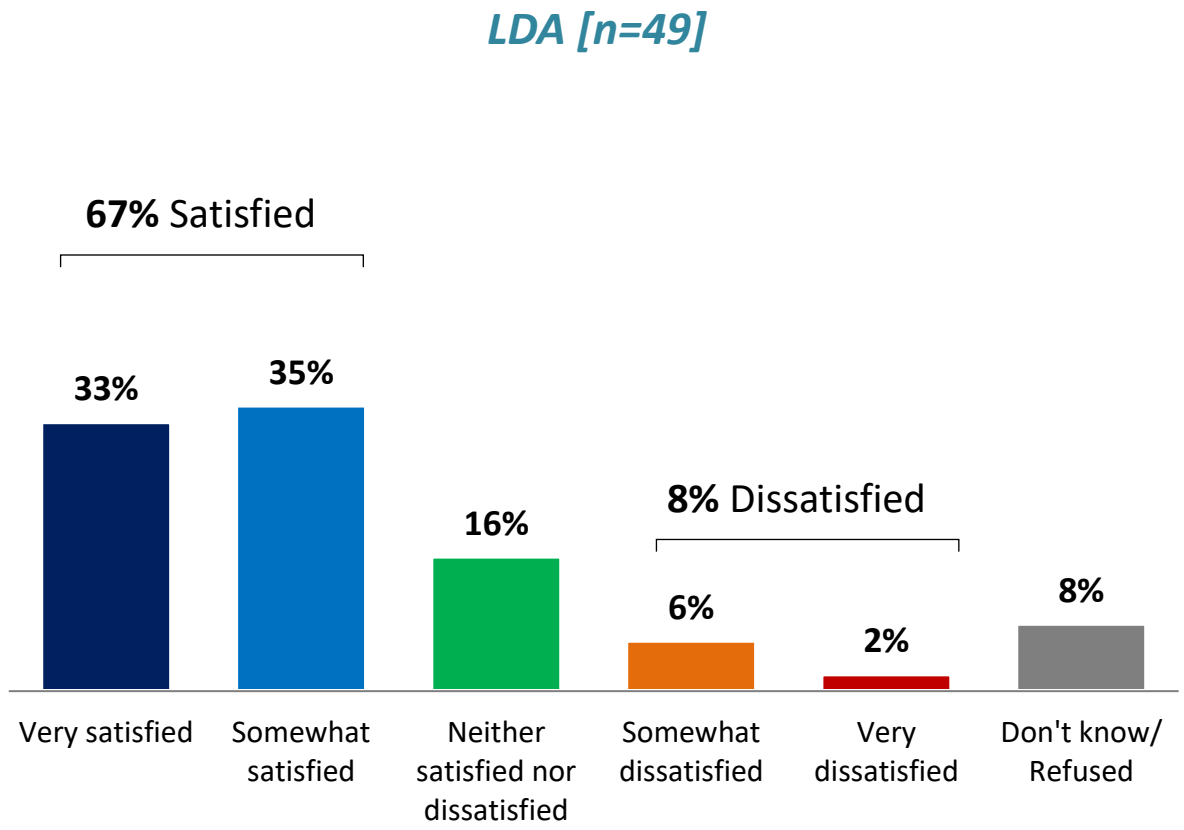
INNOVATIVE RESEARCH GROUP

Communication Satisfaction: 86% of LTX customers are satisfied with the way Hydro One communicates along with 67% of LDA customers

Q Thinking about your organization's interactions with Hydro One over the **past year** – either via email, over the telephone, or with in-person meetings – how satisfied or dissatisfied are you with the way Hydro One communicates with you and your organization?

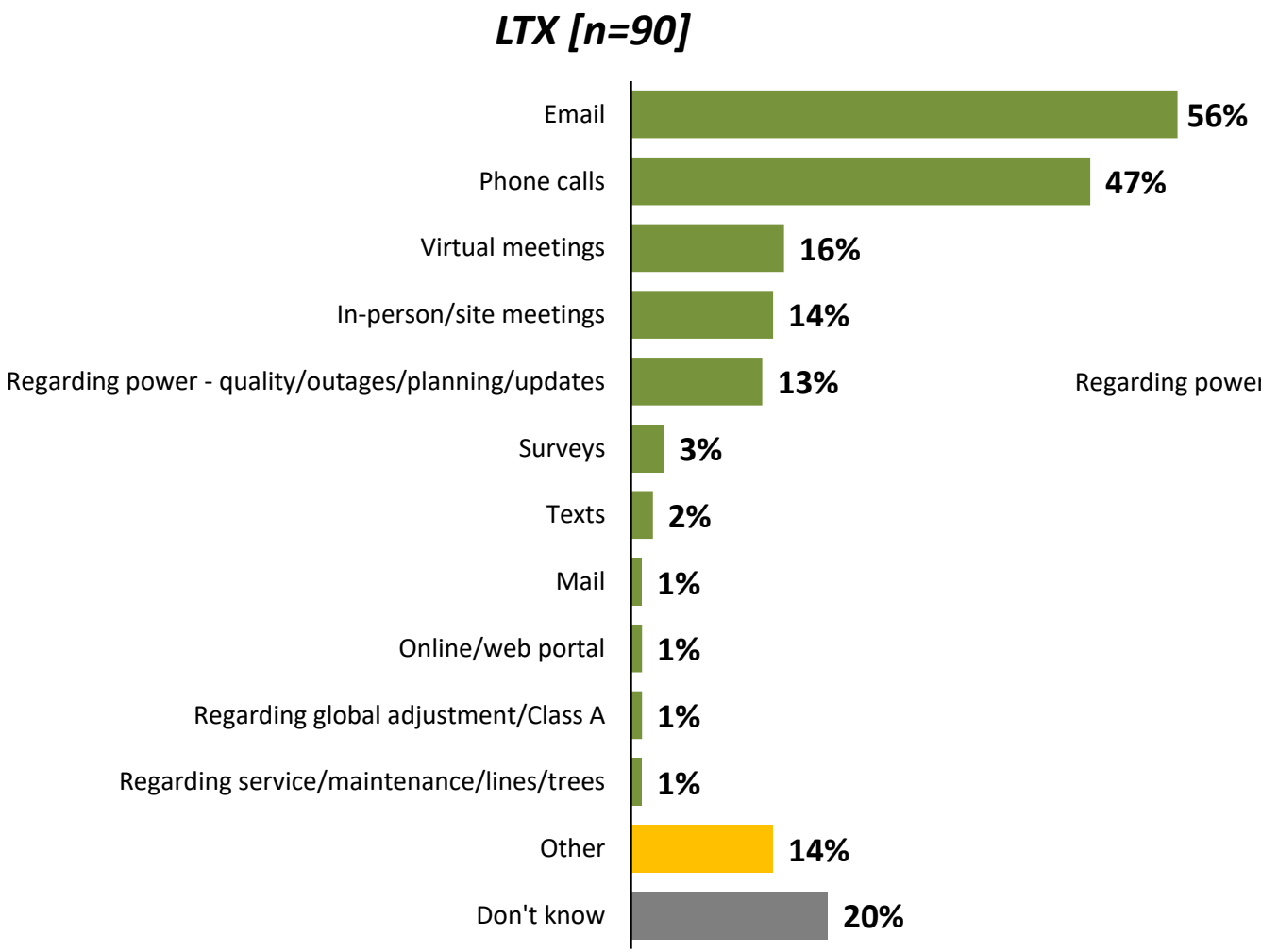
[Asked of all respondents]

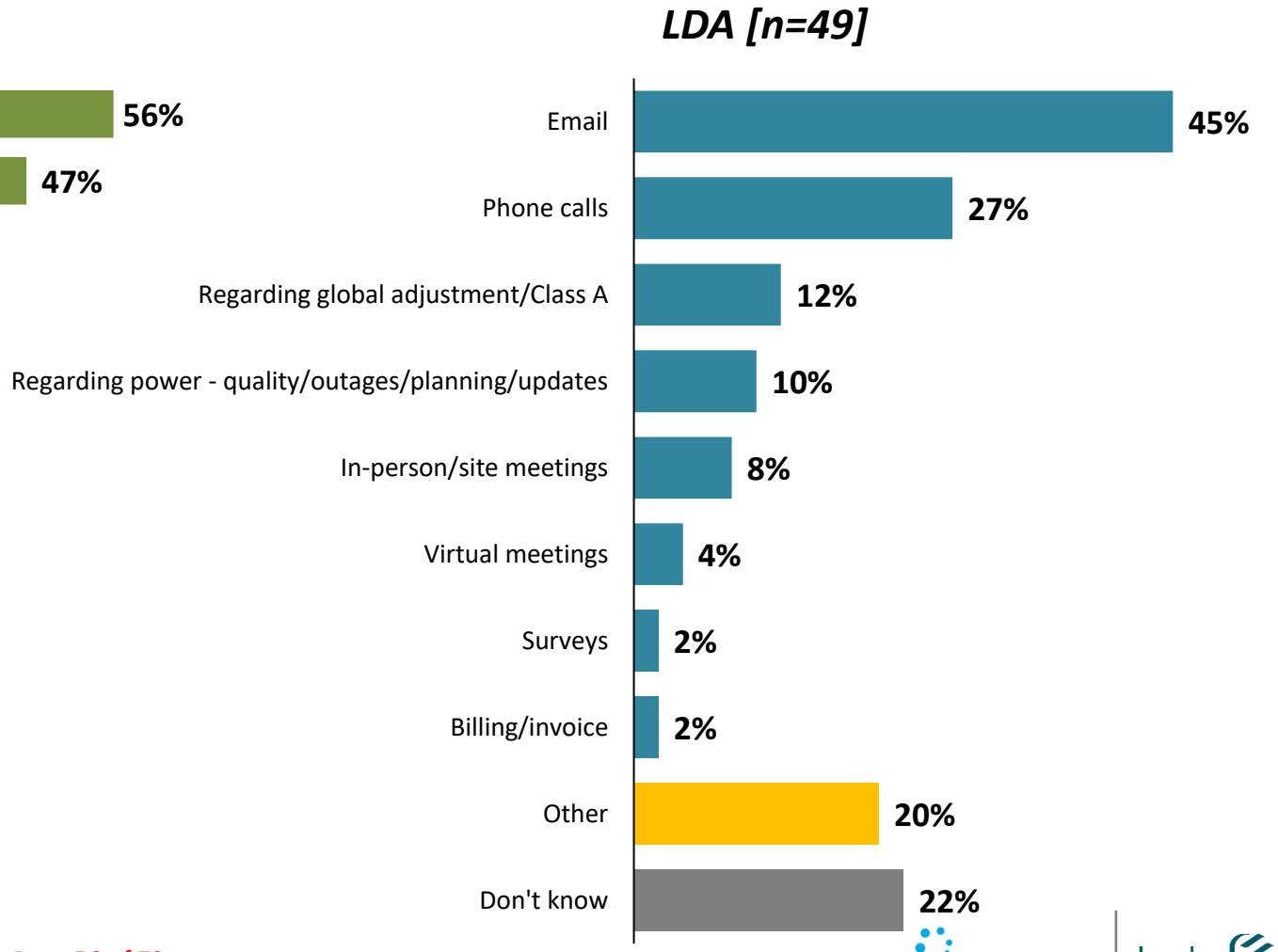




Types of Communication: Top communications recalled for both customer types are emails and phone calls

Q What types of communications do you recall receiving from Hydro One?
[Asked of all respondents]

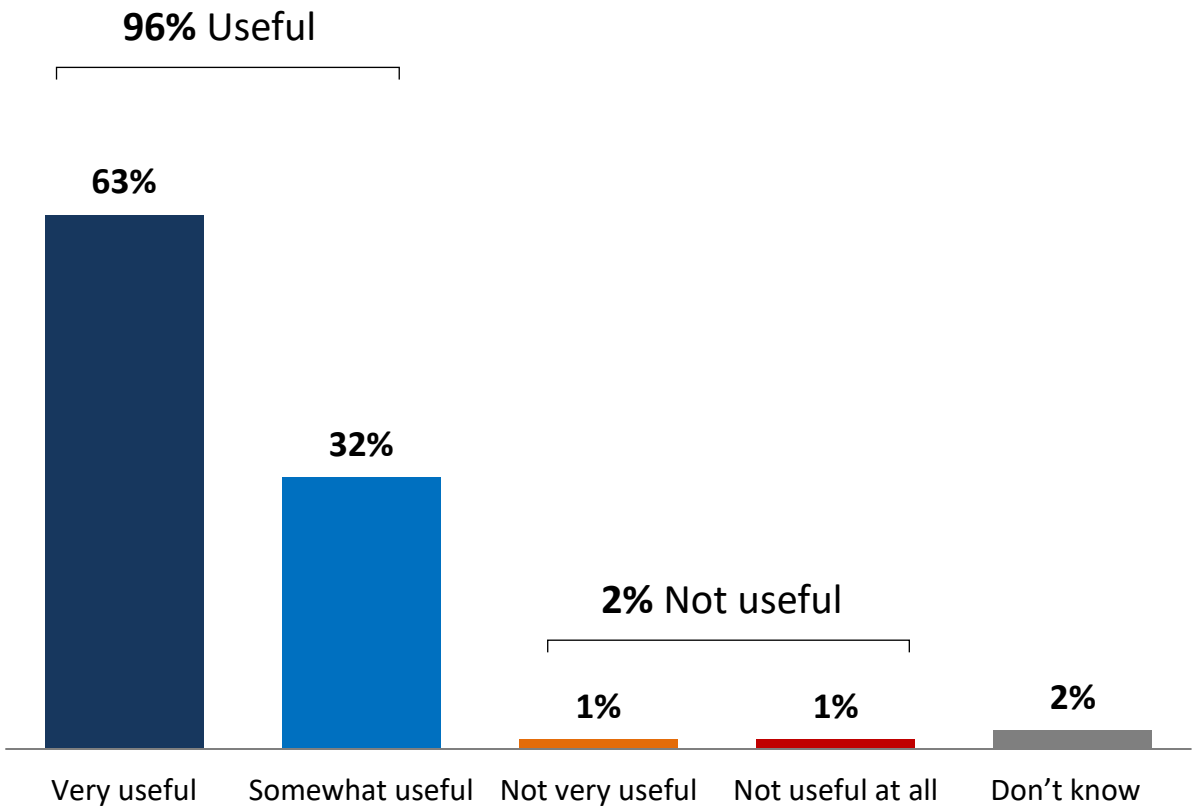




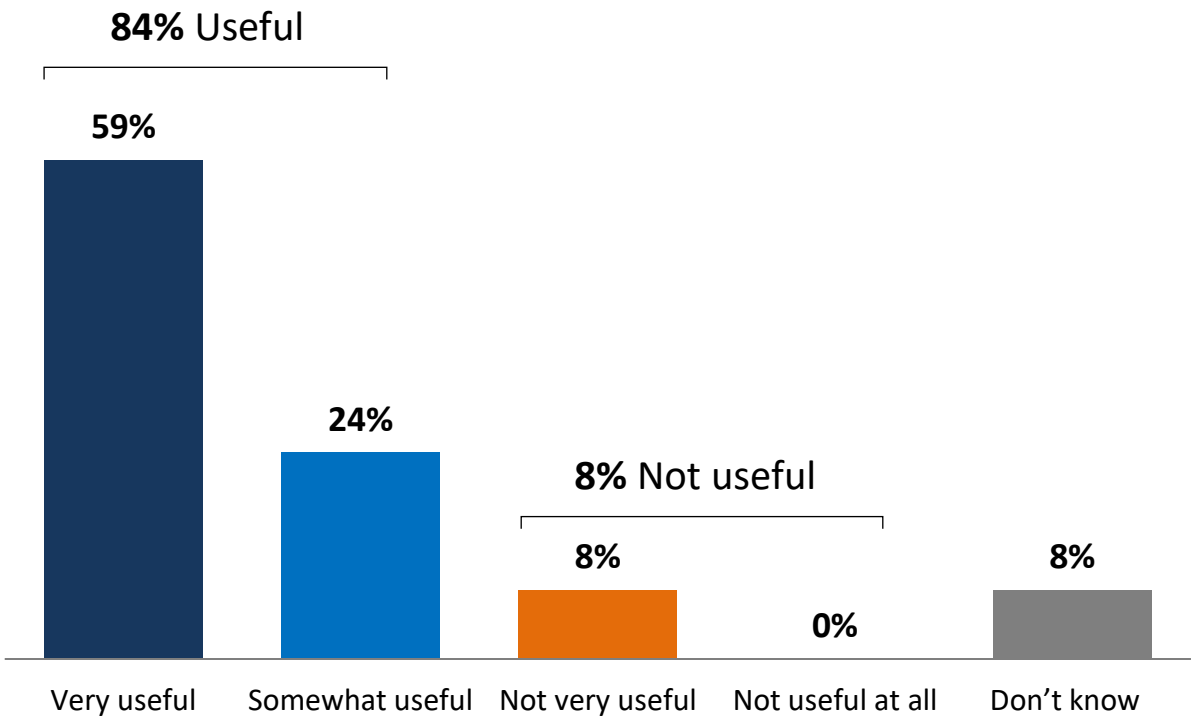
Usefulness of Information: A strong majority of LTX and LDA customers found the information they received very useful

Q Generally speaking, how useful was the information you received?
[Asked of all respondents]

LTX [n=90]

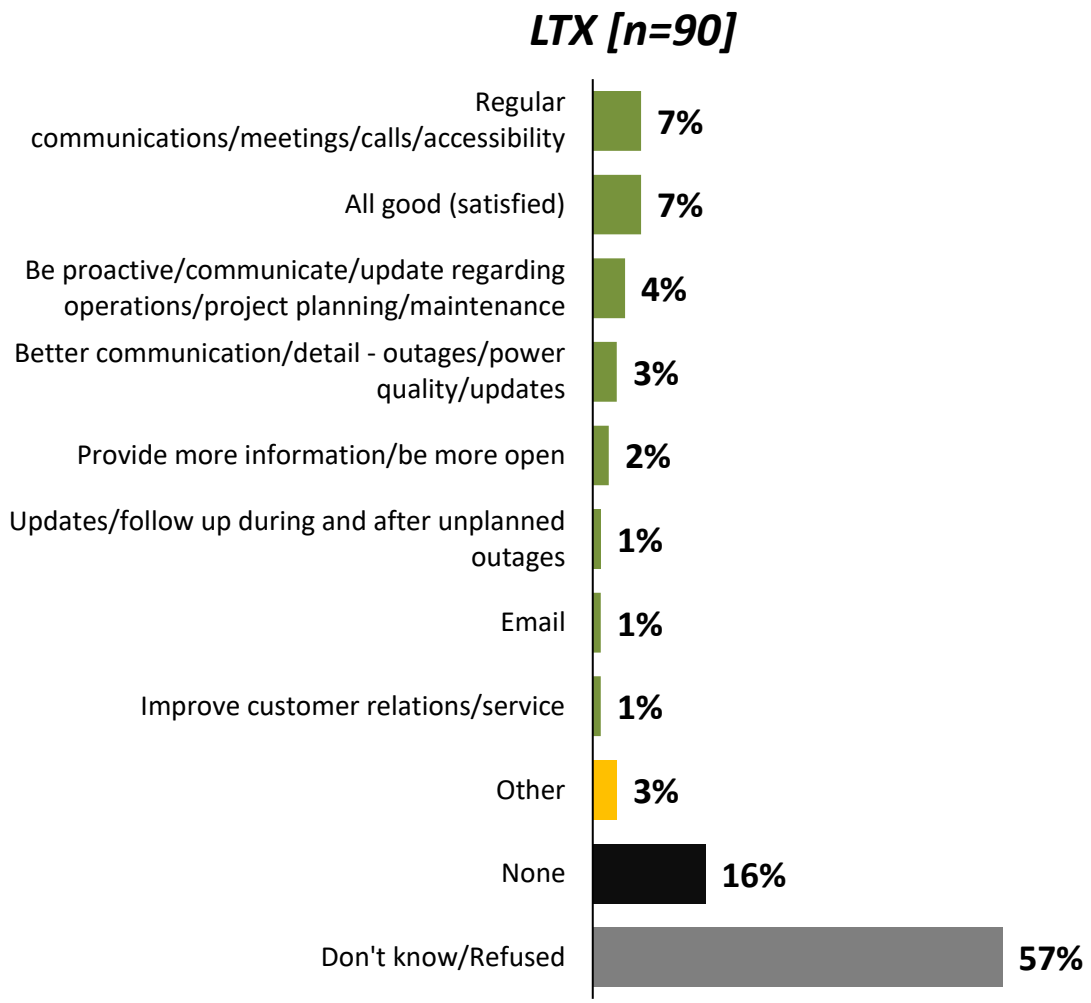


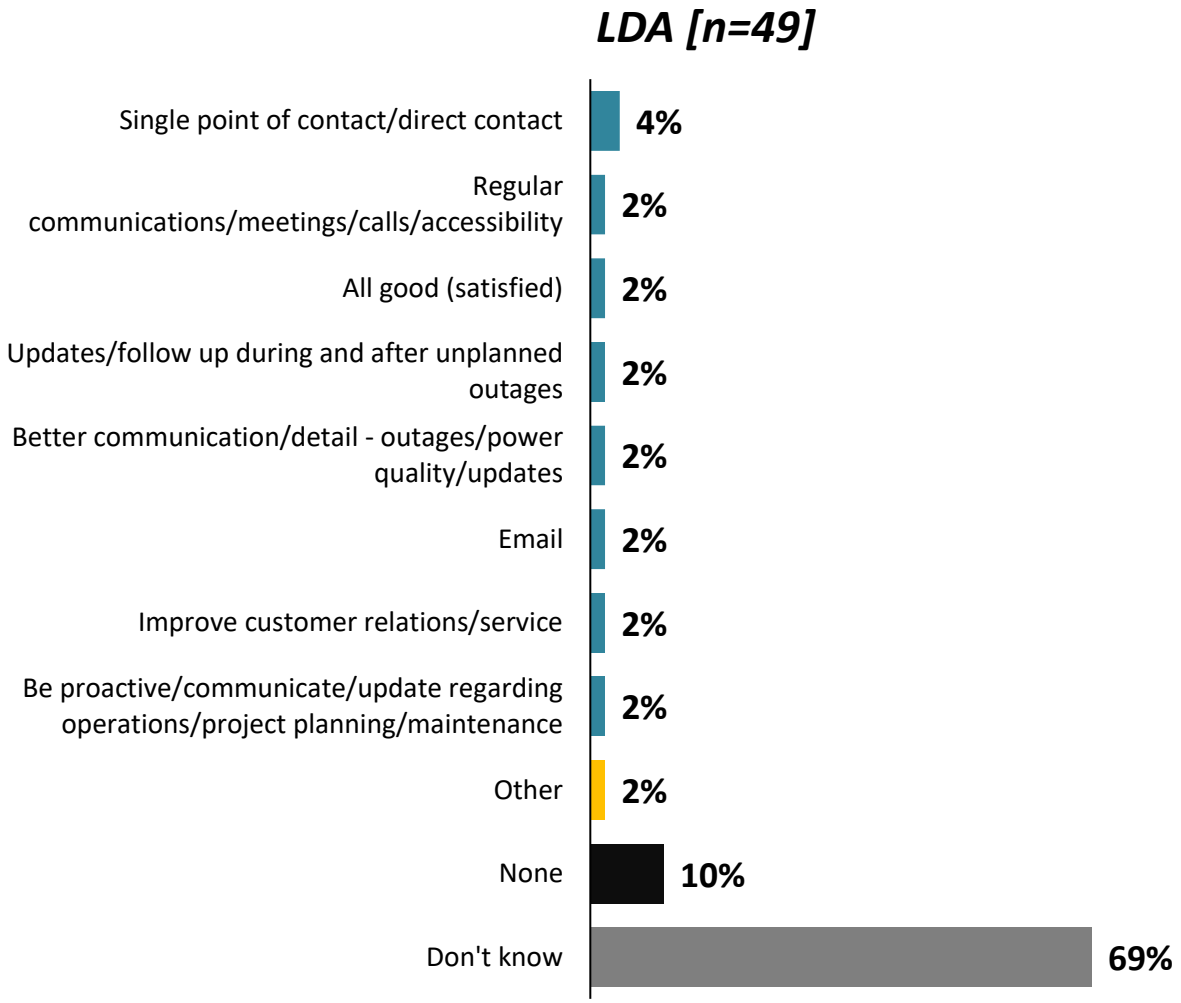
LDA [n=49]



Improvement with Communication: Most customers don't know what Hydro One can do to improve the way it communicates

Q Is there anything in particular that Hydro One can do to improve the way it communicates with you or your organization?
[Asked of all respondents]



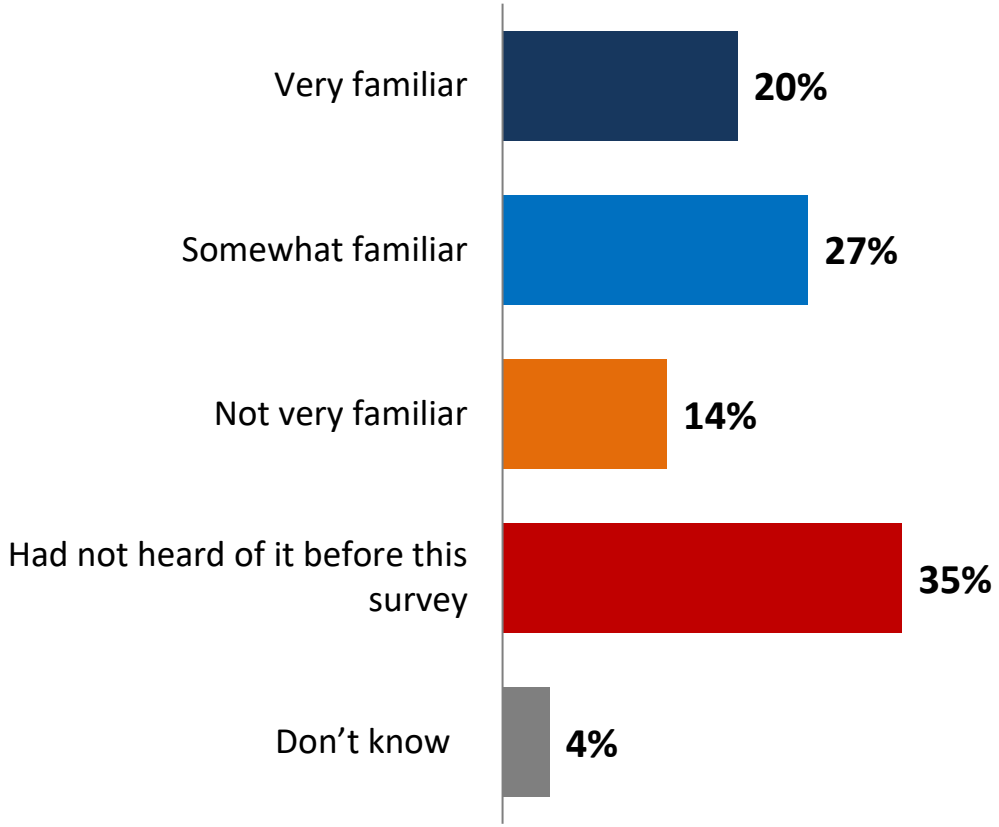


LDA **Online Interval Data Portal:** 3-in-5 (61%) have heard of the Online Interval Data Portal; among them, 2-in-5 (40%) are satisfied

Q How familiar are you with Hydro One's **Online Interval Data Portal**?

[Asked of LDA customers only]

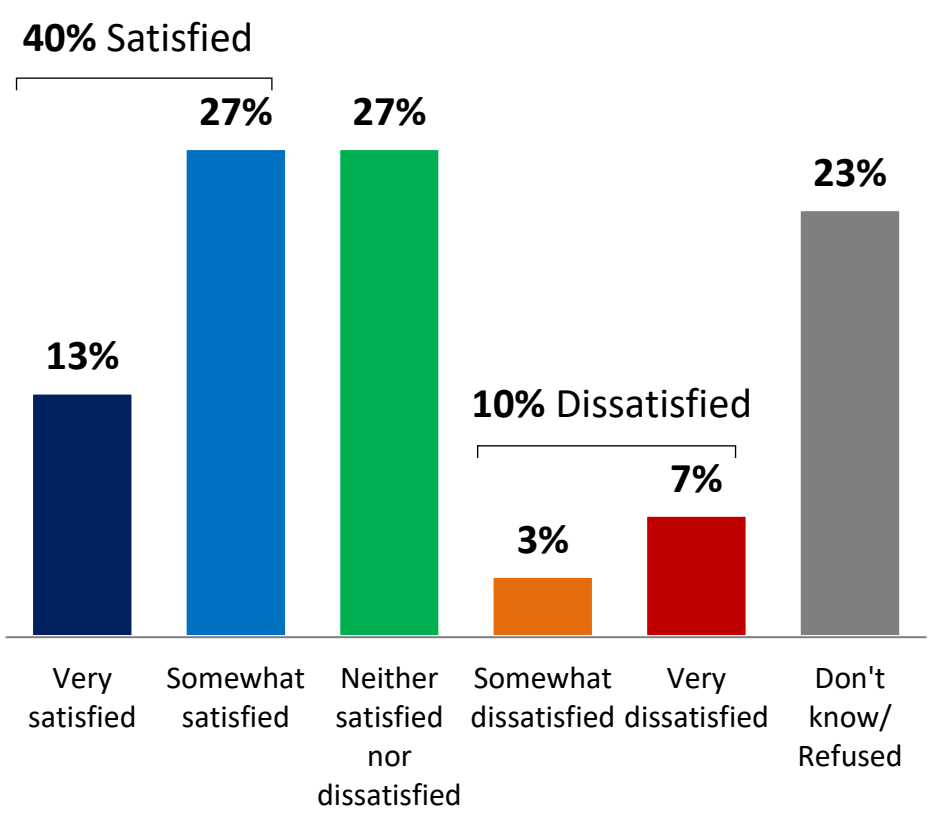
Asked of LDA customers only [n=49]



Q Overall, how satisfied or dissatisfied are you with Hydro One's **Online Interval Data Portal**?

[Asked of LDA customers only who have heard of the online interval data portal]

Asked of LDA customers who have heard of the online interval data portal [n=30]



Reason for Dissatisfaction and Suggestions: LDA customers would like ‘real time data usage’ to be included

Q Is there any particular reason why you’re dissatisfied with Hydro One’s **Online Interval Data Portal**?
[Asked of LDA customers who are dissatisfied with the online interval data portal]

Asked of LDA customers who are dissatisfied with the online interval data portal [n=3]

Verbatim
“Ours does not work.”
“Data extraction from the system is not user friendly.”

Q Is there anything else you would like to include on Hydro One’s **Online Interval Data Portal**?
[Asked of all LDA customers]

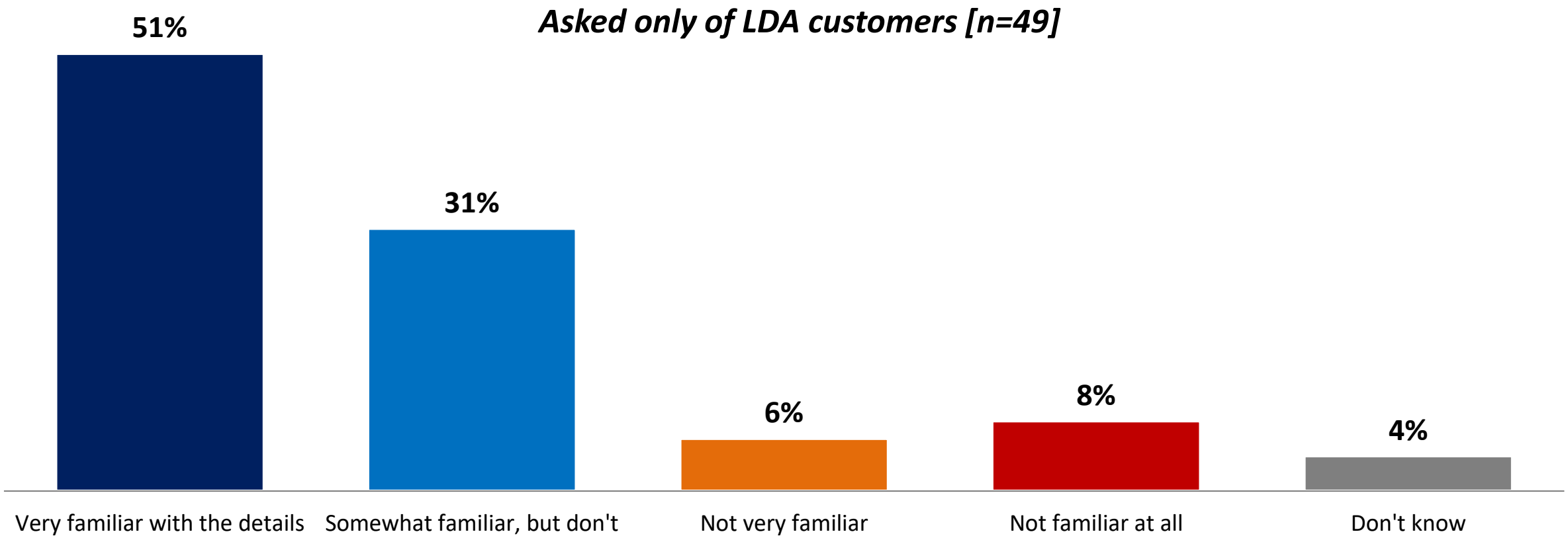
Asked of all LDA customers [n=36]

Verbatim (n=24 ‘Don’t know’)
“Real time or next day data.”
“Provide more data points from the meters.”
“I currently do not visit this portal on a regular basis.”
“Currently data lag by two or three days. Nice to have shorter gap.”
“We rarely use it as we have our own metering system and access to Hydro One's meter for our site.”
“I've never heard of this portal. Then again, I'm not in Accounts Payable, maybe this is for them? We are in Operations.”
“Make it easier please to navigate through the portal.”
“Every available reporting tool with live data that will suffice any reporting system. Currently we are looking at corporate initiatives to install hardware on our utilities for the purpose of data collection and monitoring. Probably already exists to some extent.”
“it is offline sometimes and usage data takes days to be updated.”
“Is it back online? I am getting my data emailed to me. It is not very useful since it is older data.”
“Access meter data is very slow.”

Rates and Billing

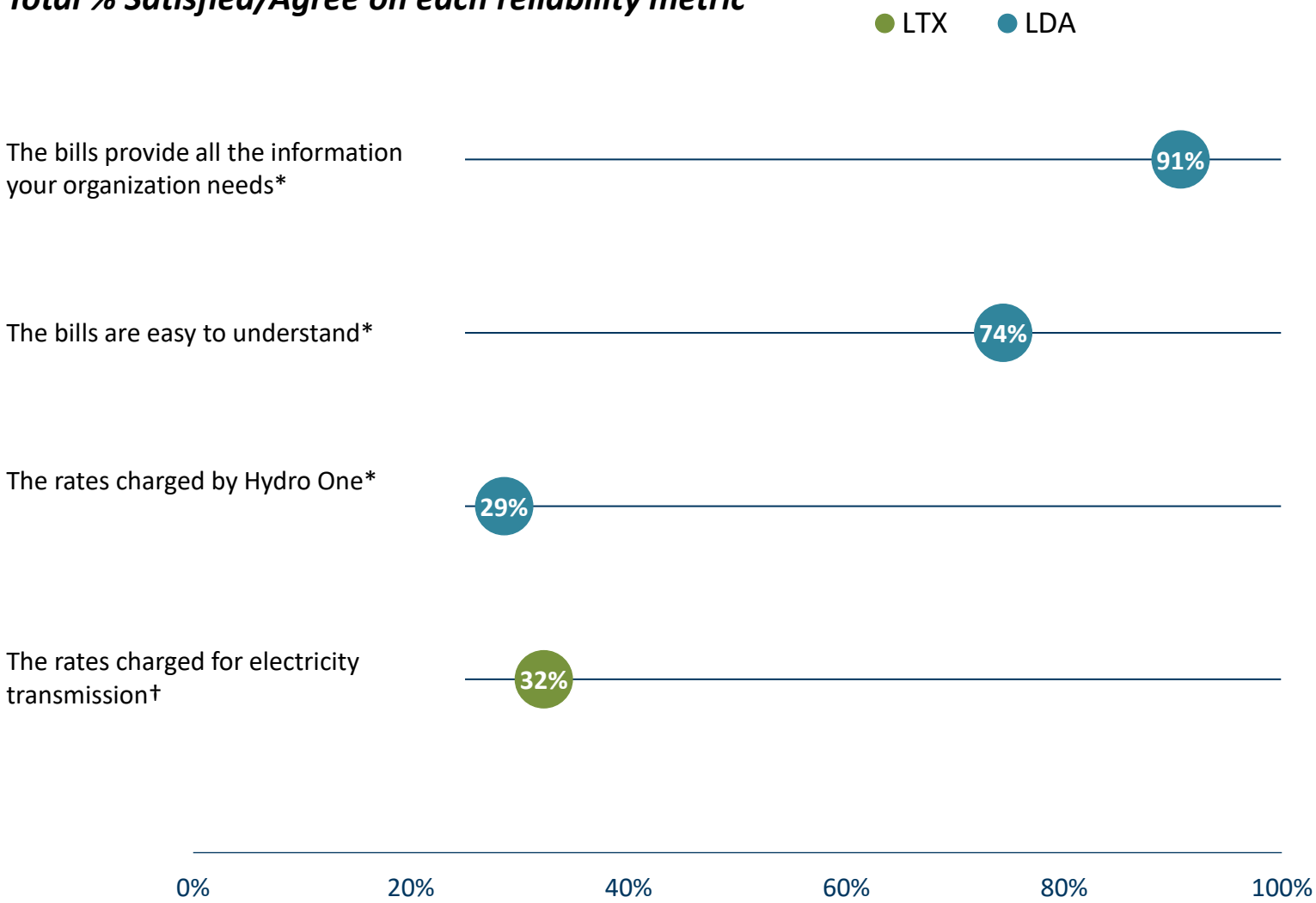
Bill Familiarity: 4-in-5 (82%) LDA customers are familiar with their organization's Hydro One bill(s)

Q How familiar are you with your organization's Hydro One bill(s)?
[Asked only of LDA customers]



Rates and Billing Satisfaction | Summary

Total % Satisfied/Agree on each reliability metric



Key Insights

- Nearly every LDA customer agrees that the bills provide all the information their organization needs
- For each of LDA and LTX customers, only around 1-in-3 are satisfied with the rates charged by Hydro One

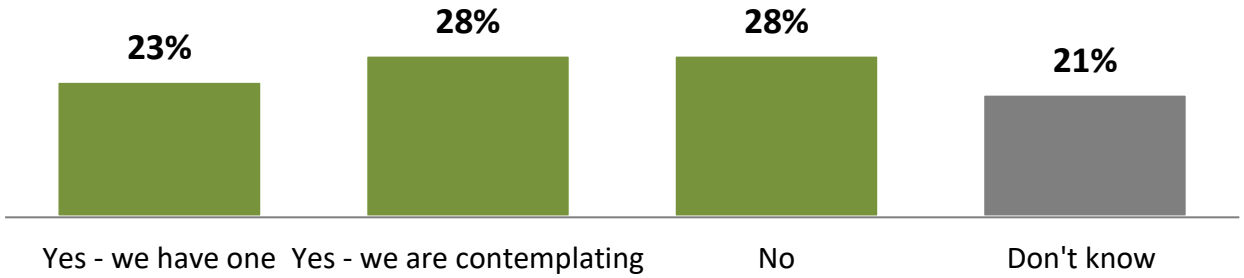
Note: Percentages represent total satisfied/dissatisfied (very and somewhat) or top/bottom two collapses for 5-point scales
*Asked only of LDA Customers.†Asked only of LTX Customers.

Additional Questions

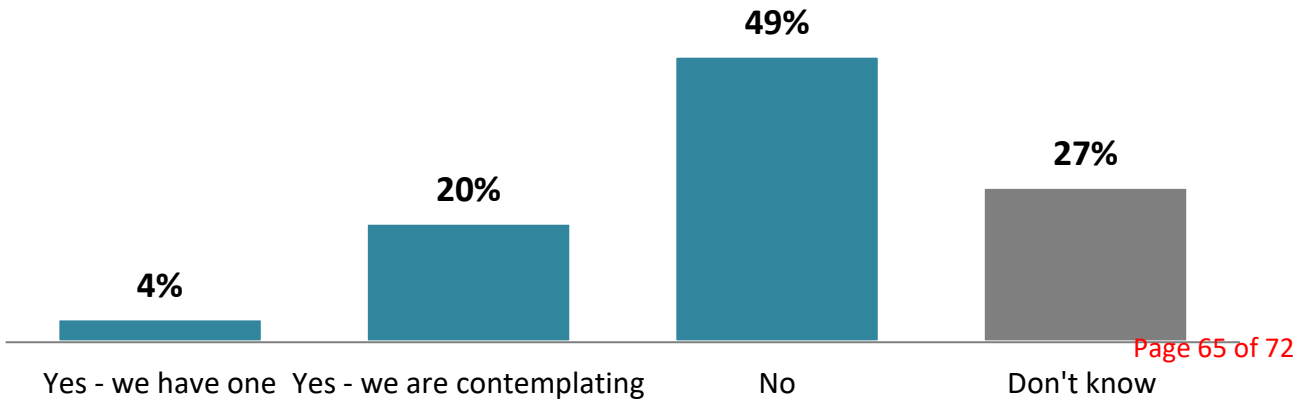
Electrification Strategies: LTX customers are more likely than LDA customers to have or be considering electrification strategies

Q Does your organization currently have, or are you contemplating putting together, a transportation electrification strategy?
[Asked of all respondents]

LTX [n=90]

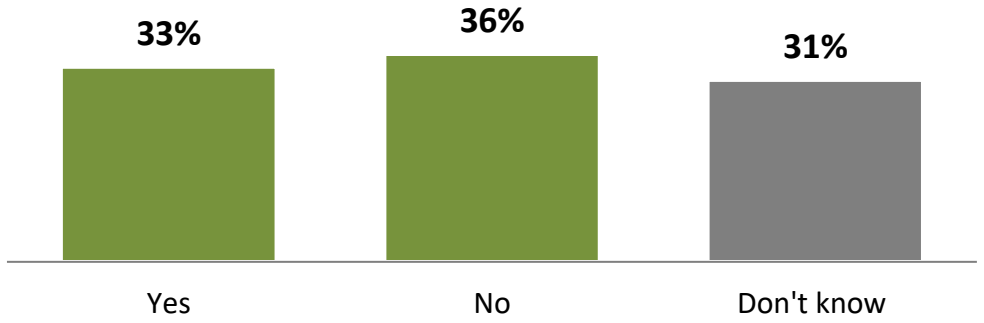


LDA [n=49]

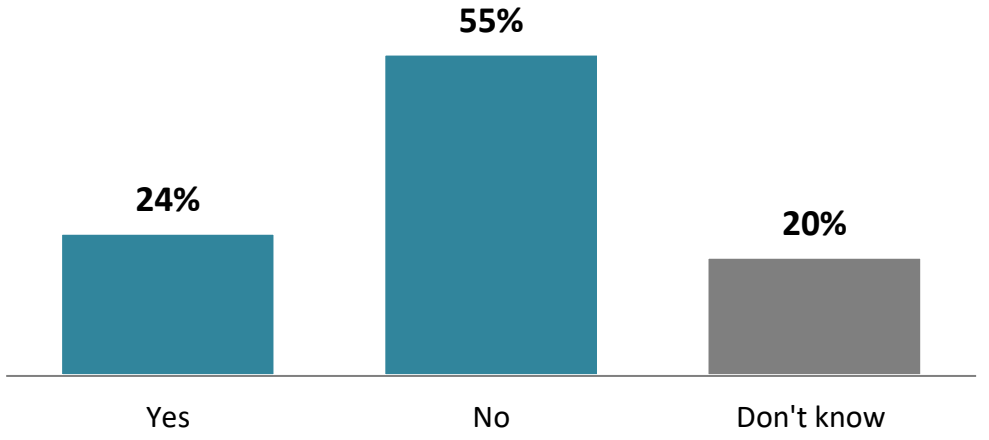


Q Are there any other electrification strategies that you have in place or are considering?
[Asked of all respondents]

LTX [n=90]



LDA [n=49]

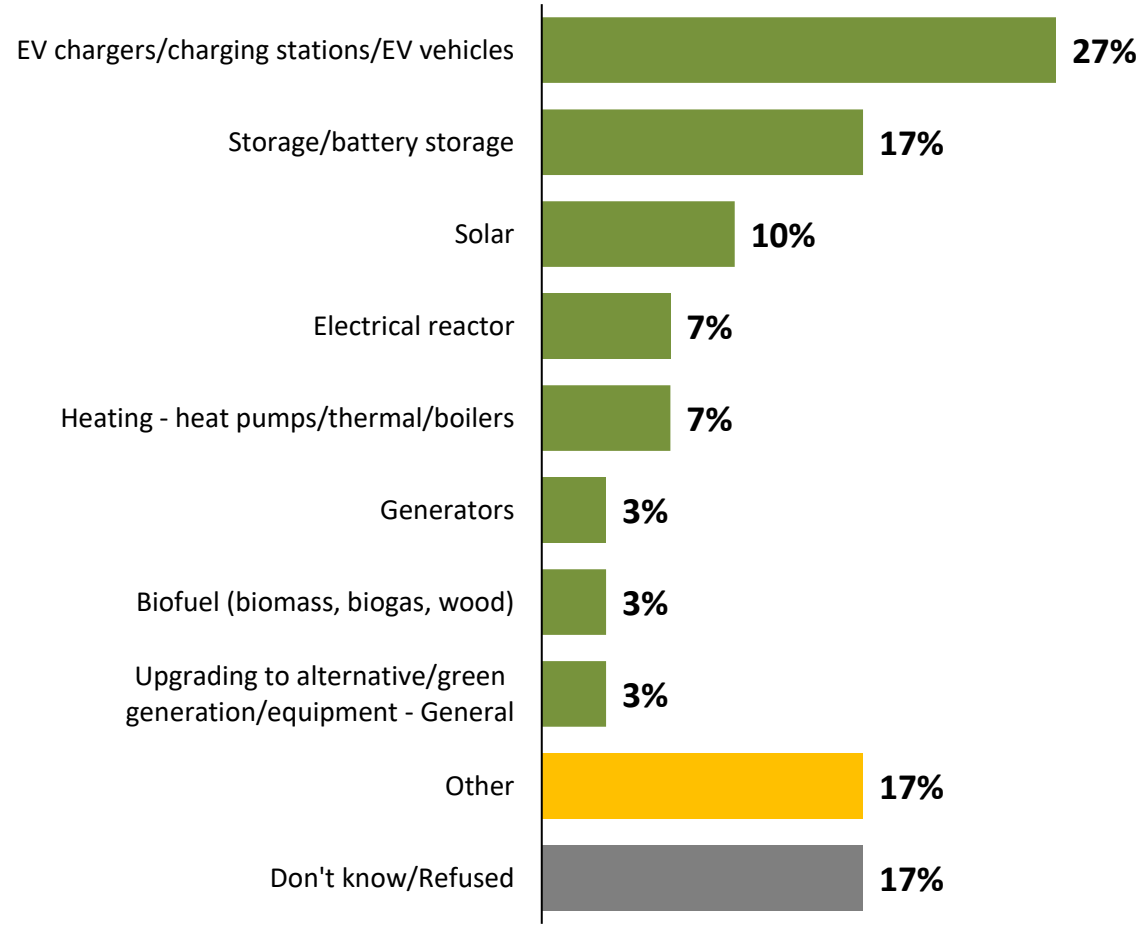


Electrification Strategies: The top electrification strategy for LTX customers is EV chargers/stations/vehicles

Q Please describe the types of electrification strategies you either have in place or which you are currently developing?

[Asked of those who have any electrification strategies in place or are considering]

LTX [n=30]



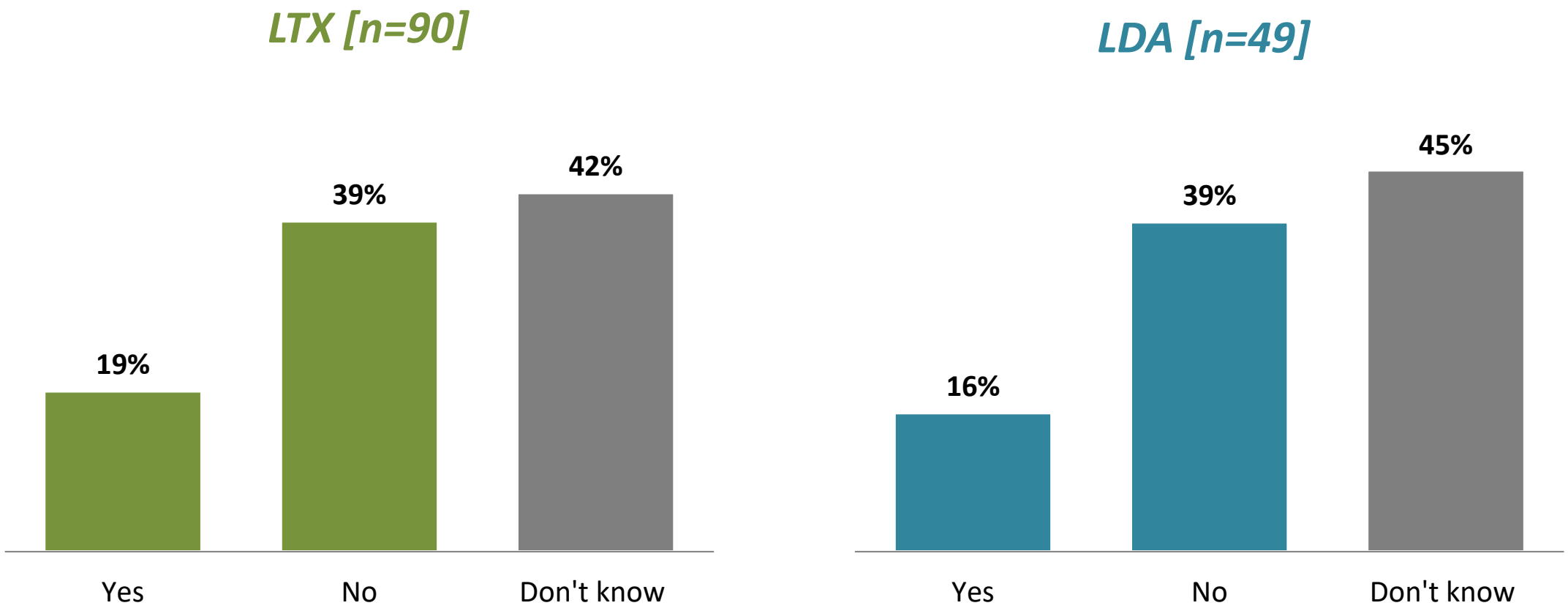
LDA [n=12]

Verbatim (n=1 'Don't know')
"Battery Energy Storage System."
"GA mitigation generation/storage capacity."
"Heating our buildings and our hot water needs. Also contemplating a new Water Park, that we should consider suing more sustainable methods of heating very large quantities of water."
"Looking into electric fork trucks."
"Use of electricity for additional heating and process heat application due to reduce CO2 reduction."
"EV's and solar panels."
"Increase our power output production."
"Potentially EV charging stations."
"Optimize the running of electrical equipment."
"Battery Energy Storage System."

Additional Services: 1-in-5 (19%) of LTX customers & 16% of LDA customers want additional services from Hydro One

Q Are there any additional services that you would look to Hydro One to provide and would be willing to pay for, or perhaps services that are currently offered by Hydro One that could be done differently to better fit your organization's needs?

[Asked of all respondents]



Additional Services

Q Please describe what new services you would like, or how you would like existing services to be changed.

[Asked of those who say there are other services they would look to Hydro One to provide]

LTX [n=17]

Verbatim (n=3 'Don't know)
"More of a One stop person for the problem that has a solution background."
"As mentioned earlier more reliable tele protection for the transmission system."
"The electrical utility industry would benefit greatly if Hydro One was more proactive about sharing its standards, research, and study results. Sharing the Technical Interface Requirement documents is a great example of this, and more of this type of sharing would create greater alignment and overall customer satisfaction."
"Hydro One should be our Meter Service Provider. Gives Hydro One a reason to visit site and have eyes on property. Interact with our staff at an operational level. Keeps the best of the best engaged in our operation and potentially highlights problems at an earlier stage. I think this has been a significant lost benefit to both Hydro One and its major customers."
"We have submarine cable in our territory - We are in talks with HONI as to how they can be of assistance to us as we don't have the resources or expert knowledge when it comes to maintenance/replacement."
"Hydro one has significant equipment and infrastructure I would like to investigate using Hydro one as a service provider to implement maintenance on our transmission and distribution system. I'd also like to investigate some alternative supply configurations for our system."
"Utilizing/procuring your engineering team to provide us with their expertise in P&C, CIAs, and distribution system planning."
"Interval data portal is great, however, also relies on the user to monitor, structure, maintain. Would be interesting to consider a more proactive supported portal with a HONI individual that could manage and provide insight, reports, optimization advice, etc for a fee."
"We are looking for increased power to our area."
"Work together to see what can be done to allow more solar power on distribution systems."
"I WOULD LIKE TO KNOW WHAT TYPE OF SERVICES (DISTRIBUTION OR FOR SUBSTATIONS) H1 CAN OFFER."
"Hydro One has expertise in high voltage lines, associated structures, line protection, teleprotection and engineering. There is an opportunity for Hydro One to grow in this area if they offer a cost at a reasonable market value. In the past, the cost of these services has not been competitive with market pricing."
"Installing the MSO on the incoming line."
"We believe a point-to-multipoint transfer trip scheme would be helpful in furthering connections of DER. We would expect Hydro One has resources to research and deploy such schemes rather than smaller distribution utilities. As well, we would be interested to know if Hydro One has further plans to reduce available fault current at stations beyond the bus-tie reactors that have been placed at a number of stations."

Additional Services

Q Please describe what new services you would like, or how you would like existing services to be changed.
[Asked of those who say there are other services they would look to Hydro One to provide]

LDA [n=8]

Verbatim
“Small interruption and surge reporting. I can provide the date and time that our operation got taken down by a "power blip" and if hydro one could respond and source this issue it would be a great feature.”
“Analyse de qualité de l'onde et programme de réduction des impacts.”
“Re-Start the Strategic Energy Management Program. Our Resort is considering moving to a more sustainable operating program for heating our buildings, water and transportation needs. A BIG Picture Outlook on new technologies for the above from Hydro One would be very helpful.”
“Renewable electricity.”
“Power quality studies.”
“Ways to reduce electrical consumption.”
“Engineering consulting services to more efficiently and seamlessly use our backup generator in cases of power outages.”
“Have a distribution rate for fuel switching projects.”

Additional Comments

Q Before this survey concludes, do you have any additional comments or feedback you'd like to share with Hydro One?
[Asked of all respondents]

LTX [n=18]

Verbatim
"Hydro One like all public utilities exists to serve the communities they operate in. I sometimes feel like they forget that and believe they can operate in a bubble and keep doing their own thing."
"I am very satisfied with the service we get from Hydro One."
"Please work with Bell to find a solution to the failing tele protection infrastructure."
"Key account manager is an important role. We are very happy with the ability to reach out to the individual. We also know key individuals in the organization who work in our territory who are always willing to discuss any issues."
"Please refrain from increasing rates/costs."
"I would like to work more closely with Hydro One in the future."
"The price of the commodity as a result of lucrative generation contracts, are the main issue with our industry in this province."
"We appreciate our collaboration with Hydro One. They provide reliable power, great customer service, and care about our business."
"Hydro One has a very competent staff who is trying their best. Hydro One is a large organization but needs to look around what other LDCs are doing on Customer Service front and try to be more aware of working as a unified and cohesive unit rather than isolated units within the large corporation."
"Recommend senior management to be more visible. Recommend Hydro One take a proactive, forthcoming approach in discussions considering the best interest of its customers and end-use electricity customers."
"This questionnaire could be much shorter..."
"Stay the course, looking forward to live face to face interactions in the future."
"When clients call for new service, would it be able to not assume they are Hydro 2000 clients because their dwelling is within the township limit? Often we need to have the client look at the meter number to prove to your agent they are your clients."
"Hydro One does an excellent job in keeping us informed."
"Survey seems targeted to direct industrials versus generators."
"Please refrain from increasing rates/costs"
"This survey is more tailored to load customers rather than generation customers, so much of this questions are not applicable."
"Hydro One overall is a great company, responding to and remediating daily issues that could cause a public hazard. The field teams are top notch. Outage communication, not always the best, we need more input when possible. Project delays, lack of updates etc."

Additional Comments

Q Before this survey concludes, do you have any additional comments or feedback you'd like to share with Hydro One?
[Asked of all respondents]

LDA [n=6]

Verbatim
"Stop asking permission to clear transmission line right of ways. A private landowner shouldn't impact the rest of the people on the grid."
"Keep supplying same good service."
"The Global adjustment payments each month are too high. Obviously we are a Class A customer and do everything possible to curtail the Peaks to lower our PDF, however short of a significant investment for self generation, we are very limited to what we can do being a 24hr 5 day per week operation."
"Would like to see 'Real Time' data for Global Adjustment. Information on website is delayed."
"GA program is a catastrophe. It gives rise to efforts to circumvent this "tax" which is not based on consumption, but based on how much you spend on predicting the weather. This has also created a secondary economy of "weather predictors". Instead of cutting back on hydro usage, the weather predictors help companies shave their peak usages by using high polluting diesel generators to offset their use of grid power. The system needs fixing."
"Hydro One is a monopoly in a country that has rules against monopolies. We are one of the cleanest energy producing countries in the world - yet we are taxed on everything to delivery to carbon. My mother lives in Niagara Falls where they produce some of the largest amounts of hydro yet their rates are the most expensive. We produce more energy and charge huge rates on electricity yet we dump unused energy in the lake or sell it to the US. Hydro can send out a million surveys."

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UNDERTAKING JT-1.19

Reference:

I-01-B2-Staff-076, Attachment 1-3

Undertaking:

To provide a response showing repair versus replace evaluations across the investments being undertaken, showing examples of repair versus replace decisions where the preferred option was repair.

Response:

Table 1 below lists examples of repair or refurbishments completed by Hydro One in recent years.

Table 1 - Transformer Component Repairs & Refurbishments

Transformer	Age	Repair Description
Campbell TS T3	29	Oil leak reduction
Cataraqui TS T1	52	Fan replacement
Claireville TS T16	29	Refurbishment
Essa TS T3	47	Cooling system repair
Goreway TS T6	27	Cooling system repair
Hawthorne TS T1	29	Refurbishment
Napanee TS T2	45	Cooling system repair
Nepean TS T3	41	Oil leak reduction
Terauley TS T1	43	Fan replacement
Terauley TS T4	42	Fan replacement
Wilson TS T2	49	Cooling system repair
Wilson TS T4	44	Cooling system repair

Hydro One completes a repair versus replacement analysis for transformers where major refurbishment is a remedial option. Where the transformer requires a single repair task to be completed in a timely manner (e.g., oil leak reduction, cooling system repair or fans replacement) no repair versus replacement analysis is performed.

As shown in Table 1, Hydro One completed a refurbishment on two transformers: Claireville T16 and Hawthorne T1 while the remaining transformers had single repair tasks that needed to be completed in a timely manner.

Figure 1 and Figure 2 below illustrate the repair versus replacement analysis that was completed for Claireville T16 and Hawthorne T1 (both had similar repair scopes). The figures show that it was financially beneficial to perform refurbishments on these two units, to preserve their expected service life.

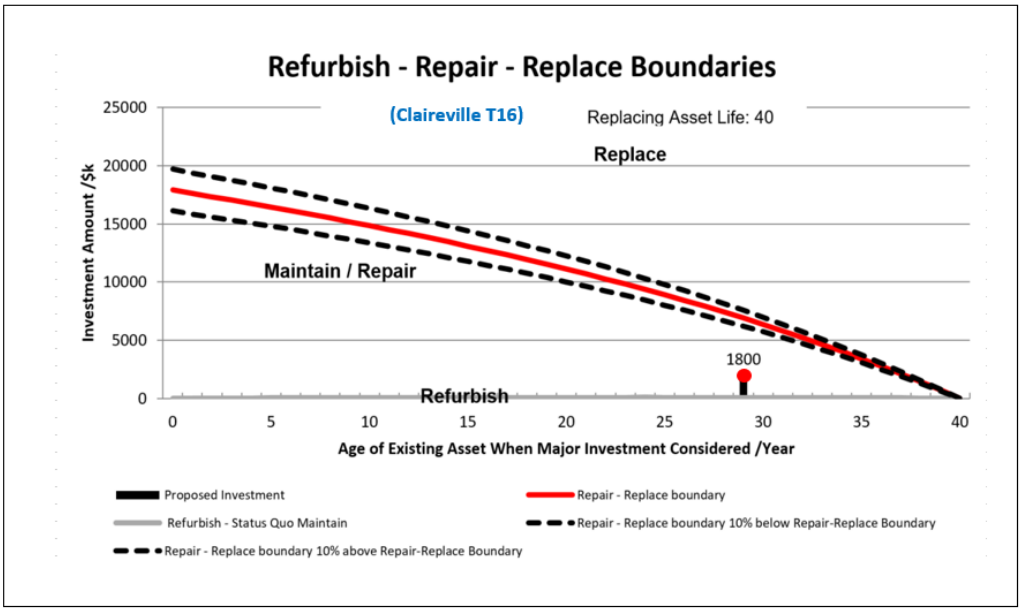

Figure 1: Claireville T16 Replacement vs Repair Analysis

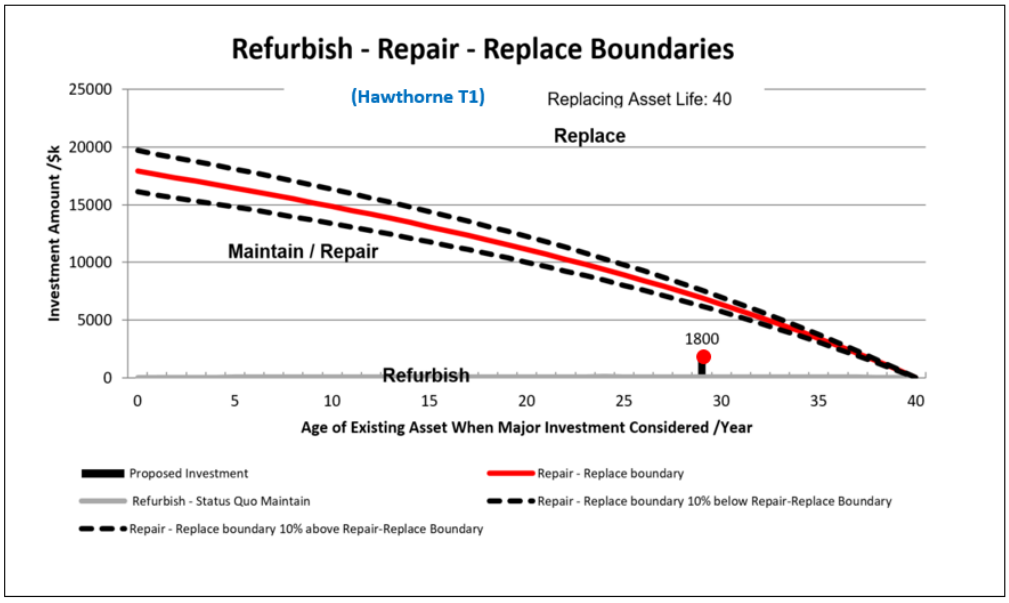

Figure 2: Hawthorne T1 Replacement vs Repair Analysis

UNDERTAKING JT-1.20

Reference:

I-01-B2-Staff-076

Undertaking:

To the extent the information is available and comparable, to provide more information on the named set of projects similar to as provided in board STAFF 76, and in JT1.7.

Response:

Below is the information requested for the seven investments identified by AMPCO during the technical conference similar to the information provided in B2-Staff-076.

Keith TS (T-SR-01.04)

- Attachment 1: Transformer Assessment – Keith TS
- Attachment 2: Protection System Assessment – Keith TS
- Attachment 3: Transformer Oil Data – Keith TS
- Attachment 4: Maintenance Report – Transformer – Keith TS

Rexdale TS (T-SR-03.14)

- Attachment 5: Breaker Assessment – Rexdale TS
- Attachment 6: Protection System Assessment – Rexdale TS
- Attachment 7: Maintenance Report – Breakers– Rexdale TS

Preston TS (T-SR-03.27)

- Attachment 8: Transformer Assessment – Preston TS
- Attachment 9: Protection System Assessment – Preston TS
- Attachment 10: Transformer Oil Data – Preston TS
- Attachment 11: Maintenance Report – Transformer – Preston TS

Fairchild TS (T-SR-03.51)

- Attachment 12: Transformer Assessment – Fairchild TS
- Attachment 13: Protection System Assessment – Fairchild TS
- Attachment 14: Transformer Oil Data – Fairchild TS
- Attachment 15: Maintenance Report – Transformer – Fairchild TS

Hawthorne TS (T-SR-01.31)

- Attachment 16: Breaker Assessment – Hawthorne TS
- Attachment 17: Protection System Assessment – Hawthorne TS
- Attachment 18: Maintenance Report – Breakers– Hawthorne TS

Below is the information for the seven investments identified by AMPCO during the technical conference similar to the information provided in JT1.07.

The following major power system assets will be replaced as part of the seven investments identified by AMPCO during the technical conference:

ISD Reference	Station	In-Service Year	# of Transformers to be Replaced	# of Breakers to be Replaced	# of Protections to be Replaced
T-SR-01.04	Keith TS	2023	2	0	17
	Transformers	T11, T12			
	Protections	23M21 MAIN, A A, A B, T1 BU, T1 MAIN, T11 A, T11 B, T11-BUS A, T11-BUS B, T12 A, T12 B, T12-BUS A, T12-BUS B, T12K BF, J2N A, J2N B ,T12P BF			
T-SR-03.14	Rexdale TS	2024	0	22	36
	Breakers	BSC3, BY, JQ, JSC2, M1, M2, M3, M31, M32, M33, M34, M35, M36, M4, M5, M6, QSC4, T1B, T1J, T2Q, T2Y, YSC1			
	Protections	29M1 MAIN, 29M2 MAIN, 29M3 MAIN, 29M31 MAIN, 29M32 MAIN, 29M33 MAIN, 29M34 MAIN, 29M35 MAIN, 29M36 MAIN, 29M4 MAIN, 29M5 MAIN, 29M6 MAIN, B BU, B MAIN, BY BF, J BU, J MAIN, JQ BF, Q BU, Q MAIN, SC1 MAIN, SC2 MAIN, SC3 MAIN, SC4 MAIN, T1 A, T1 B, T1B BF, T1J BF, T2 A, T2 B, T2Q BF, T2Y BF, V74R BU, V76R BU, Y BU, Y MAIN			
T-SR-03.27	Preston TS	2025	2	0	21
	Transformers	T3, T4			
	Protections	21M23 MAIN, 21M24 A, 21M24 B, 21M24 BU, 21M25 MAIN, 21M26 MAIN, 21M27 MAIN, 21M28 MAIN, 21M29 MAIN, 21M30 B, 21M30 BU, T3 A, T3 B, T3 OL, T3J BF, T3Q BF, T4 A, T4 B, T4 OL, T4J BF, T4Q BF			
T-SR-03.51	Fairchild TS	2027	3	0	34
	Transformers	T1, T3, T4			
	Protections	80M11 MAIN, 80M12 MAIN, 80M25 MAIN, 80M26 MAIN, 80M7 MAIN, B BU, B MAIN, BY BF, C18R BU, C20R BU, J BU, J MAIN, JQ BF, Q BU, Q MAIN, SC2 MAIN, SC3 MAIN, SC4 MAIN, T1 A, T1 B, T1B BF, T1Y BF, T2B BF, T2Y BF, T3 A, T3 B, T3J BF, T3Q BF, T4 A, T4 B, T4J BF, T4Q BF, Y BU, Y MAIN			
T-SR-01.31	Hawthorne TS	2028	0	8	111
	Breakers	BJ, M1, M2, M3, M4, M5, T7B, T8J			
	Protections	48M1 MAIN, 48M2 MAIN, 48M3 MAIN, 48M4 MAIN, 48M5 MAIN, A2 RT N, A6R RT A, A6R RT B, B BU, B MAIN, BAT A GFD, BAT B GFD, BJ BF, D5A TT A, D5A TT B, H9A TT A, H9A TT B, HT1 A, HT1 B, HT1P1 BF, HT2 A, HT2 B, HT3 A, HT3 B, HT4 A, HT4 B, HT5 A, HT5 B, HT5L31 BF, HT5L5 BF, J BU, J MAIN, K A, K B, KL5 BF, L4L8 BF, L5L2 BF, LT2 A, LT2 B, LT3 A, LT3 B, LT4 A, LT4 B, LT4L2 BF, LT5 A, LT5 B, LT5L9 BF, LT6 A, LT6 B, LT6L8 BF, LT9 B, LT9L3 BF, M31A B, MG MAIN, MPS A, MPS B, MPS LEO, Q A, Q B, QL3 BF, QLT4 BF, QLT5 BF, QLT6 BF, R2 A, R2 B, R3 A, R3 B, SC1 MAIN, SC2 MAIN, SPS191 GR B, T10 A, T10 B, T1L522 BF, T2 A, T2 B, T2 ZATM A, T2 ZATM B, T3 A, T3 B, T3 ZATM A, T3 ZATM B, T3L522 BF, T4 A, T4 B, T4 HIROP A, T4 HIROP B, T5 A, T5 B, T5 HIROP A, T5 HIROP B, T6 A, T6 B, T6 HIROP A, T6 HIROP B, T7 A, T7 B, T7B BF, T8J BF, T9 HIROP A, T9 HIROP B, W67 A, W67 B, X522A LEO, X522A ZATMB, X523A A, X523A LEO, X523A ZATMA, X523A ZATMB, Y A, Y B, YL4 BF, YL6 BF			

The following table provides the baseline, residual and mitigated risk, as well as a breakdown of consequence and probability for the seven investments identified by AMPCO during the technical conference.

Risk Assessment Summary

Station	Equipment Being Replaced	Qty	Risk – Consequence (C) and Probability (P)[1]						Annualized Risk		
			Before			After					
			Safety	Envir.	Reliab.	Safety	Envir.	Reliab.	Baseline	Residual	Mitigated
Keith TS	Transformers	2	--	C5/P2	C5/P4	--	C5/P1	C5/P1	26,820	2,340	24,480
	Protections	17	--	--	C4/ P5	--	--	C4/ P1			
Rexdale TS	Breakers	22	--	--	C5/P4	--	--	C5/P1	103,250	3,456	99,794
	Protections	36	--	--	C5/P5	--	--	C5/P1			
Preston TS	Transformers	2	--	C5/P2	C4/P3	--	C5/P1	C4/P1	42,778	954	42,778
	Protections	21	--	--	C4/ P5	--	--	C4/ P1			
Fairchild TS	Transformers	3	--	C5/P2	C5/P3	--	C5/P1	C5/P1	363,810	4,059	357,231
	Protections	34	--	--	C5/P6	--	--	C5/P1			
Hawthorne TS	Breakers	8	--	--	C5/P3	--	--	C5/P1	2,234,208	26,109	2,208,099
	Protections	111	--	--	C7/P6	--	--	C7/P1			

[1]*Values are shown as per SPF Section 1.7*

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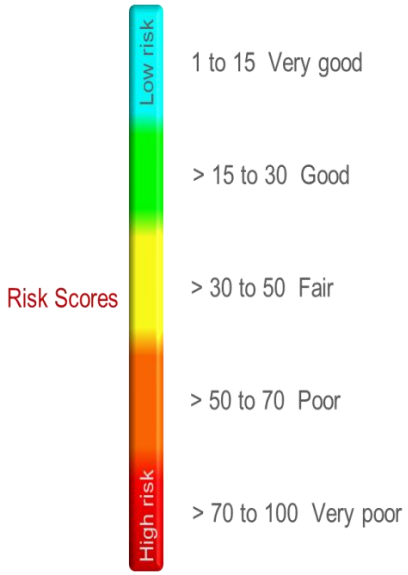
Health Assessment for Transformers at Keith TS

Prepared by: Peter Zhao

Approved by: Behdad Biglar

Rev.#: 00

APPENDIX – Health Index Summary



The asset risk assessment process relies on the Asset Analytics system to provide initial asset screening and quantitative analysis of the following six risk factors:

- Condition – Asset Health Index or condition risk related to the increased probability of failure that assets experience when their condition degrades over time.
- Demographics - Risk related to the increased probability of failure exhibited by assets of a particular make, manufacturer, and/or vintage.
- Criticality - Represents the impact that the failure of a specific asset would have on the transmission system
- Performance - Risk that reflects the historical performance of an asset, derived from the frequency and duration of outages
- Utilization - Risk that reflects the increased rate of deterioration exhibited by an asset that is highly utilized
- Economics - Risk based on the economic evaluation of the ongoing costs associated with the operation of an asset

The Asset Analytics system enables Hydro One planners to review aggregated information from various enterprise reporting systems to provide a common understanding of asset health and asset risks. This drives efficient and effective planning decisions by ensuring a consistent view of asset information for all planners. The information contained within the asset analytics system includes condition information driven by deficiency and preventative maintenance reports, demographic information (including make, model, type and criticality to the transmission system), performance data based on equipment outages, utilization information, and economics.

Hydro One's planners also take into account additional factors such as load forecasts, equipment ratings, operating restrictions, security incidents, environmental risks and requirements, compliance obligations, equipment defects, obsolescence, and health and safety considerations to ensure capital expenditures target the most appropriate mix of assets.

Table 1 Health Assessment for Power transformers at Keith TS

Asset	Age	Final review		Conditi	Demog.	Econ.	Perform.	Utiliz.	Critic.	Obsole.	HS&E	PCB
		Risk	Technical Assessments and Recommendations									
T11	69	High	• The assessment concluded that T11 has exceeded its ESL, and shown insulation degradation in a very poor condition. • T1 shows sign of oil leaks and rusty tank. • Cooling fans were failing and require attention. • PCB was detected on 115kV bushings. • Recommended for replacement within next 4 years to mitigate reliability risk, safety and environmental hazards, and to lower overall future OM&A cost. • Short term replacement.	85	100	38	1	8	54	N	N	Y
T12	67	High	• The assessment concluded that T12 has exceeded its ESL, and shown insulation degradation in a very poor condition. • T12 shows sign of oil leaks and rusty tank. • Cooling fans were failing and require attention. • Recommended for replacement within next 5 years to mitigate reliability risk, safety and environmental hazards, and to lower overall future OM&A cost. • Short term replacement.	74	100	35	1	8	54	N	N	N

Other factors to Note: Increase in rating required from 115MVA to 250MVA as per IESO for the above units

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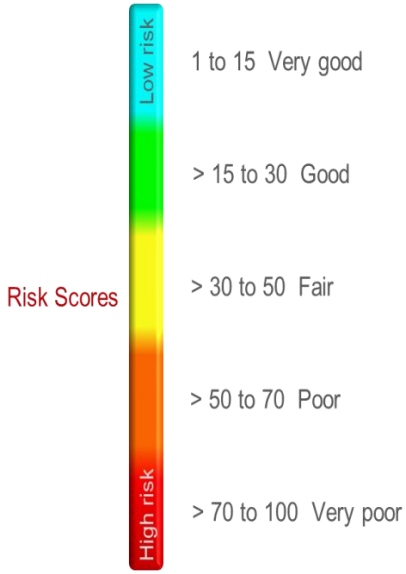
Health Assessment for Protection at Keith TS

Prepared by: Abu Zahid

Approved by: Jawed Atcha

Rev.#: 00

APPENDIX – Health Index Summary



The asset risk assessment process relies on the Asset Analytics system to provide initial asset screening and quantitative analysis of the following six risk factors:

- Condition – Asset Health Index or condition risk related to the increased probability of failure that assets experience when their condition degrades over time.
- Demographics - Risk related to the increased probability of failure exhibited by assets of a particular make, manufacturer, and/or vintage.
- Criticality - Represents the impact that the failure of a specific asset would have on the transmission system
- Performance - Risk that reflects the historical performance of an asset, derived from the frequency and duration of outages
- Utilization - Risk that reflects the increased rate of deterioration exhibited by an asset that is highly utilized
- Economics - Risk based on the economic evaluation of the ongoing costs associated with the operation of an asset
- Composite - Calculated as a weighted average of the other 6 primary Risk Factors.

The Asset Analytics system enables Hydro One planners to review aggregated information from various enterprise reporting systems to provide a common understanding of asset health and asset risks. This drives efficient and effective planning decisions by ensuring a consistent view of asset information for all planners. The information contained within the asset analytics system includes condition information driven by deficiency and preventative maintenance reports, demographic information (including make, model, type and criticality to the transmission system), performance data based on equipment outages, utilization information, and economics.

Hydro One's planners also take into account additional factors such as load forecasts, equipment ratings, operating restrictions, security incidents, environmental risks and requirements, compliance obligations, equipment defects, obsolescence, and health and safety considerations to ensure capital expenditures target the most appropriate mix of assets.

Station	Asset	Type	Age(2021)	Asset Risk Assessment (ARA)	Comments	Condition RF	Demographics RF	Economics RF	Performance RF	Utilization RF	Criticality	Obsolescence	HS&E
Keith TS (Protections)	N-TS-KEITHTS -PR-A A	Electromechanical	17	Low	Electromechanical relays are obsolete and no longer supported. It is currently being maintained with spare parts at the Meter-shop when it fails.	1	1	1	1	0	22	Y	N
	N-TS-KEITHTS -PR-A B		17	Low		1	1	1	1	0	22	Y	N
	N-TS-KEITHTS -PR-T11-BUS A		17	Low		1	1	1	1	0	4	Y	N
	N-TS-KEITHTS -PR-T11-BUS B		17	Low		1	1	1	1	0	4	Y	N
	N-TS-KEITHTS -PR-T12-BUS A		17	Low		1	1	1	1	0	4	Y	N
	N-TS-KEITHTS -PR-T12-BUS B		17	Low		1	1	1	1	0	4	Y	N
	N-TS-KEITHTS -PR-23M21 MAIN	Microprocessor	24	High	Relays are at end of their expected service life at in-service time of the project. Some hardware and firmware deficiencies are being observed in 1st generation of microprocessor relays.	1	75	1	1	0	10	N	N
	N-TS-KEITHTS -PR-T1 BU		24	High		1	75	1	1	0	4	N	Y
	N-TS-KEITHTS -PR-T1 MAIN		24	High		1	75	1	1	0	4	N	Y
	N-TS-KEITHTS -PR-T11 A		19	High		1	50	100	73	0	22	N	Y
	N-TS-KEITHTS -PR-T11 B		19	High		1	50	1	1	0	22	N	Y
	N-TS-KEITHTS -PR-T12 A		19	High		1	50	1	1	0	22	N	Y
	N-TS-KEITHTS -PR-T12 B		19	High		1	50	1	1	0	22	N	Y
	N-TS-KEITHTS -PR-T12K BF		18	High		1	50	1	1	0	4	N	N

Note 1: Keith TS J2N ‘A’ and ‘B’ protection relays are being replaced to facilitate T11/T12 replacements under the customer driven project.

Note 2: Keith TS T12P BF will be replaced to duplicate breaker failure function; new design standard requires new relays.

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Floc	Description	Equipment	Make	Year Built	In-service Year	Samples	LAB TEST DATE (YYYYMMDD)
N-TS-KEITHTS -TF-T11	TF: Auto - 104MVA 228.8-116.9-12.75kV	1171927	CGE	1953	1996	2020	20200617
N-TS-KEITHTS -TF-T11		1171927	CGE	1953	1996	2019	20190607
N-TS-KEITHTS -TF-T11		1171927	CGE	1953	1996	2018	20181205
N-TS-KEITHTS -TF-T11		1171927	CGE	1953	1996	2017	20170215
N-TS-KEITHTS -TF-T11		1171927	CGE	1953	1996	2016	20160828
N-TS-KEITHTS -TF-T11		1171927	CGE	1953	1996	2015	20150612
N-TS-KEITHTS -TF-T11		1171927	CGE	1953	1996	2014	20140614
N-TS-KEITHTS -TF-T11		1171927	CGE	1953	1996	2013	20130719
N-TS-KEITHTS -TF-T11		1171927	CGE	1953	1996	2012	20120910
N-TS-KEITHTS -TF-T11		1171927	CGE	1953	1996	2011	20110721
N-TS-KEITHTS -TF-T12	TF: Auto - 115MVA 228.8-116.9-12.7kV	1182528	CGE	1954	1996	2020	20200819
N-TS-KEITHTS -TF-T12		1182528	CGE	1954	1996	2019	20190605
N-TS-KEITHTS -TF-T12		1182528	CGE	1954	1996	2017	20170215
N-TS-KEITHTS -TF-T12		1182528	CGE	1954	1996	2016	20160808
N-TS-KEITHTS -TF-T12		1182528	CGE	1954	1996	2015	20150609
N-TS-KEITHTS -TF-T12		1182528	CGE	1954	1996	2014	20140515
N-TS-KEITHTS -TF-T12		1182528	CGE	1954	1996	2013	20130719
N-TS-KEITHTS -TF-T12		1182528	CGE	1954	1996	2012	20120904
N-TS-KEITHTS -TF-T12		1182528	CGE	1954	1996	2011	20110608

DISSOLVED HYDROGEN IN OIL	DISSOLVED OXYGEN IN OIL	DISSOLVED NITROGEN IN OIL	DISSOLVED (CO) IN OIL	DISSOLVED (CO2) IN OIL	DISSOLVED METHANE IN OIL
71	5387	63528	741	4517	21
83	10914	71779	854	4811	24
90	5942	63005	830	4857	22
45	14400	63100	682	4020	19
105	10200	64800	858	5190	18
75	9920	61000	795	4650	17
70	10700	61000	716	4860	18
70	14800	70500	763	4420	23
90	10500	67200	813	4840	23
80	12100	65600	773	4360	20
29	18456	62426	507	3250	15
38	26930	79453	596	3736	15
35	22100	63700	578	3200	18
55	30500	98700	635	3630	14
30	21700	63300	516	3480	10
25	23300	63600	548	3580	11
25	22000	64100	573	3720	14
30	18800	61800	654	4460	9
25	21800	64100	546	3440	9

DISSOLVED ETHANE IN OIL	DISSOLVED ETHYLENE IN OIL	DISSOLVED ACETYLENE IN OIL	TOTAL VOL OF DISSOLVED GAS	MOISTURE IN OIL	BREAKDOWN VOLTAGE (ASTM D1816)	BREAKDOWN VOLTAGE (ASTM D877)
17	6	0	7.43	13	57	56
18	6	0	8.85	13	66	44
16	6	0	7.48	10	50	37
17	6	0	8.19	9	70	61
19	4	0	8.08	21	21	42
16	4	3	7.61	17	55	N/A
15	0	0	7.7	18	51	27
19	7	0	9.01	16	22	29
20	6	0	8.3	17	45	N/A
21	6	0	8.25	16	19	44
7	24	0	8.47	22	29	54
8	29	0	11.08	14	59	40
9	34	0	8.93	5	57	48
7	31	0	13.3	11	34	40
6	20	0	8.86	9	64	50
7	12	0	9.06	6	59	56
8	23	0	9.01	11	46	28
6	21	0	8.53	12	57	55
7	21	0	8.96	10	43	54

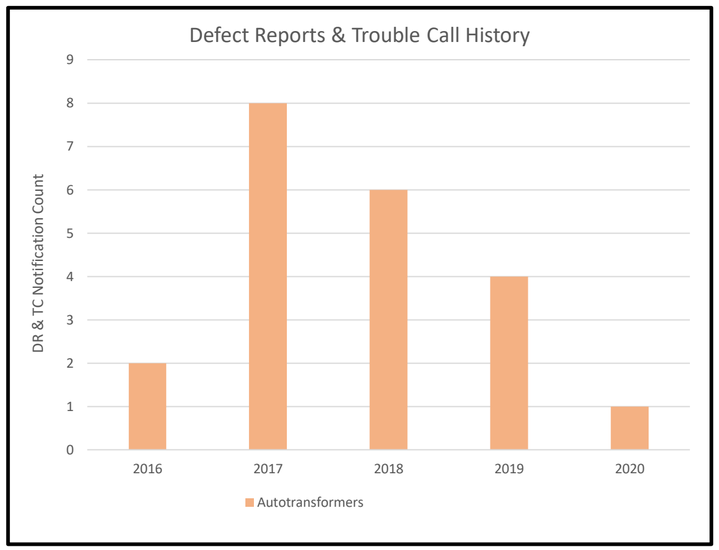
OIL CONTAMINATION MEASUREMENT	ACIDITY MEASUREMNT (KOH reqd)	OIL POWER FACTOR AT 25 °C	FURAN IN OIL	COLOUR OF INSULATING OIL	SAMPLE OIL TEMPERATURE
20.4	0.15	0.24	239	4	42
20.6	0.14	0.27	239	4	28
20	0.14	0.16	318	4	48
18.5	0.14	0.21	313	4	18
20.6	0.15	0.27	327	4	55
19.9	0.13	0.22	285	4	30
20.4	0.12	0.23	353	4	30
20.1	0.14	0.27	308	4	50
18.7	0.12	0.25	315	4	38
20.2	0.13	0.32	302	4	30
24.4	0.08	0.2	65	3	47
24.1	0.08	0.11	104	3	55
23.5	0.08	0.14	104	3	18
23.7	0.07	0.17	108	3	82
23.8	0.05	0.14	105	3	18
23.7	0.08	0.12	112	3	30
24.1	0.07	0.13	106	3	44
22.3	0.07	0.15	48	3	38
24.4	0.07	0.2	92	2	35

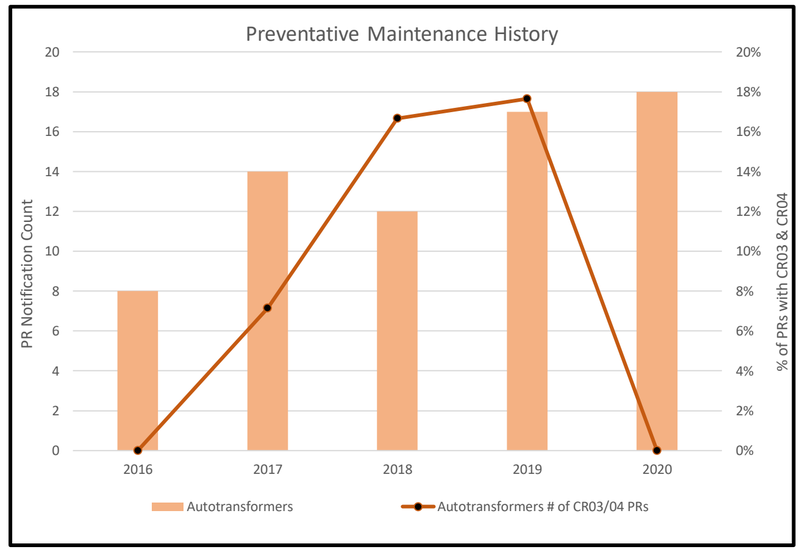
Quantity of Defect Reports and Trouble Calls					
Asset	Year				
	2016	2017	2018	2019	2020
Autotransformers	2	8	6	4	1

Quantity of Preventative Maintenance Reports					
Asset	Year				
	2016	2017	2018	2019	2020
Autotransformers	8	14	12	17	18

Assets: N-TS-KEITHTS -TF-T11
N-TS-KEITHTS -TF-T12

Preventative Maintenance Report Condition Ratings																				
	2016				2017				2018				2019				2020			
Asset	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04
Autotransformers	4	4	0	0	10	1	1	0	6	4	2	0	9	5	3	0	14	4	0	0





Data Extraction Notes:

1. Query SAP DR/TC/PR type completed notifications via t-code IW29
2. Seach by Functional Location (individual assets and parent FLOC)
3. Date range is 2015.1.1 to 2020.12.31
4. Exclude notification completion dates outside of 2016 to 2020.
5. Exclude cancelled or voided notifications.
6. Exclude parent FLOC notifications not associated with assets in question.

Asset Type	year	Notification	Notifictn type	Order	System status	User status	Coding	Completn date	Functional Loc.	Description
TF	2017	15461476	DR	61455115	NOCO ORAS	VALD	1600	06/22/2017	N-TS-KEITHTS -TF-T11	ONE FAN NOT WORKING ON T11
TF	2017	15810897	DR	61515510	NOCO ORAS	VALD	4200	06/22/2017	N-TS-KEITHTS -TF-T12	Mouse Nests in Mech Box
TF	2018	16263708	DR	61748778	NOCO ORAS	VALD	0700	01/08/2018	N-TS-KEITHTS -TF-T12	T12 Low Oil Alarm- Top up
TF	2018	16730632	DR	61842875	NOCO NOPT ORAS	VALD	9900	08/27/2018	N-TS-KEITHTS -TF-T12	New Nomenclature Needed
TF	2019	17133600	DR	62084559	NOCO ORAS	VALD	0100	01/30/2019	N-TS-KEITHTS -TF-T11	Investigate Gas Trip
TF	2020	18712993	DR	62557553	NOCO ORAS	VALD	9800	04/02/2020	N-TS-KEITHTS -TF-T11	T11 trip on differential
TF	2017	16225288	DR	61723071	NOCO ORAS	VALD		12/01/2017	N-TS-KEITHTS -TF-T11	Cooling Pump Faulty signal/indication/al
TF	2017	15808852	DR	61496517	NOCO ORAS	INIT		11/21/2017	N-TS-KEITHTS -TF-T11	Keith T11 PCB Bushing Replace CMS 2017
TF	2016	14519578	DR	61270903	NOCO ORAS	RECD	3300	06/21/2016	N-TS-KEITHTS -TF-T12	T12 cooling fan failure
TF	2017	16166258	DR	61699452	NOCO ORAS	VALD		11/17/2017	N-TS-KEITHTS -TF-T12	Replace pressure differential swithces
TF	2018	16743012	DR	61842869	NOCO ORAS	VALD	0100	05/16/2018	N-TS-KEITHTS -TF-T12	Oil Level Gauge Wiring
TF	2019	17243984	DR	62131072	NOCO ORAS	VALD	9900	02/06/2019	N-TS-KEITHTS -TF-T12	Fan Motor Needs to be replaced
TF	2019	17135903	DR	62087905	NOCO ORAS	VALD	9900	06/13/2019	N-TS-KEITHTS -TF-T12	Gas Relay Wiring Inspection/repair
TF	2017	15931196	TC	61613925	NOCO ORAS	RECD		09/29/2017	N-TS-KEITHTS -TF	ITMC EMD RE: HIGH TEMP ALARM TICEKT NO.1
TF	2018	16685854	TC	61828073	NOCO ORAS	RECD		04/30/2018	N-TS-KEITHTS -TF	s1 keith
TF	2017	16088447	TC	61653431	NOCO ORAS	RECD		10/11/2017	N-TS-KEITHTS -TF-T11	S1 REQ PC IMM REG: T11 GAS TRIP BLOCKING
TF	2019	17243982	TC	62131069	NOCO ORAS	RECD		02/08/2019	N-TS-KEITHTS -TF-T12	SEC1-EMD-T12 COOLING FAILURE ALARM
TF	2017	15809416	TC	61512470	NOCO ORAS	RECD		06/30/2017	N-TS-KEITHTS -TF-T12	SEC 1 - EMD - T12 COOLING FAIL
TF	2018	16263673	TC	61748767	NOCO ORAS	RECD		01/12/2018	N-TS-KEITHTS -TF-T12	S1-EMD-T12 OIL LEVEL ALARM
TF	2018	17133502	TC	62084558	NOCO ORAS	RECD		12/09/2018	N-TS-KEITHTS -TF-T11	S1: EMD RE: T11 GAS TRIP ALARM
TF	2016	14519614	TC	61264657	NOCO ORAS	RECD		03/02/2016	N-TS-KEITHTS -TF-T12	S1 RE T12 COOL FAIL-

Asset Type	Year	Notification	Notifictn type	Order	System status	User sta	Coding	Completn date	Functional Loc.	Description
TF	2021	19180624	PR	62669284	NOCO ORAS	INIT	CR02	07/13/2021	N-TS-KEITHTS -TF	TF-TS-GENERAL-FANS AUTO
TF	2021	19179443	PR	62668279	NOCO ORAS	INIT	CR01	04/30/2021	N-TS-KEITHTS -TF	TF-TS-GENERAL-FANS ON
TF	2020	18012295	PR	62378397	NOCO ORAS	INIT	CR01	06/02/2020	N-TS-KEITHTS -TF-T11	Tx PCB Reduction Oil Sample
TF	2017	14914581	PR	61337038	NOCO ORAS	INIT		11/14/2017	N-TS-KEITHTS -TF-T11	TF-GENERAL-D1
TF	2016	14499075	PR	61169507	NOCO ORAS	INIT	CR01	01/28/2016	N-TS-KEITHTS -TF-T11	STN 'C' PWR EQ INSP-SVI SPRING 2016
TF	2016	15045161	PR	61188302	NOCO ORAS	INIT	CR02	08/30/2016	N-TS-KEITHTS -TF-T11	TF-TS-PWR WASH - TF rad 2016
TF	2015	14112441	PR	61065348	NOCO ORAS	INIT	CR01	08/18/2015	N-TS-KEITHTS -TF-T11	STN 'C' PWR EQ INSP-SVI FALL 2015
TF	2015	13826736	PR	61054197	NOCO ORAS	INIT	CR01	05/29/2015	N-TS-KEITHTS -TF-T11	TF-TS-PWR WASH - TF rad 2015
TF	2016	15033593	PR	61169508	NOCO ORAS	INIT	CR01	08/24/2016	N-TS-KEITHTS -TF-T11	STN 'C' PWR EQ INSP-SVI FALL 2016
TF	2020	19354637	PR	62290493	NOCO ORAS	INIT	CR01	09/18/2020	N-TS-KEITHTS -TF-T11	STN 'C' PWR EQ INSP-SVI Fall 2020
TF	2020	17810852	PR	62291715	NOCO ORAS	INIT	CR02	06/17/2020	N-TS-KEITHTS -TF-T11	TF-GENERAL-GOT
TF	2020	17812293	PR	62293156	NOCO ORAS	INIT	CR01	06/04/2020	N-TS-KEITHTS -TF-T11	TF-TS-PWR WASH - TF rad
TF	2019	17875926	PR	62319535	NOCO ORAS	INIT	CR02	09/09/2019	N-TS-KEITHTS -TF-T11	PREOUTAGE INSPECTION- CAT 1 - ELEC
TF	2019	17575531	PR	62195663	NOCO ORAS	INIT	CR03	10/02/2019	N-TS-KEITHTS -TF-T11	TF-GENERAL-SPECIAL)DGA-MAIN TANK
TF	2019	17415529	PR	61927241	NOCO ORAS	INIT	CR01	03/21/2019	N-TS-KEITHTS -TF-T11	STN 'C' PWR EQ INSP-SVI Spr 2019
TF	2019	17237657	PR	62128096	NOCO ORAS	INIT	CR03	05/06/2019	N-TS-KEITHTS -TF-T11	TF-GENERAL-(SPECIAL)DGA-MAIN TANK
TF	2019	16896996	PR	61928673	NOCO ORAS	INIT	CR01	04/17/2019	N-TS-KEITHTS -TF-T11	TF-GENERAL-GOT
TF	2017	16081365	PR	61322343	NOCO ORAS	INIT	CR01	09/14/2017	N-TS-KEITHTS -TF-T11	STN 'C' PWR EQ INSP-SVI Fall 2017
TF	2018	15894228	PR	61575738	NOCO ORAS	INIT	CR03	08/14/2018	N-TS-KEITHTS -TF-T11	TF-GENERAL-GOT
TF	2018	15896105	PR	61577615	NOCO ORAS	INIT	CR02	06/18/2018	N-TS-KEITHTS -TF-T11	TF-TS-PWR WASH - TF rad
TF	2017	14924302	PR	61347440	NOCO NOPT ORAS	INIT		11/08/2017	N-TS-KEITHTS -TF-T11	TF-GENERAL-D2
TF	2020	14914583	PR	61337700	ATCO NOCO ORAS	INIT	CR02	01/21/2020	N-TS-KEITHTS -TF-T11	TF-GENERAL-DBT
TF	2017	14914582	PR	61337039	NOCO ORAS	INIT	CR03	03/29/2017	N-TS-KEITHTS -TF-T11	TF-GENERAL-GOT
TF	2017	14922766	PR	61345905	NOCO ORAS	INIT	CR01	06/22/2017	N-TS-KEITHTS -TF-T11	TF-TS-PWR WASH - TF rad
TF	2016	14048433	PR	61188302	NOCO ORAS	INIT	CR02	08/30/2016	N-TS-KEITHTS -TF-T11	TF-TS-PWR WASH - TF rad
TF	2017	14042512	PR	61182381	ATCO NOCO ORAS	INIT	CR02	02/07/2017	N-TS-KEITHTS -TF-T11	TF-GENERAL-GOT
TF	2015	13562270	PR	61065347	NOCO ORAS	INIT	CR02	03/20/2015	N-TS-KEITHTS -TF-T11	STN 'C' PWR EQ INSP-SVI SPRING 2015
TF	2017	15344207	PR	61322342	NOCO ORAS	INIT	CR01	01/09/2017	N-TS-KEITHTS -TF-T11	STN 'C' PWR EQ INSP-SVI Spr 2017
TF	2017	15814830	PR	61345905	NOCO ORAS	INIT	CR01	06/22/2017	N-TS-KEITHTS -TF-T11	TF-TS-PWR WASH - TF rad 2017
TF	2020	19028137	PR	62293156	NOCO ORAS	INIT	CR01	06/04/2020	N-TS-KEITHTS -TF-T11	TF-TS-PWR WASH - TF rad 2020
TF	2019	18079852	PR	62407058	NOCO ORAS	INIT	CR02	12/10/2019	N-TS-KEITHTS -TF-T11	TF-GENERAL-(SPECIAL)DGA-MAIN TANK
TF	2018	16834242	PR	61577615	NOCO ORAS	INIT	CR02	06/18/2018	N-TS-KEITHTS -TF-T11	TF-TS-PWR WASH - TF rad 2018
TF	2018	16645941	PR	61574710	NOCO ORAS	INIT	CR01	04/11/2018	N-TS-KEITHTS -TF-T11	STN 'C' PWR EQ INSP-SVI Spr 2018
TF	2018	16961036	PR	61574711	NOCO ORAS	INIT	CR01	08/24/2018	N-TS-KEITHTS -TF-T11	STN 'C' PWR EQ INSP-SVI Fall 2018
TF	2018	16944429	PR	61967492	ATCO NOCO ORAS	INIT	CR03	12/10/2018	N-TS-KEITHTS -TF-T11	TF-GENERAL-(SPECIAL)GOT
TF	2019	17958172	PR	61927242	NOCO ORAS	INIT	CR01	08/23/2019	N-TS-KEITHTS -TF-T11	STN 'C' PWR EQ INSP-SVI Fall 2019
TF	2021	19201765	PR	62689701	NOCO ORAS	INIT	CR01	07/12/2021	N-TS-KEITHTS -TF-T11	TF-TS-PWR WASH - TF rad
TF	2021	19201517	PR	62689453	NOCO ORAS	INIT	CR03	02/21/2021	N-TS-KEITHTS -TF-T11	TF-GENERAL-GOT
TF	2019	17730157	PR	61929417	NOCO ORAS	INIT	CR01	06/21/2019	N-TS-KEITHTS -TF-T11	TF-TS-PWR WASH - TF rad 2019
TF	2019	16897727	PR	61929417	NOCO ORAS	INIT	CR01	06/21/2019	N-TS-KEITHTS -TF-T11	TF-TS-PWR WASH - TF rad
TF	2019	17140741	PR	62090614	ATCO NOCO ORAS	INIT	CR03	01/30/2019	N-TS-KEITHTS -TF-T11	TF-GENERAL-(SPECIAL)DGA-MAIN TANK
TF	2021	19201516	PR	62689452	NOCO ORAS	INIT	CR02	07/12/2021	N-TS-KEITHTS -TF-T11	TF-GENERAL-D1
TF	2020	18904041	PR	62290492	NOCO ORAS	INIT	CR01	05/11/2020	N-TS-KEITHTS -TF-T11	STN 'C' PWR EQ INSP-SVI Spr 2020
TF	2021	19201518	PR	62689454	NOCO ORAS	INIT	CR02	02/21/2021	N-TS-KEITHTS -TF-T12	TF-GENERAL-GOT
TF	2019	15894233	PR	61575743	ATCO NOCO ORAS	INIT	CR02	04/11/2019	N-TS-KEITHTS -TF-T12	TF-GENERAL-GOT
TF	2018	15894230	PR	61575740	NOCO ORAS	INIT	CR02	05/16/2018	N-TS-KEITHTS -TF-T12	TF-GENERAL-D1
TF	2020	15894235	PR	61575745	ATCO NOCO ORAS	INIT	CR02	01/21/2020	N-TS-KEITHTS -TF-T12	TF-GENERAL-DBT
TF	2021	19201766	PR	62689702	NOCO ORAS	INIT	CR01	08/06/2021	N-TS-KEITHTS -TF-T12	TF-TS-PWR WASH - TF rad
TF	2016	14801639	PR	61188303	NOCO ORAS	INIT	CR02	06/21/2016	N-TS-KEITHTS -TF-T12	TF-TS-PWR WASH - TF rad 2016
TF	2018	16645949	PR	61574710	NOCO ORAS	INIT	CR01	04/11/2018	N-TS-KEITHTS -TF-T12	STN 'C' PWR EQ INSP-SVI Spr 2018
TF	2019	16896999	PR	61928676	NOCO ORAS	INIT	CR02	06/27/2019	N-TS-KEITHTS -TF-T12	TF-GENERAL-GOT
TF	2018	15896128	PR	61577628	NOCO ORAS	INIT	CR01	05/17/2018	N-TS-KEITHTS -TF-T12	TF-TS-PWR WASH - TF rad
TF	2020	18904047	PR	62290492	NOCO ORAS	INIT	CR01	05/11/2020	N-TS-KEITHTS -TF-T12	STN 'C' PWR EQ INSP-SVI Spr 2020
TF	2017	14914584	PR	61337701	NOCO ORAS	INIT	CR01	03/29/2017	N-TS-KEITHTS -TF-T12	TF-GENERAL-GOT
TF	2017	14922767	PR	61345906	NOCO ORAS	INIT	CR01	06/21/2017	N-TS-KEITHTS -TF-T12	TF-TS-PWR WASH - TF rad
TF	2016	14048434	PR	61188303	NOCO ORAS	INIT	CR02	06/21/2016	N-TS-KEITHTS -TF-T12	TF-TS-PWR WASH - TF rad
TF	2015	14112448	PR	61065348	NOCO ORAS	INIT	CR01	08/18/2015	N-TS-KEITHTS -TF-T12	STN 'C' PWR EQ INSP-SVI FALL 2015
TF	2017	14042513	PR	61182382	ATCO NOCO ORAS	INIT	CR01	02/02/2017	N-TS-KEITHTS -TF-T12	TF-GENERAL-GOT
TF	2020	19298532	PR	62293160	NOCO ORAS	INIT	CR01	09/03/2020	N-TS-KEITHTS -TF-T12	TF-TS-PWR WASH - TF rad 2020
TF	2019	17649243	PR	62215057	NOCO ORAS	INIT	CR02	05/30/2019	N-TS-KEITHTS -TF-T12	PREOUTAGE INSPECTION- CAT 1 - ELEC
TF	2018	16751978	PR	61577628	NOCO ORAS	INIT	CR01	05/17/2018	N-TS-KEITHTS -TF-T12	TF-TS-PWR WASH - TF rad 2018
TF	2018	15897751	PR	61579261	NOCO ORAS	INIT	CR02	05/16/2018	N-TS-KEITHTS -TF-T12	TF-GENERAL-D2
TF	2017	15344244	PR	61322342	NOCO ORAS	INIT	CR01	01/09/2017	N-TS-KEITHTS -TF-T12	STN 'C' PWR EQ INSP-SVI Spr 2017
TF	2017	16081371	PR	61322343	NOCO ORAS	INIT	CR01	09/14/2017	N-TS-KEITHTS -TF-T12	STN 'C' PWR EQ INSP-SVI Fall 2017
TF	2016	14499082	PR	61169507	NOCO ORAS	INIT	CR01	01/28/2016	N-TS-KEITHTS -TF-T12	STN 'C' PWR EQ INSP-SVI SPRING 2016
TF	2019	16897728	PR	61929418	NOCO ORAS	INIT	CR01	06/07/2019	N-TS-KEITHTS -TF-T12	TF-TS-PWR WASH - TF rad
TF	2015	13562285	PR	61065347	NOCO ORAS	INIT	CR02	03/20/2015	N-TS-KEITHTS -TF-T12	STN 'C' PWR EQ INSP-SVI SPRING 2015
TF	2019	17957867	PR	61927242	NOCO ORAS	INIT	CR01	08/23/2019	N-TS-KEITHTS -TF-T12	STN 'C' PWR EQ INSP-SVI Fall 2019
TF	2019	17692797	PR	61929418	NOCO ORAS	INIT	CR01	06/07/2019	N-TS-KEITHTS -TF-T12	TF-TS-PWR WASH - TF rad 2019
TF	2019	17415013	PR	61927241	NOCO ORAS	INIT	CR01	03/21/2019	N-TS-KEITHTS -TF-T12	STN 'C' PWR EQ INSP-SVI Spr 2019
TF	2018	16961042	PR	61574711	NOCO ORAS	INIT	CR01	08/24/2018	N-TS-KEITHTS -TF-T12	STN 'C' PWR EQ INSP-SVI Fall 2018
TF	2017	15813100	PR	61345906	NOCO ORAS	INIT	CR01	06/21/2017	N-TS-KEITHTS -TF-T12	TF-TS-PWR WASH - TF rad 2017
TF	2016	15033820	PR	61169508	NOCO ORAS	INIT	CR01	08/24/2016	N-TS-KEITHTS -TF-T12	STN 'C' PWR EQ INSP-SVI FALL 2016
TF	2015	13798014	PR	61054198	NOCO ORAS	INIT	CR01	05/22/2015	N-TS-KEITHTS -TF-T12	TF-TS-PWR WASH - TF rad 2015
TF	2020	19354653	PR	62290493	NOCO ORAS	INIT	CR01	09/18/2020	N-TS-KEITHTS -TF-T12	STN 'C' PWR EQ INSP-SVI Fall 2020
TF	2020	17810856	PR	62291719	NOCO ORAS	INIT	CR02	08/19/2020	N-TS-KEITHTS -TF-T12	TF-GENERAL-GOT
TF	2020	17812297	PR	62293160	NOCO ORAS	INIT	CR01	09/03/2020	N-TS-KEITHTS -TF-T12	TF-TS-PWR WASH - TF rad
TF	2020	19015818	PR	62378397	NOCO ORAS	INIT	CR01	06/02/2020	N-TS-KEITHTS -TF-T11	Tx PCB Reduction Oil Sample
TF	2020	19015819	PR	62378397	NOCO ORAS	INIT	CR01	06/02/2020	N-TS-KEITHTS -TF-T11	Tx PCB Reduction Oil Sample
TF	2020	19015861	PR	62378397	NOCO ORAS	INIT	CR01	06/02/2020	N-TS-KEITHTS -TF-T11	Tx PCB Reduction Oil Sample
TF	2020	19015862	PR	62378397	NOCO ORAS	INIT	CR01	06/02/2020	N-TS-KEITHTS -TF-T11	Tx PCB Reduction Oil Sample
TF	2020	19015863	PR	62378397	NOCO ORAS	INIT	CR01	06/02/2020	N-TS-KEITHTS -TF-T11	Tx PCB Reduction Oil Sample

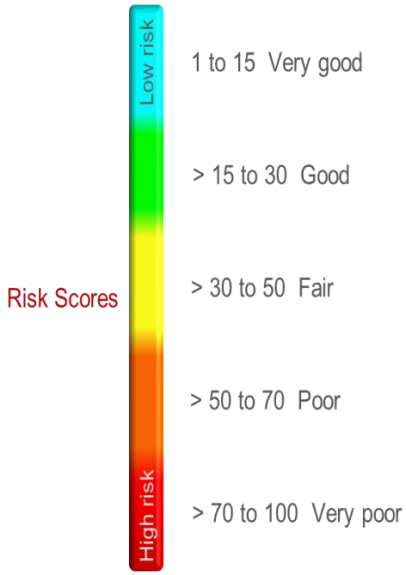
Health Assessment for Rexdale TS

Prepared by: Harshal Bhatt

Approved by: Behdad Biglar

Rev.#: 00

APPENDIX – Health Index Summary



The asset risk assessment process relies on the Asset Analytics system to provide initial asset screening and quantitative analysis of the following six risk factors:

- Condition – Asset Health Index or condition risk related to the increased probability of failure that assets experience when their condition degrades over time.
- Demographics - Risk related to the increased probability of failure exhibited by assets of a particular make, manufacturer, and/or vintage.
- Criticality - Represents the impact that the failure of a specific asset would have on the transmission system
- Performance - Risk that reflects the historical performance of an asset, derived from the frequency and duration of outages
- Utilization - Risk that reflects the increased rate of deterioration exhibited by an asset that is highly utilized
- Economics - Risk based on the economic evaluation of the ongoing costs associated with the operation of an asset

The Asset Analytics system enables Hydro One planners to review aggregated information from various enterprise reporting systems to provide a common understanding of asset health and asset risks. This drives efficient and effective planning decisions by ensuring a consistent view of asset information for all planners. The information contained within the asset analytics system includes condition information driven by deficiency and preventative maintenance reports, demographic information (including make, model, type and criticality to the transmission system), performance data based on equipment outages, utilization information, and economics.

Hydro One's planners also take into account additional factors such as load forecasts, equipment ratings, operating restrictions, security incidents, environmental risks and requirements, compliance obligations, equipment defects, obsolescence, and health and safety considerations to ensure capital expenditures target the most appropriate mix of assets.

Table 1 - Health Assessment for Circuit Breakers at Rexdale TS

Station	Asset	Type	Age	Final review		Conditi	Demog.	Econ.	Perform.	Utiliz.	Critic.	Obsole.	HS&E	PCB
				Asset Risk Assessment (ARA)	Comments									
Rexdale TS	BSC3	Metalclad - SF6	31	High - Short term	Limted part availability and no spares are available. Economic value is high due to high maintennace cost. Repair is costly and hence replacement is recommended.	32	55	1	100	40	27	Y	N	N/A
	BY	Metalclad - SF6	31	High - Short term		32	55	1	72	6	29	Y	N	N/A
	JQ	Metalclad - SF6	31	High - Short term		32	55	1	100	8	29	Y	N	N/A
	JSC2	Metalclad - SF6	31	High - Short term		47	55	1	100	50	27	Y	N	N/A
	M1	Metalclad - SF6	31	High - Short term		32	55	62	100	27	23	Y	N	N/A
	M2	Metalclad - SF6	31	High - Short term		54	55	61	100	37	23	Y	N	N/A
	M3	Metalclad - SF6	31	High - Short term		47	55	62	100	25	23	Y	N	N/A
	M31	Metalclad - SF6	30	High - Short term		47	50	1	100	33	23	Y	N	N/A
	M32	Metalclad - SF6	30	High - Short term		54	50	62	100	36	23	Y	N	N/A

M33	Metalclad - SF6	30	High - Short term		54	50	1	100	35	23	Y	N	N/A
M34	Metalclad - SF6	30	High - Short term		54	50	62	100	37	23	Y	N	N/A
M35	Metalclad - SF6	30	High - Short term		32	50	1	18	41	23	Y	N	N/A
M36	Metalclad - SF6	30	High - Short term		54	50	62	100	36	23	Y	N	N/A
M4	Metalclad - SF6	31	High - Short term		54	55	1	100	34	23	Y	N	N/A
M5	Metalclad - SF6	31	High - Short term		54	55	62	100	34	23	Y	N	N/A
M6	Metalclad - SF6	31	High - Short term		54	55	62	100	43	23	Y	N	N/A
QSC4	Metalclad - SF6	31	High - Short term		41	55	1	100	50	27	Y	N	N/A
T1B	Metalclad - SF6	31	High - Short term		32	55	1	100	44	31	Y	N	N/A
T1J	Metalclad - SF6	30	High - Short term		32	50	1	100	43	31	Y	N	N/A
T2Q	Metalclad - SF6	30	High - Short term		54	50	1	100	36	31	Y	N	N/A
T2Y	Metalclad - SF6	31	High - Short term		54	55	1	100	35	31	Y	N	N/A
YSC1	Metalclad - SF6	31	High - Short term		67	55	1	100	50	27	Y	N	N/A

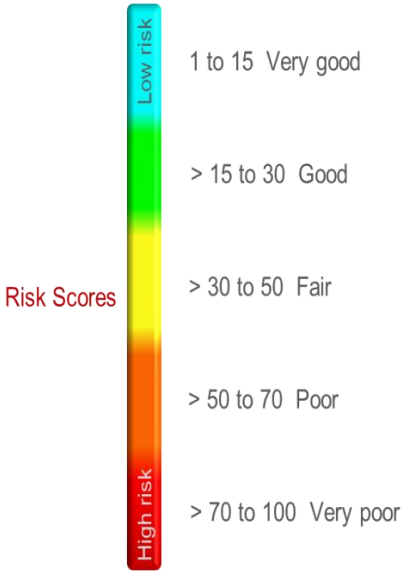
Health Assessment for Protection at Rexdale TS

Prepared by: Elizabeth Duan

Approved by: Jawed Atcha

Rev.#: 00

APPENDIX – Health Index Summary



The asset risk assessment process relies on the Asset Analytics system to provide initial asset screening and quantitative analysis of the following six risk factors:

- Condition – Asset Health Index or condition risk related to the increased probability of failure that assets experience when their condition degrades over time.
- Demographics - Risk related to the increased probability of failure exhibited by assets of a particular make, manufacturer, and/or vintage.
- Criticality - Represents the impact that the failure of a specific asset would have on the transmission system
- Performance - Risk that reflects the historical performance of an asset, derived from the frequency and duration of outages
- Utilization - Risk that reflects the increased rate of deterioration exhibited by an asset that is highly utilized
- Economics - Risk based on the economic evaluation of the ongoing costs associated with the operation of an asset

The Asset Analytics system enables Hydro One planners to review aggregated information from various enterprise reporting systems to provide a common understanding of asset health and asset risks. This drives efficient and effective planning decisions by ensuring a consistent view of asset information for all planners. The information contained within the asset analytics system includes condition information driven by deficiency and preventative maintenance reports, demographic information (including make, model, type and criticality to the transmission system), performance data based on equipment outages, utilization information, and economics.

Hydro One's planners also take into account additional factors such as load forecasts, equipment ratings, operating restrictions, security incidents, environmental risks and requirements, compliance obligations, equipment defects, obsolescence, and health and safety considerations to ensure capital expenditures target the most appropriate mix of assets.

Station	Asset	Type	Age	Asset Risk Assessment (ARA)	Comments	Condition RF	Demographics RF	Economics RF	Performance RF	Utilization RF	Criticality	Obsolescence	HS&E
Rexdale TS (Protections)	N-TS-REXDALETS -PR-29M1 MAIN	Solid-state Relays	32	High	Solid-state relays are obsolete. It is currently being maintained with spare parts when it fails.	1	100	100	100	0	10	Y	N
	N-TS-REXDALETS -PR-29M2 MAIN		32	High		1	100	1	1	0	10	Y	N
	N-TS-REXDALETS -PR-29M3 MAIN		32	High		1	100	78	19	0	10	Y	N
	N-TS-REXDALETS -PR-29M31 MAIN		31	High		1	75	61	19	0	10	Y	N
	N-TS-REXDALETS -PR-29M32 MAIN		31	High		1	75	61	19	0	10	Y	N
	N-TS-REXDALETS -PR-29M33 MAIN		31	High		1	75	45	19	0	10	Y	N
	N-TS-REXDALETS -PR-29M34 MAIN		31	High		1	75	45	19	0	10	Y	N
	N-TS-REXDALETS -PR-29M35 MAIN		27	High		1	75	73	19	0	10	Y	N
	N-TS-REXDALETS -PR-29M36 MAIN		27	High		1	75	73	19	0	10	Y	N
	N-TS-REXDALETS -PR-29M4 MAIN		32	High		1	100	73	19	0	10	Y	N
	N-TS-REXDALETS -PR-29M5 MAIN		32	High		1	100	61	19	0	10	Y	N
	N-TS-REXDALETS -PR-29M6 MAIN		32	High		1	100	61	19	0	10	Y	N
	N-TS-REXDALETS -PR-SC1 MAIN		29	High		1	75	82	100	0	10	Y	N
	N-TS-REXDALETS -PR-SC2 MAIN		29	High		1	75	1	1	0	10	Y	N
	N-TS-REXDALETS -PR-SC3 MAIN		29	High		1	75	1	100	0	10	Y	N
	N-TS-REXDALETS -PR-SC4 MAIN		29	High		1	75	1	1	0	10	Y	N
	N-TS-REXDALETS -PR-T1 B		32	High		1	100	1	1	0	19	Y	N
	N-TS-REXDALETS -PR-T1B BF		32	High		1	100	1	1	0	10	Y	N
	N-TS-REXDALETS -PR-T1J BF		31	High		1	75	1	1	0	10	Y	N
	N-TS-REXDALETS -PR-T2 B		32	High		1	100	1	1	0	19	Y	N
	N-TS-REXDALETS -PR-T2Q BF		31	High		1	75	1	1	0	10	Y	N
	N-TS-REXDALETS -PR-T2Y BF		32	High		1	100	1	1	0	10	Y	N

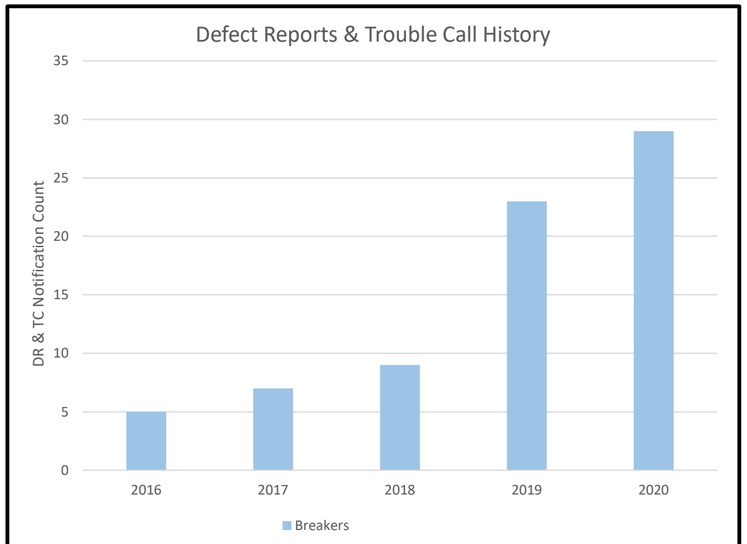
	N-TS-REXDALETS -PR-B BU	Electromechanical Relays	32	High	Electromechanical relays are obsolete and no longer supported. It is currently being maintained with spare parts when it fails.	1	25	1	1	0	10	Y	N
	N-TS-REXDALETS -PR-B MAIN		32	High		1	25	1	1	0	10	Y	N
	N-TS-REXDALETS -PR-BY BF		32	High		1	25	1	1	0	10	Y	N
	N-TS-REXDALETS -PR-J BU		31	High		1	25	23	23	0	10	Y	N
	N-TS-REXDALETS -PR-J MAIN		31	High		1	25	1	1	0	10	Y	N
	N-TS-REXDALETS -PR-JQ BF		31	High		1	25	1	1	0	10	Y	N
	N-TS-REXDALETS -PR-Q BU		31	High		1	25	1	1	0	10	Y	N
	N-TS-REXDALETS -PR-Q MAIN		31	High		1	25	1	1	0	10	Y	N
	N-TS-REXDALETS -PR-T1 A		32	High		1	25	38	100	0	19	Y	N
	N-TS-REXDALETS -PR-T2 A		32	High		1	25	1	1	0	19	Y	N
	N-TS-REXDALETS -PR-V74R BU		32	High		1	25	1	1	0	19	Y	N
	N-TS-REXDALETS -PR-V76R BU		32	High		1	25	55	100	0	19	Y	N
	N-TS-REXDALETS -PR-Y BU		32	High		1	25	1	1	0	10	Y	N
	N-TS-REXDALETS -PR-Y MAIN		32	High		1	25	1	1	0	10	Y	N

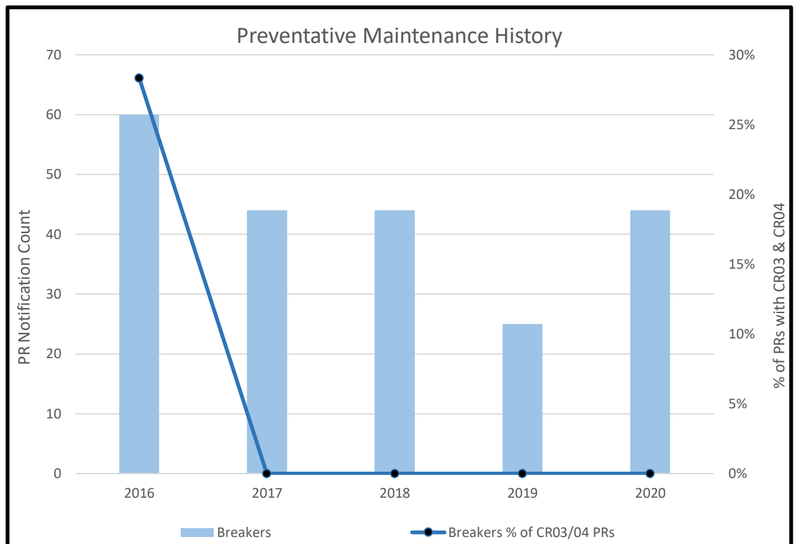
Quantity of Defect Reports and Trouble Calls					
Asset	Year				
	2016	2017	2018	2019	2020
Breakers	5	7	9	23	29

Quantity of Preventative Maintenance Reports					
Asset	Year				
	2016	2017	2018	2019	2020
Breakers	60	44	44	25	44

Assets:
N-TS-REXDALETS -BR-BSC3
N-TS-REXDALETS -BR-BY
N-TS-REXDALETS -BR-JQ
N-TS-REXDALETS -BR-JSC2
N-TS-REXDALETS -BR-M1
N-TS-REXDALETS -BR-M2
N-TS-REXDALETS -BR-M3
N-TS-REXDALETS -BR-M31
N-TS-REXDALETS -BR-M32
N-TS-REXDALETS -BR-M33
N-TS-REXDALETS -BR-M34
N-TS-REXDALETS -BR-M35
N-TS-REXDALETS -BR-M36
N-TS-REXDALETS -BR-M4
N-TS-REXDALETS -BR-M5
N-TS-REXDALETS -BR-M6
N-TS-REXDALETS -BR-QSC4
N-TS-REXDALETS -BR-T1B
N-TS-REXDALETS -BR-T1J
N-TS-REXDALETS -BR-T2Q
N-TS-REXDALETS -BR-T2Y
N-TS-REXDALETS -BR-YSC1

Preventative Maintenance Report Condition Ratings																				
	2016				2017				2018				2019				2020			
Station - Asset	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04
Breakers	1	42	17	0	44	0	0	0	22	22	0	0	0	25	0	0	44	0	0	0





Data Extraction Notes:

1. Query SAP DR/TC/PR type completed notifications via t-code IW29
2. Seach by Functional Location (individual assets and parent FLOC)
3. Date range is 2015.1.1 to 2020.12.31
4. Exclude notification completion dates outside of 2016 to 2020.
5. Exclude cancelled or voided notifications.
6. Exclude parent FLOC notifications not associated with assets in question.

Asset Type	year	Notification	Notifictn type	Order	System status	User status	Coding	Completn date	Functional Loc.	Description
BR	2020	18599922	DR		NOCO	INIT	1614	03/02/2020	N-TS-REXDALETS -BR-M1	
BR	2018	17115321	DR	62070108	NOCO ORAS	VALD	1000	11/15/2018	N-TS-REXDALETS -BR-M1	Breaker Failure
BR	2021	19487410	DR	62815625	NOCO ORAS	VALD	1400	02/24/2021	N-TS-REXDALETS -BR-M5	Rexdale M5 breaker fails to operate
BR	2017	15434491	DR	61444862	NOCO ORAS	VALD	0100	04/12/2017	N-TS-REXDALETS -BR-T1J	Repair T1J pothead @ Rexdale TS
BR	2019	17648250	DR	62215119	NOCO ORAS	VALD	0312	07/04/2019	N-TS-REXDALETS -BR-M31	Rexdale M31 breaker rebuild
BR	2019	15166694	DR	61388442	NOCO ORAS	VALD	0100	04/30/2019	N-TS-REXDALETS -BR-M31	Cabinet Light Replcmnt Rexdale Brkrs
BR	2019	15133064	DR	61378369	NOCO ORAS	VALD	5710	04/15/2019	N-TS-REXDALETS -BR-M31	Rexdale M31 SF6 Invest/Repair
BR	2019	15133009	DR	61378373	NOCO ORAS	VALD	5710	07/29/2019	N-TS-REXDALETS -BR-M33	Rexdale M33 SF6 Invest/Repair
BR	2019	15133240	DR	61378379	NOCO ORAS	VALD	0312	10/17/2019	N-TS-REXDALETS -BR-M34	Rexdale M34 SF6 Invest/Repair
BR	2020	15166788	DR	61388442	NOCO ORAS	VALD	0100	03/09/2020	N-TS-REXDALETS -BR-M34	cabinet lighting not operating Rexdale
BR	2020	15166867	DR	61388442	NOCO ORAS	VALD	0100	03/09/2020	N-TS-REXDALETS -BR-M4	cabinet lighting not operating Rexdale
BR	2020	15133070	DR	61378584	NOCO ORAS	VALD	5710	01/03/2020	N-TS-REXDALETS -BR-M4	Rexdale M4 SF6 Invest/Repair
BR	2019	15133077	DR	61378585	NOCO ORAS	VALD	0312	10/30/2019	N-TS-REXDALETS -BR-M6	Rexdale M6 SF6 Invest/Repair
BR	2020	15166695	DR	61388442	NOCO ORAS	VALD	0100	03/09/2020	N-TS-REXDALETS -BR-M6	cabinet lighting not operating Rexdale
BR	2020	15166865	DR	61388442	NOCO ORAS	VALD	0100	03/09/2020	N-TS-REXDALETS -BR-T1B	cabinet lighting not operating Rexdale
BR	2019	15133008	DR	61378586	NOCO ORAS	VALD	0100	09/10/2019	N-TS-REXDALETS -BR-T1B	Rexdale T1B SF6 Invest/Repair
BR	2019	15132955	DR	61378587	NOCO ORAS	VALD	5710	07/29/2019	N-TS-REXDALETS -BR-T2Y	Rexdale T2Y SF6 Invest/Repair
BR	2020	15166866	DR	61388442	NOCO ORAS	VALD	0100	03/09/2020	N-TS-REXDALETS -BR-T2Y	cabinet lighting not operatingRexdale
BR	2020	15166816	DR	61388442	NOCO ORAS	VALD	0100	03/09/2020	N-TS-REXDALETS -BR-JSC2	cabinet lighting not operatingRexdale
BR	2019	17656605	DR	62217358	NOCO ORAS	VALD	5710	09/26/2019	N-TS-REXDALETS -BR-JSC2	Rexdale JSC2 repair
BR	2018	15133233	DR	61378588	NOCO ORAS	VALD	0100	02/16/2018	N-TS-REXDALETS -BR-JSC2	Rexdale JSC2 SF6 Invest/Repair
BR	2020	15166815	DR	61388442	NOCO ORAS	VALD	0100	03/09/2020	N-TS-REXDALETS -BR-T1J	cabinet lighting not operatingRexdale
BR	2019	15132805	DR	61378589	NOCO ORAS	VALD	5710	07/29/2019	N-TS-REXDALETS -BR-T1J	Rexdale T1J SF6 Invest/Repair
BR	2020	15133251	DR	61378590	NOCO ORAS	VALD	5710	01/03/2020	N-TS-REXDALETS -BR-YSC1	Rexdale YSC1 SF6 Invest/Repair
BR	2020	15166864	DR	61388442	NOCO ORAS	VALD	0100	03/09/2020	N-TS-REXDALETS -BR-YSC1	cabinet lighting not operatingRexdale
BR	2019	15133242	DR	61378591	NOCO ORAS	VALD	0100	09/10/2019	N-TS-REXDALETS -BR-JQ	Rexdale JQ SF6 Invest/Repair
BR	2019	15133250	DR	61378592	NOCO ORAS	VALD	5710	09/25/2019	N-TS-REXDALETS -BR-M36	Rexdale M36 SF6 Invest/Repair
BR	2020	15166787	DR	61388442	NOCO ORAS	VALD	0100	03/09/2020	N-TS-REXDALETS -BR-M36	cabinet lighting not operatingRexdale
BR	2016	15181445	DR	61386388	NOCO ORAS	VALD	0700	12/02/2016	N-TS-REXDALETS -BR-M36	Rexdale M36 invest/repair
BR	2020	15166944	DR	61388442	NOCO ORAS	VALD	0100	03/09/2020	N-TS-REXDALETS -BR-T2Q	Cabinet lighting not operatingRexdale
BR	2020	15166906	DR	61388442	NOCO ORAS	VALD	0100	03/09/2020	N-TS-REXDALETS -BR-T2Q	Cabinet lighting not operatingRexdale
BR	2019	15133244	DR	61378593	NOCO ORAS	VALD	5710	07/29/2019	N-TS-REXDALETS -BR-T2Q	Rexdale T2Q SF6 Invest/Repair
BR	2016	14678304	DR	61288752	NOCO ORAS	VALD	1000	08/03/2016	N-TS-REXDALETS -BR-BSC3	Rexdale BSC3 repair
BR	2020	15166935	DR	61388442	NOCO ORAS	VALD	0100	03/09/2020	N-TS-REXDALETS -BR-BSC3	Cabinet lighting not operatingRexdale
BR	2020	15166959	DR	61388442	NOCO ORAS	VALD	0100	03/09/2020	N-TS-REXDALETS -BR-BSC3	cabinet lighting not operatingRexdale
BR	2019	15133243	DR	61378594	NOCO ORAS	VALD	0312	07/04/2019	N-TS-REXDALETS -BR-BSC3	Rexdale BSC3 SF6 Invest/Repair
BR	2018	16853717	DR	61884397	NOCO ORAS	VALD	0100	07/11/2018	N-TS-REXDALETS -BR-BSC3	Rexdale BSC3 D.C. ground repair
BR	2018	17015170	DR	62025417	NOCO ORAS	VALD	1611	10/31/2018	N-TS-REXDALETS -BR-BSC3	Rexdale BSC3 invest/repair
BR	2020	19487353	DR	62815626	NOCO ORAS	VALD	1615	12/15/2020	N-TS-REXDALETS -BR-BSC3	Rexdale BSC3 not operating DC ground
BR	2018	15762307	DR	61532805	NOCO ORAS	VALD	1400	06/18/2018	N-TS-REXDALETS -BR-QSC4	QSC4 failed to close
BR	2019	17648252	DR	62215141	NOCO ORAS	VALD	0312	10/17/2019	N-TS-REXDALETS -BR-QSC4	Rexdale QSC4 breaker rebuild
BR	2015	14318873	DR	61229781	NOCO ORAS	VALD	0312	10/30/2015	N-TS-REXDALETS -BR-QSC4	Rexdale - QSC4 Breaker Rebuilt Checks
BR	2020	15167011	DR	61388442	NOCO ORAS	VALD	0100	03/09/2020	N-TS-REXDALETS -BR-QSC4	cabinet lighting not operatingRexdale
BR	2016	14716882	DR	61292421	NOCO ORAS	VALD	0100	06/15/2016	N-TS-REXDALETS -BR-QSC4	Rexdale QSC4 breaker testing
BR	2017	15448444	DR	61451782	NOCO ORAS	VALD	5710	11/17/2017	N-TS-REXDALETS -BR-M2	Rexdale M2 racking mech faulty
BR	2020	15132958	DR	61378595	NOCO ORAS	VALD	5710	01/03/2020	N-TS-REXDALETS -BR-M2	Rexdale M2 SF6 Invest/Repair
BR	2019	15132807	DR	61378596	NOCO ORAS	VALD	5710	10/30/2019	N-TS-REXDALETS -BR-M1	Rexdale M1 SF6 Invest/Repair
BR	2020	18611443	DR	62540790	NOCO ORAS	VALD	1400	03/25/2020	N-TS-REXDALETS -BR-M1	REXDALE M1 NOT OPERATING
BR	2018	17112536	DR	62064977	NOCO ORAS	VALD	0700	11/26/2018	N-TS-REXDALETS -BR-M1	Rexdale Bus outage inspection
BR	2019	15132809	DR	61378597	NOCO ORAS	VALD	0312	11/25/2019	N-TS-REXDALETS -BR-M5	Rexdale M5 SF6 Invest/Repair
BR	2019	15132808	DR	61378599	NOCO ORAS	VALD	0100	10/07/2019	N-TS-REXDALETS -BR-M3	Rexdale M3 SF6 Invest/Repair
BR	2020	15167012	DR	61388442	NOCO ORAS	VALD	0100	03/09/2020	N-TS-REXDALETS -BR-BY	cabinet lighting not operatingRexdale
BR	2019	17648255	DR	62215142	NOCO ORAS	VALD	5710	09/26/2019	N-TS-REXDALETS -BR-BY	Rexdale BY breaker rebuild
BR	2019	15133241	DR	61378600	NOCO ORAS	VALD	0100	09/26/2019	N-TS-REXDALETS -BR-M35	Rexdale M35 SF6 Invest/Repair
BR	2020	15133065	DR	61378601	NOCO ORAS	VALD	5710	01/09/2020	N-TS-REXDALETS -BR-M32	Rexdale M32 SF6 Invest/Repair
BR	2017	15640764	TC	61475726	NOCO ORAS	RECD		06/19/2017	N-TS-REXDALETS -BR-BSC3	S2: PENDING MONDAY - EMD - SC3 NEUTRAL O
BR	2017	15981496	TC	61624330	NOCO ORAS	RECD		08/28/2017	N-TS-REXDALETS -BR-BSC3	S2 EMD PD RE: SC3 NEUTRAL OVER CURRENT
BR	2020	18599480	TC	62536721	NOCO ORAS	RECD		03/09/2020	N-TS-REXDALETS -BR-M1	S2 EMD RE: M1 STATUS
BR	2020	19642704	TC	62843591	NOCO ORAS	RECD		12/04/2020	N-TS-REXDALETS -BR-M5	S2 IMM EMD RE: M5 BREAKER UNABLE TO CLOS
BR	2020	18636837	TC	62544107	NOCO ORAS	RECD		03/20/2020	N-TS-REXDALETS -BR-M5	S2 - EMD - BREAKER WONT CLOSE
BR	2017	15671280	TC	61493869	NOCO ORAS	RECD		06/23/2017	N-TS-REXDALETS -BR-QSC4	S2^ PD^ EMD^ REXDALE TS^ RE: QSC4 BREAKE
BR	2020	18500263	TC	62522076	NOCO ORAS	RECD		02/07/2020	N-TS-REXDALETS -BR-YSC1	S2 PS RE: YSC1 BREAKER FAIL TO CLOSE
BR	2019	17750667	TC	62245943	NOCO ORAS	RECD		07/02/2019	N-TS-REXDALETS -BR-M31	S2 - IMM EMD - RESTORE M31 FEEDER
BR	2019	17576636	TC	62196395	NOCO ORAS	RECD		05/13/2019	N-TS-REXDALETS -BR-YSC1	S2 - IMM EMD - WHY WE CANT CLOSE YSC1 FR
BR	2018	16289460	TC	61766505	NOCO ORAS	RECD		01/30/2018	N-TS-REXDALETS -BR-YSC1	S2 PC IM RE YSC1 BREAKER INTERMITENT CON
BR	2016	15174837	TC	61383322	NOCO ORAS	RECD		10/20/2016	N-TS-REXDALETS -BR-M36	NAR29 M36 Breaker Low Density
BR	2018	16853695	TC	61884486	NOCO ORAS	RECD		07/04/2018	N-TS-REXDALETS -BR-BSC3	S2 - IMM EMD - BSC3 BREAKER GAS RELAY
BR	2016	15096123	TC	61370525	NOCO ORAS	RECD		09/26/2016	N-TS-REXDALETS -BR-BSC3	s2 emd rexdale ts bsc3 breaker
BR	2018	17013098	TC	62023704	NOCO ORAS	RECD		10/05/2018	N-TS-REXDALETS -BR-BSC3	S2 IMM EMD REXDALE TS SF6 LOW DENSITY AL
BR	2017	15683513	TC	61497251	NOCO ORAS	RECD		06/23/2017	N-TS-REXDALETS -BR-QSC4	Rexdale QCS4 won't operate
BR	2017	15682808	TC	61497253	NOCO ORAS	RECD		06/08/2017	N-TS-REXDALETS -BR-QSC4	S2 PC PD RE SC4 WONT OPERATE FROM CONTRO
BR	2020	19486102	TC	62812964	NOCO ORAS	RECD		11/04/2020	N-TS-REXDALETS -BR-M5	S2 EMD PD RE: M5 BREAKER WILL NOT CLOSE
BR	2020	19005047	TC	62599182	NOCO ORAS	RECD		06/05/2020	N-TS-REXDALETS -BR-M5	S2 - EMD REXDALE TS M5 & M6 A/RS WITH M5
BR	2020	19005045	TC	62599137	NOCO ORAS	RECD		06/04/2020	N-TS-REXDALETS -BR-M5	S2 - P&C REXDALE TS M5 & M6 A/RS WITH M5
BR	2019	17243974	TC	62132050	NOCO ORAS	RECD		02/05/2019	N-TS-REXDALETS -BR-M3	S2 IMD EMD RE: INVESTIGATE M3 BREAKER WO

Asset Type	Year	Notification	Notifictn type	Order	System status	User stat	Coding	Completn date	Functional Loc.	Description
BR	2015	14200798	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-M31	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2020	18846277	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-M31	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2019	18368685	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-M31	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2018	16690597	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-M31	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2017	15448897	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-M31	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2016	15167072	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-M31	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2016	14753174	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-M31	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2015	13584066	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-M31	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2017	16141441	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-M31	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2018	17043194	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-M31	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2020	19586796	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-M31	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2016	14055242	PR	61195094	NOCO ORAS	INIT	CR03	09/30/2016	N-TS-REXDALETS -BR-M31	BR-M/C-SF6-Strategy
BR	2021	19191322	PR	62679250	NOCO ORAS	INIT	CR04	01/29/2021	N-TS-REXDALETS -BR-M31	BR-M/C-SF6-Strategy
BR	2021	19191324	PR	62679252	NOCO ORAS	INIT	CR01	01/29/2021	N-TS-REXDALETS -BR-M33	BR-M/C-SF6-Strategy
BR	2018	17043196	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-M33	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2015	14200793	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-M33	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2016	14753177	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-M33	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2016	15167076	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-M33	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2019	18368686	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-M33	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2020	18846279	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-M33	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2015	13584239	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-M33	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2020	19588793	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-M33	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2016	14055244	PR	61195096	NOCO ORAS	INIT	CR03	09/30/2016	N-TS-REXDALETS -BR-M33	BR-M/C-SF6-Strategy
BR	2018	16690703	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-M33	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2017	16141442	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-M33	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2017	15448899	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-M33	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2015	13584282	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-M34	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2015	14200794	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-M34	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2016	14055245	PR	61195097	NOCO ORAS	INIT	CR03	09/30/2016	N-TS-REXDALETS -BR-M34	BR-M/C-SF6-Strategy
BR	2016	14753178	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-M34	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2016	15167077	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-M34	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2017	15448901	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-M34	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2017	16141443	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-M34	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2018	17043213	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-M34	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2020	18846290	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-M34	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2018	16690680	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-M34	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2019	18368687	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-M34	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2021	19191325	PR	62679253	NOCO ORAS	INIT	CR01	01/08/2021	N-TS-REXDALETS -BR-M34	BR-M/C-SF6-Strategy
BR	2020	19588794	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-M34	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2019	18368688	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-M4	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2017	16141444	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-M4	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2017	15448917	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-M4	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2015	14200795	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-M4	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2018	17043197	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-M4	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2020	19588795	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-M4	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2018	16690644	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-M4	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2020	18846276	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-M4	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2016	15167059	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-M4	STN 'A' PWR EQ INSP-SVI FALL 2016

BR	2016	14753185	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-M4	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2016	14055236	PR	61195088	NOCO ORAS	INIT	CR03	09/30/2016	N-TS-REXDALETS -BR-M4	BR-M/C-SF6-Strategy
BR	2015	13584283	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-M4	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2020	19588796	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-M6	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2018	17043198	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-M6	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2017	16141449	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-M6	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2017	15448921	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-M6	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2016	15167110	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-M6	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2015	14200796	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-M6	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2015	13584284	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-M6	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2020	18846167	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-M6	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2019	18368689	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-M6	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2018	16690647	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-M6	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2016	14753192	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-M6	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2016	14055238	PR	61195090	NOCO ORAS	INIT	CR03	09/30/2016	N-TS-REXDALETS -BR-M6	BR-M/C-SF6-Strategy
BR	2016	14753162	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-T1B	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2016	15167094	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-T1B	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2017	15448933	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-T1B	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2017	16141445	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-T1B	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2018	16690660	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-T1B	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2018	17043193	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-T1B	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2019	18368720	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-T1B	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2020	18846202	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-T1B	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2020	19588797	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-T1B	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2015	14200797	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-T1B	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2016	14055239	PR	61195091	NOCO ORAS	INIT	CR03	09/30/2016	N-TS-REXDALETS -BR-T1B	BR-M/C-SF6-Strategy
BR	2015	13584105	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-T1B	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2017	16141446	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-T2Y	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2017	15448942	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-T2Y	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2018	16690683	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-T2Y	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2020	18846274	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-T2Y	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2016	15167048	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-T2Y	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2016	14753172	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-T2Y	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2015	14200791	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-T2Y	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2021	19191320	PR	62679248	NOCO ORAS	INIT	CR01	02/12/2021	N-TS-REXDALETS -BR-T2Y	BR-M/C-SF6-Strategy
BR	2020	19586797	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-T2Y	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2019	18368721	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-T2Y	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2016	14055240	PR	61195092	NOCO ORAS	INIT	CR03	09/30/2016	N-TS-REXDALETS -BR-T2Y	BR-M/C-SF6-Strategy
BR	2018	17043199	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-T2Y	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2015	13584285	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-T2Y	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2018	17043214	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-JSC2	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2018	16690593	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-JSC2	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2017	15448944	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-JSC2	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2019	18368722	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-JSC2	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2015	13584286	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-JSC2	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2020	19586798	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-JSC2	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2019	17560884	PR	61910305	NOCO ORAS	INIT	CR02	05/01/2019	N-TS-REXDALETS -BR-JSC2	STN 'A' PWR EQ INSP-SVI Spr 2019
BR	2017	16141447	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-JSC2	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2020	18846262	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-JSC2	STN 'A' PWR EQ INSP-SVI Spr 2020

BR	2015	14200792	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-JSC2	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2016	15167055	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-JSC2	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2016	14753169	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-JSC2	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2017	15448946	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-T1J	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2016	15167078	PR	61170680	NOCO ORAS	INIT	CR01	10/12/2016	N-TS-REXDALETS -BR-T1J	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2016	14753163	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-T1J	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2017	16141409	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-T1J	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2018	16690664	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-T1J	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2019	18368723	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-T1J	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2015	14200799	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-T1J	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2016	14055249	PR	61195101	NOCO ORAS	INIT	CR03	09/30/2016	N-TS-REXDALETS -BR-T1J	BR-M/C-SF6-Strategy
BR	2015	13584287	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-T1J	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2018	17043215	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-T1J	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2020	18846211	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-T1J	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2020	19586799	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-T1J	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2019	18368724	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-YSC1	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2015	13584106	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-YSC1	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2016	14753176	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-YSC1	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2016	15167079	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-YSC1	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2018	16690614	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-YSC1	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2018	17043216	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-YSC1	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2015	14200800	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-YSC1	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2020	18846228	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-YSC1	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2020	19588771	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-YSC1	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2017	15448955	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-YSC1	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2017	16141420	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-YSC1	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2016	14753166	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-JQ	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2015	14200810	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-JQ	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2020	18846275	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-JQ	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2019	18368725	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-JQ	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2018	17043232	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-JQ	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2016	15167111	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-JQ	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2018	16690643	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-JQ	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2020	19588772	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-JQ	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2017	16141452	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-JQ	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2017	15448957	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-JQ	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2015	13584288	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-JQ	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2016	14055241	PR	61195093	NOCO ORAS	INIT	CR03	09/30/2016	N-TS-REXDALETS -BR-JQ	BR-M/C-SF6-Strategy
BR	2020	19588798	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-M36	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2020	18846222	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-M36	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2015	13584142	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-M36	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2021	19191327	PR	62679255	NOCO ORAS	INIT	CR04	01/20/2021	N-TS-REXDALETS -BR-M36	BR-M/C-SF6-Strategy
BR	2016	14055248	PR	61195100	NOCO ORAS	INIT	CR03	09/30/2016	N-TS-REXDALETS -BR-M36	BR-M/C-SF6-Strategy
BR	2019	18368769	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-M36	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2018	17043233	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-M36	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2017	16141421	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-M36	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2018	16690688	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-M36	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2017	15448837	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-M36	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2015	14200801	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-M36	STN 'A' PWR EQ INSP-SVI FALL 2015

BR	2016	15167049	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-M36	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2016	14753184	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-M36	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2015	13584322	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-T2Q	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2018	16690684	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-T2Q	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2020	18846238	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-T2Q	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2020	19588780	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-T2Q	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2015	14200838	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-T2Q	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2016	14055250	PR	61195102	NOCO ORAS	INIT	CR03	09/30/2016	N-TS-REXDALETS -BR-T2Q	BR-M/C-SF6-Strategy
BR	2016	14753167	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-T2Q	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2016	15167185	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-T2Q	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2017	15448959	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-T2Q	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2017	16141448	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-T2Q	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2018	17043210	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-T2Q	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2019	18368753	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-T2Q	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2020	19588781	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-BSC3	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2020	18846233	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-BSC3	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2017	16141422	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-BSC3	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2019	18368754	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-BSC3	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2017	15448961	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-BSC3	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2018	16690687	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-BSC3	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2018	17043211	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-BSC3	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2015	14200839	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-BSC3	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2016	14753164	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-BSC3	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2015	13584065	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-BSC3	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2016	15167090	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-BSC3	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2015	14200840	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-QSC4	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2018	16690702	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-QSC4	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2017	15448971	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-QSC4	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2020	18846291	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-QSC4	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2017	16141423	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-QSC4	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2018	17043212	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-QSC4	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2019	17560917	PR	61910305	NOCO ORAS	INIT	CR02	05/01/2019	N-TS-REXDALETS -BR-QSC4	STN 'A' PWR EQ INSP-SVI Spr 2019
BR	2015	13584323	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-QSC4	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2016	15167181	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-QSC4	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2019	18368755	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-QSC4	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2020	19588783	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-QSC4	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2017	16141424	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-M2	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2020	19588789	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-M2	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2019	18368760	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-M2	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2021	19191303	PR	62679241	NOCO ORAS	INIT	CR01	02/09/2021	N-TS-REXDALETS -BR-M2	BR-M/C-SF6-Strategy
BR	2016	14055234	PR	61195086	NOCO ORAS	INIT	CR03	09/30/2016	N-TS-REXDALETS -BR-M2	BR-M/C-SF6-Strategy
BR	2020	18846253	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-M2	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2018	16690707	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-M2	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2015	13584327	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-M2	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2015	14200845	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-M2	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2016	14753171	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-M2	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2016	15167091	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-M2	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2018	17043218	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-M2	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2017	15448857	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-M2	STN 'A' PWR EQ INSP-SVI Spr 2017

BR	2021	19191302	PR	62679240	NOCO ORAS	INIT	CR01	02/18/2021	N-TS-REXDALETS -BR-M1	BR-M/C-SF6-Strategy
BR	2016	14055230	PR	61195082	NOCO ORAS	INIT	CR03	09/30/2016	N-TS-REXDALETS -BR-M1	BR-M/C-SF6-Strategy
BR	2015	14200846	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-M1	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2016	15167112	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-M1	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2018	16690685	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-M1	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2015	13584328	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-M1	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2017	15448872	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-M1	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2017	16141425	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-M1	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2020	19588790	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-M1	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2020	18846258	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-M1	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2019	18368761	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-M1	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2018	17043219	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-M1	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2016	14753170	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-M1	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2015	14200847	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-M5	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2016	14753189	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-M5	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2015	13584329	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-M5	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2017	15448887	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-M5	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2021	19191307	PR	62679245	NOCO ORAS	INIT	CR01	02/24/2021	N-TS-REXDALETS -BR-M5	BR-M/C-SF6-Strategy
BR	2020	19588791	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-M5	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2016	14055237	PR	61195089	NOCO ORAS	INIT	CR03	09/30/2016	N-TS-REXDALETS -BR-M5	BR-M/C-SF6-Strategy
BR	2020	18846263	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-M5	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2019	18368762	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-M5	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2018	17043234	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-M5	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2018	16690667	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-M5	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2017	16141450	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-M5	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2016	15167092	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-M5	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2020	19588792	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-M3	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2020	18846265	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-M3	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2019	18368763	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-M3	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2018	17043235	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-M3	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2016	14753173	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-M3	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2015	14200848	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-M3	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2015	13584350	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-M3	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2016	14055235	PR	61195087	NOCO ORAS	INIT	CR03	09/30/2016	N-TS-REXDALETS -BR-M3	BR-M/C-SF6-Strategy
BR	2018	16690682	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-M3	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2017	16141426	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-M3	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2017	15448889	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-M3	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2016	15167093	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-M3	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2018	16690599	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-BY	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2019	18368764	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-BY	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2018	17043190	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-BY	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2015	14200849	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-BY	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2019	17560910	PR	61910305	NOCO ORAS	INIT	CR02	05/01/2019	N-TS-REXDALETS -BR-BY	STN 'A' PWR EQ INSP-SVI Spr 2019
BR	2017	15448891	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-BY	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2020	19588882	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-BY	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2015	13584352	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-BY	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2016	14753165	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-BY	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2016	15167117	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-BY	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2020	18846292	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-BY	STN 'A' PWR EQ INSP-SVI Spr 2020

BR	2017	16141427	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-BY	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2017	16141428	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-M35	STN 'A' PWR EQ INSP-SVI Fall 2017
BR	2019	18368765	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-M35	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2018	17043191	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-M35	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2018	16690701	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-M35	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2017	15448829	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-M35	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2016	14055246	PR	61195098	NOCO ORAS	INIT	CR03	09/30/2016	N-TS-REXDALETS -BR-M35	BR-M/C-SF6-Strategy
BR	2016	14753179	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-M35	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2015	14200850	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-M35	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2016	15167095	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-M35	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2020	19588883	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-M35	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2021	19191326	PR	62679254	NOCO ORAS	INIT	CR04	01/29/2021	N-TS-REXDALETS -BR-M35	BR-M/C-SF6-Strategy
BR	2020	18846267	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-M35	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2015	13584109	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-M35	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2019	18368766	PR	61910306	NOCO ORAS	INIT	CR02	11/29/2019	N-TS-REXDALETS -BR-M32	STN 'A' PWR EQ INSP-SVI Fall 2019
BR	2018	17043230	PR	61554474	NOCO ORAS	INIT	CR01	10/19/2018	N-TS-REXDALETS -BR-M32	STN 'A' PWR EQ INSP-SVI Fall 2018
BR	2015	13584353	PR	61065543	NOCO ORAS	INIT	CR02	03/31/2015	N-TS-REXDALETS -BR-M32	STN 'A' PWR EQ INSP-SVI SPRING 2015
BR	2018	16690665	PR	61554473	NOCO ORAS	INIT	CR02	04/24/2018	N-TS-REXDALETS -BR-M32	STN 'A' PWR EQ INSP-SVI Spr 2018
BR	2020	18846268	PR	62283722	NOCO ORAS	INIT	CR01	04/29/2020	N-TS-REXDALETS -BR-M32	STN 'A' PWR EQ INSP-SVI Spr 2020
BR	2021	19191323	PR	62679251	NOCO ORAS	INIT	CR01	01/07/2021	N-TS-REXDALETS -BR-M32	BR-M/C-SF6-Strategy
BR	2020	19588884	PR	62283723	NOCO ORAS	INIT	CR01	11/19/2020	N-TS-REXDALETS -BR-M32	STN 'A' PWR EQ INSP-SVI Fall 2020
BR	2016	15167096	PR	61170680	NOCO ORAS	INIT	CR02	10/12/2016	N-TS-REXDALETS -BR-M32	STN 'A' PWR EQ INSP-SVI FALL 2016
BR	2016	14055243	PR	61195095	NOCO ORAS	INIT	CR03	09/30/2016	N-TS-REXDALETS -BR-M32	BR-M/C-SF6-Strategy
BR	2015	14200851	PR	61065544	NOCO ORAS	INIT	CR01	09/19/2015	N-TS-REXDALETS -BR-M32	STN 'A' PWR EQ INSP-SVI FALL 2015
BR	2016	14753175	PR	61170659	NOCO ORAS	INIT	CR02	06/09/2016	N-TS-REXDALETS -BR-M32	STN 'A' PWR EQ INSP-SVI SPRING 2016
BR	2017	15448811	PR	61324990	NOCO ORAS	INIT	CR01	03/27/2017	N-TS-REXDALETS -BR-M32	STN 'A' PWR EQ INSP-SVI Spr 2017
BR	2017	16141429	PR	61324991	NOCO ORAS	INIT	CR01	10/12/2017	N-TS-REXDALETS -BR-M32	STN 'A' PWR EQ INSP-SVI Fall 2017

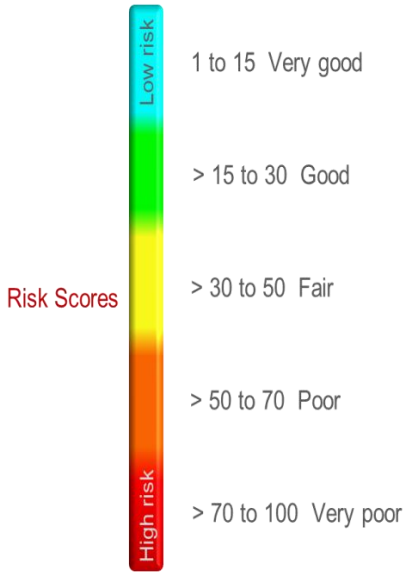
Health Assessment for Transformer at Preston T3 and T4 Transformers

Prepared by: Peter Zhao

Approved by: Behdad Biglar

Rev.#: 00

APPENDIX – Health Index Summary



The asset risk assessment process relies on the Asset Analytics system to provide initial asset screening and quantitative analysis of the following six risk factors:

- Condition – Asset Health Index or condition risk related to the increased probability of failure that assets experience when their condition degrades over time.
- Demographics - Risk related to the increased probability of failure exhibited by assets of a particular make, manufacturer, and/or vintage.
- Criticality - Represents the impact that the failure of a specific asset would have on the transmission system
- Performance - Risk that reflects the historical performance of an asset, derived from the frequency and duration of outages
- Utilization - Risk that reflects the increased rate of deterioration exhibited by an asset that is highly utilized
- Economics - Risk based on the economic evaluation of the ongoing costs associated with the operation of an asset

The Asset Analytics system enables Hydro One planners to review aggregated information from various enterprise reporting systems to provide a common understanding of asset health and asset risks. This drives efficient and effective planning decisions by ensuring a consistent view of asset information for all planners. The information contained within the asset analytics system includes condition information driven by deficiency and preventative maintenance reports, demographic information (including make, model, type and criticality to the transmission system), performance data based on equipment outages, utilization information, and economics.

Hydro One's planners also take into account additional factors such as load forecasts, equipment ratings, operating restrictions, security incidents, environmental risks and requirements, compliance obligations, equipment defects, obsolescence, and health and safety considerations to ensure capital expenditures target the most appropriate mix of assets.

Table 1 - Health Assessment for Power Transformers at Preston TS

Asset	Age	Final review		Conditi	Demog.	Econ.	Perform.	Utiliz.	Critic.	Obsole.	HS&E	PCB
		Risk	Technical Assessments and Recommendations									
T3	53	high	• The assessment concluded that the T3 has shown deterioration of the structural integrity, in a high risk category. • Insulation system is deteriorating. • Tranformer is oil leaking and requires top-up. • PCB contaminated bushings (HV) were detected. • Defect reports were filed numerous times on ULTC and require attention and repair. • Known manufacuting deficiency and limitation results in no available Limited Time Rating (LTR) and limits capacity to nameplate rating • Recommended for replacement of the T5 within next 5 years in order to mitigate reliability risk, safety and environmental hazards, and to lower overall future OM&A cost.	22	100	20	20	3	29	N	Y	Y

T4	53	high	• The assessment concluded that the T4 has shown deterioration of the structural integrity, in a high risk category. • Insulation system is deteriorating. • PCB contaminated bushings (HV) were detected. • Defect reports were filed numerous times on ULTC and require attention and repair. • Known manufacuting deficiency and limitation results in no available Limited Time Rating (LTR) and limits capacity to nameplate rating • Recommended for replacement of the T5 within next 5 years in order to mitigate reliability risk, safety and environmental hazards, and to lower overall future OM&A cost.	70	100	8	1	3	29	N	Y	Y

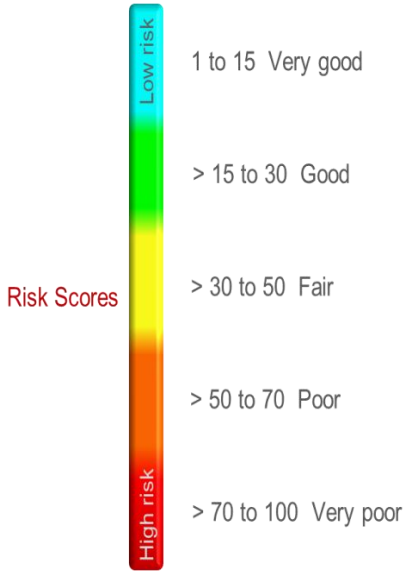
Health Assessment for Protection at Preston TS

Prepared by: Abu Zahid

Approved by: Jawed Atcha

Rev.#: 00

APPENDIX – Health Index Summary



The asset risk assessment process relies on the Asset Analytics system to provide initial asset screening and quantitative analysis of the following six risk factors:

- Condition – Asset Health Index or condition risk related to the increased probability of failure that assets experience when their condition degrades over time.
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- Performance - Risk that reflects the historical performance of an asset, derived from the frequency and duration of outages
- Utilization - Risk that reflects the increased rate of deterioration exhibited by an asset that is highly utilized
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The Asset Analytics system enables Hydro One planners to review aggregated information from various enterprise reporting systems to provide a common understanding of asset health and asset risks. This drives efficient and effective planning decisions by ensuring a consistent view of asset information for all planners. The information contained within the asset analytics system includes condition information driven by deficiency and preventative maintenance reports, demographic information (including make, model, type and criticality to the transmission system), performance data based on equipment outages, utilization information, and economics.

Hydro One's planners also take into account additional factors such as load forecasts, equipment ratings, operating restrictions, security incidents, environmental risks and requirements, compliance obligations, equipment defects, obsolescence, and health and safety considerations to ensure capital expenditures target the most appropriate mix of assets.

Station	Asset	Type	Age	Asset Risk Assessment (ARA)	Comments	Condition RF	Demographics RF	Economics RF	Performance RF	Utilization RF	Criticality	Obsolescence	HS&E
	N-TS-PRESTONTS -PR-T3 A	Electromechanical	33	High	Electromechanical relays are obsolete and no longer supported. It is currently being maintained with spare parts when it fails.	1	25	1	100	0	19	Y	N
	N-TS-PRESTONTS -PR-T4 A		33	High		1	25	1	1	0	19	Y	N
	N-TS-PRESTONTS -PR-21M23 MAIN	Microprocessor	25	High	Relays are at end of their expected service life. Hardware and firmware deficiencies are being observed in 1st generation of microprocessor relays.	1	75	1	1	0	10	N	N
	N-TS-PRESTONTS -PR-21M24 B		25	High		1	75	1	1	0	10	N	N
	N-TS-PRESTONTS -PR-21M29 MAIN		25	High		1	75	1	1	0	10	N	N
	N-TS-PRESTONTS -PR-21M30 B		25	High		1	75	1	1	0	10	N	N
	N-TS-PRESTONTS -PR-T3 OL		22	High		1	75	1	1	0	19	N	N
	N-TS-PRESTONTS -PR-T4 OL		22	High		1	75	1	1	0	19	N	N
	N-TS-PRESTONTS -PR-21M26 MAIN	Solid State	33	High	Solid-state relays are obsolete. It is currently being maintained with spare parts when it fails. M26, M27, M28, T3Q, T4J relays are PALC type relays which have a high failure rate.	1	100	1	1	0	10	Y	N
	N-TS-PRESTONTS -PR-21M27 MAIN		33	High		1	100	1	1	0	10	Y	N
	N-TS-PRESTONTS -PR-21M28 MAIN		33	High		1	100	1	1	0	10	Y	N
	N-TS-PRESTONTS -PR-T3 B		24	High		1	50	1	1	0	19	Y	N
	N-TS-PRESTONTS -PR-T3J BF		33	High		1	100	1	1	0	10	Y	N
	N-TS-PRESTONTS -PR-T3Q BF		25	High		1	50	1	1	0	10	Y	N
	N-TS-PRESTONTS -PR-T4 B		24	High		1	50	1	1	0	19	Y	N
	N-TS-PRESTONTS -PR-T4J BF		25	High		1	50	1	1	0	10	Y	N
	N-TS-PRESTONTS -PR-T4Q BF		33	High		1	100	1	1	0	10	Y	N

Note: Preston TS relays 21M24A, 21M24 BU, 21M25 Main and 21M30BU have been replaced under customer driven project; scope to be confirmed during project planning phase.

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Floc	Description	Equipment	Make	Year Built	In-service Year	Samples	LAB TEST DATE (YYYYMMDD)	DISSOLVED HYDROGEN IN OIL	DISSOLVED OXYGEN IN OIL
N-TS-PRESTONTS -TF-T3	TF: Stepdn - 125MVA 220-28-28kV	1172094	CGE	1971	1971	2020	20200520	0	31005
N-TS-PRESTONTS -TF-T3		1172094	CGE	1971	1971	2019	20190526	0	37481
N-TS-PRESTONTS -TF-T3		1172094	CGE	1971	1971	2018	20180401	0	30056
N-TS-PRESTONTS -TF-T3		1172094	CGE	1971	1971	2017	20170726	0	25500
N-TS-PRESTONTS -TF-T3		1172094	CGE	1971	1971	2016	20160729	0	28200
N-TS-PRESTONTS -TF-T3		1172094	CGE	1971	1971	2013	20130215	0	24400
N-TS-PRESTONTS -TF-T3		1172094	CGE	1971	1971	2012	20120217	0	25300
N-TS-PRESTONTS -TF-T3		1172094	CGE	1971	1971	2011	20111028	0	25600
N-TS-PRESTONTS -TF-T4	TF: Stepdn - 125MVA 220-28-28kV	1172127	CGE	1971	1971	2020	20200520	0	32613
N-TS-PRESTONTS -TF-T4		1172127	CGE	1971	1971	2019	20190526	0	32991
N-TS-PRESTONTS -TF-T4		1172127	CGE	1971	1971	2018	20180401	11	30002
N-TS-PRESTONTS -TF-T4		1172127	CGE	1971	1971	2017	20170726	0	25200
N-TS-PRESTONTS -TF-T4		1172127	CGE	1971	1971	2016	20160729	0	26800
N-TS-PRESTONTS -TF-T4		1172127	CGE	1971	1971	2015	20151201	0	22800
N-TS-PRESTONTS -TF-T4		1172127	CGE	1971	1971	2014	20140429	0	23300
N-TS-PRESTONTS -TF-T4		1172127	CGE	1971	1971	2012	20120217	0	17100
N-TS-PRESTONTS -TF-T4		1172127	CGE	1971	1971	2011	20110901	2.28	24000

DISSOLVED NITROGEN IN OIL	DISSOLVED (CO) IN OIL	DISSOLVED (CO2) IN OIL	DISSOLVED METHANE IN OIL	DISSOLVED ETHANE IN OIL	DISSOLVED ETHYLENE IN OIL	DISSOLVED ACETYLENE IN OIL	TOTAL VOL OF DISSOLVED GAS
75193	518	2114	3	1	25	4	10.89
90397	491	2154	3	1	28	3	13.06
82262	501	2082	0	2	23	3	11.49
63300	404	1860	0	0	19	0	9.07
66500	424	2020	0	0	20	0	9.68
58000	404	1740	0	0	19	0	8.42
58300	348	1650	0	0	18	0	8.52
64200	443	1960	0	0	17	0	9.18
90179	600	2337	3	1	40	3	12.58
92336	635	2289	3	0	43	2	12.83
89830	619	2270	0	0	37	0	12.28
67700	468	1950	0	0	29	0	9.49
74000	517	2070	0	0	29	0	10.3
60000	460	1940	0	0	31	0	8.49
56800	337	1450	0	0	16	0	8.16
35800	119	645	0	0	6	0	5.35
65400	91	633	0	0	4	0	9.01

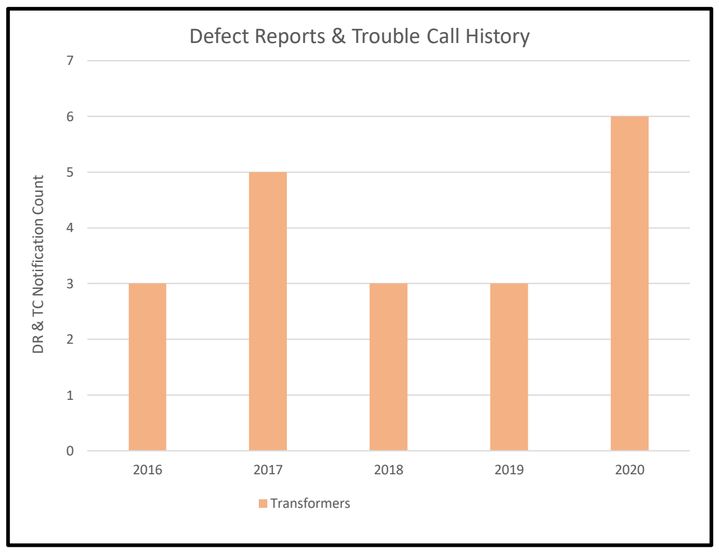
MOISTURE IN OIL	BREAKDOWN VOLTAGE (ASTM D1816)	BREAKDOWN VOLTAGE (ASTM D877)	OIL CONTAMINATION MEASUREMENT	ACIDITY MEASUREMNT (KOH reqd)	OIL POWER FACTOR AT 25 °C	FURAN IN OIL	COLOUR OF INSULATING OIL	SAMPLE OIL TEMPERATURE
5	N/A	45	34.4	N/A	0.05	0	2	25
6	57	46	34.9	0.01	0.08	0	2	25
5	64	58	34.4	0.01	0.05	0	2	30
8	67	58	37.2	0.01	0.05	5	2	50
6	48	46	34.3	0.01	0.06	5	2	50
1	40	43	33.5	0.01	0.05	5	2	22
3	56	51	34.2	0.02	0.05	0	N/A	22
8	67	51	35.5	0.01	0.07	0	2	17
4	N/A	42	32.8	N/A	0.09	0	2	25
6	69	58	33	0.01	0.13	5	2	25
5	64	62	32.4	0.01	0.09	5	2	30
7	68	58	35.7	0.01	0.09	6	2	51
7	32	44	32.5	0.02	0.1	5	2	50
5	24	50	33.2	0.01	0.07	5	1	37
3	53	54	32.6	0.01	0.08	5	2	30
4	59	47	32.2	0.01	0.07	0	N/A	32
15	54	52	32.1	0.01	0.08	N/A	2	54

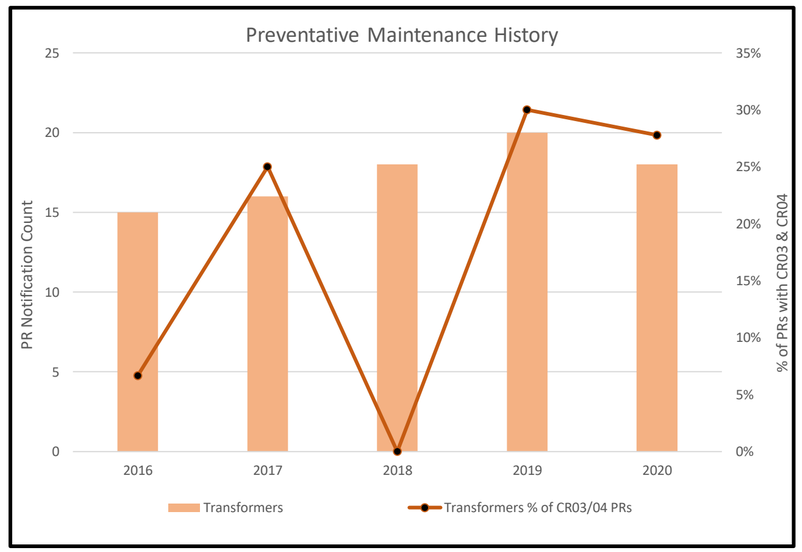
Quantity of Defect Reports and Trouble Calls					
Asset	Year				
	2016	2017	2018	2019	2020
Transformers	3	5	3	3	6

Quantity of Preventative Maintenance Reports					
Asset	Year				
	2016	2017	2018	2019	2020
Transformers	15	16	18	20	18

Assets: N-TS-PRESTONTS -TF-T3
N-TS-PRESTONTS -TF-T4

Preventative Maintenance Report Condition Ratings																				
	2016				2017				2018				2019				2020			
Asset	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04
Transformers	14	0	1	0	12	0	4	0	14	4	0	0	13	1	6	0	10	3	5	0





Data Extraction Notes:

1. Query SAP DR/TC/PR type completed notifications via t-code IW29
2. Seach by Functional Location (individual assets and parent FLOC)
3. Date range is 2015.1.1 to 2020.12.31
4. Exclude notification completion dates outside of 2016 to 2020.
5. Exclude cancelled or voided notifications.

Asset Type	year	Notification	Notifictn type	Order	System status	User status	Coding	Completn date	Functional Loc.	Description
TF	2016	14428358	DR	61242475	NOCO ORAS	VALD		12/29/2016	N-TS-PRESTONTS -TF-T3	Preston T.S. T3 conservitor gauge
TF	2017	15337363	DR	61412123	NOCO ORAS	VALD	0100	02/01/2017	N-TS-PRESTONTS -TF-T3	Preston T3 temp gauge
TF	2020	19221307	DR	62704008	NOCO ORAS	VALD	0100	08/13/2020	N-TS-PRESTONTS -TF-T4	Preston T4 repair ULTC filter pump
TF	2020	19277127	DR	62737530	NOCO ORAS	VALD	0700	09/01/2020	N-TS-PRESTONTS -TF-T3	Preston T3 Oil Leak
TF	2020	19038238	DR	62605540	NOCO ORAS	VALD	0100	06/16/2020	N-TS-PRESTONTS -TF-T3	Preston T3 sample/ship oil sample
TF	2020	19040132	DR	62605806	NOCO ORAS	VALD	0100	06/15/2020	N-TS-PRESTONTS -TF-T3	Preston T3 bank differential Emer DGA
TF	2016	15023726	DR	61368589	NOCO ORAS	VALD	1600	12/21/2016	N-TS-PRESTONTS -TF-T3	Preston TS T3 Replace Liquid Temp Gauge
TF	2017	15793697	DR	61506953	NOCO ORAS	VALD	9900	06/16/2017	N-TS-PRESTONTS -TF-T4	Preston TS T4 Fluidix by pass line
TF	2017	15793710	DR	61506954	NOCO ORAS	VALD	9900	06/16/2017	N-TS-PRESTONTS -TF-T4	Preston TS T4 Add ULTC drain for sample
TF	2018	14962258	DR	61358839	NOCO ORAS	VALD	0100	09/08/2018	N-TS-PRESTONTS -TF-T4	Preston TS T4 Fire HADS
TF	2018	15210880	DR	61595536	NOCO ORAS	VALD	0100	09/08/2018	N-TS-PRESTONTS -TF-T4	Preston TS T4 Valve Leaking
TF	2018	15210884	DR	61595534	NOCO ORAS	VALD	0100	09/08/2018	N-TS-PRESTONTS -TF-T4	Preston TS T4 Rad Grounds
TF	2017	15210881	DR	61419964	NOCO ORAS	VALD	0100	02/01/2017	N-TS-PRESTONTS -TF-T4	Preston TS T4 ULTC Filter
TF	2020	19276297	TC	62737531	NOCO ORAS	RECD		09/10/2020	N-TS-PRESTONTS -TF-T3	PC REQUESTING EMD AT STATION, S1 AWARE,
TF	2016	15009929	TC	61360377	NOCO ORAS	RECD		08/31/2016	N-TS-PRESTONTS -TF-T3	S1^ EMD^ PRESTON TS^ RE: T3 OIL TEMPERAT
TF	2017	15337055	TC	61412120	NOCO ORAS	RECD		02/17/2017	N-TS-PRESTONTS -TF-T3	S1 RE: T3 OIL TEMPERATURE ALARM
TF	2015	13831441	TC	61142626	NOCO ORAS	RECD		06/05/2015	N-TS-PRESTONTS -TF-T3	S1 - T3 OIL LEVEL ALLARM
TF	2015	14347294	TC	61232781	NOCO ORAS	RECD		11/16/2015	N-TS-PRESTONTS -TF-T3	S1 EMD PD T3 TRANSFORMER OIL TEMP ALARM
TF	2020	19036697	TC	62604938	NOCO ORAS	RECD		06/26/2020	N-TS-PRESTONTS -TF-T3	S1 IMD EMD RE: T3 DIFFERENTIAL
TF	2019	17241725	TC	62133774	NOCO ORAS	RECD		02/26/2019	N-TS-PRESTONTS -TF-T4	S1 EMD PD RE T4 TAP CHANGER FILTER TROUB
TF	2019	17473218	TC	62172025	NOCO ORAS	RECD		04/17/2019	N-TS-PRESTONTS -TF-T4	S1- EMD RE:T4 TRF DIFFERENTIAL PROTECTN
TF	2019	17484736	TC	62175152	NOCO ORAS	RECD		04/22/2019	N-TS-PRESTONTS -TF-T4	S1 EMD INSPECT T4 TO DECLARE AVAILABLE O

Asset Type	Year	Notification	Notifictn type	Order	System status	User stat	Coding	Completn date	Functional Loc.	Description
TF	2018	16977837	PR	61574507	NOCO ORAS	INIT	CR01	09/08/2018	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI Fall 2018
TF	2018	16993491	PR	61577721	NOCO ORAS	INIT	CR01	09/15/2018	N-TS-PRESTONTS -TF-T3	STN BUS -M21D- PWR WASH 2018
TF	2019	17503633	PR	61926769	NOCO ORAS	INIT	CR01	04/12/2019	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI Spr 2019
TF	2020	17811410	PR	62292283	NOCO ORAS	INIT	CR02	05/21/2020	N-TS-PRESTONTS -TF-T3	TF-GENERAL-GOT
TF	2019	16897531	PR	61929221	NOCO ORAS	INIT	CR03	05/31/2019	N-TS-PRESTONTS -TF-T3	TF-GENERAL-GOT
TF	2019	18325556	PR	61929433	NOCO ORAS	INIT	CR01	11/18/2019	N-TS-PRESTONTS -TF-T3	STN BUS -M21D- PWR WASH 2019
TF	2019	18393232	PR	61926770	NOCO ORAS	INIT	CR01	12/11/2019	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI Fall 2019
TF	2018	16418328	PR	61574506	NOCO ORAS	INIT	CR01	03/05/2018	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI Spr 2018
TF	2017	16176646	PR	61320088	NOCO ORAS	INIT	CR01	11/06/2017	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI Fall 2017
TF	2017	16175759	PR	61345972	NOCO ORAS	INIT	CR01	11/04/2017	N-TS-PRESTONTS -TF-T3	STN BUS -M21D- PWR WASH 2017
TF	2021	19201603	PR	62689539	NOCO ORAS	INIT	CR01	08/24/2021	N-TS-PRESTONTS -TF-T3	TF-GENERAL-GOT
TF	2017	15794089	PR	61320087	NOCO ORAS	INIT	CR01	06/14/2017	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI Spr 2017
TF	2020	19445459	PR	62293212	NOCO ORAS	INIT	CR01	10/19/2020	N-TS-PRESTONTS -TF-T3	STN BUS -M21D- PWR WASH 2020
TF	2018	15895175	PR	61576685	NOCO ORAS	INIT	CR02	04/06/2018	N-TS-PRESTONTS -TF-T3	TF-GENERAL-GOT
TF	2020	19446755	PR	62289510	NOCO ORAS	INIT	CR01	10/19/2020	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI Fall 2020
TF	2015	13510102	PR	60760558	NOCO ORAS	INIT	CR01	01/27/2015	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI FALL 2013
TF	2015	13819953	PR	61065141	NOCO ORAS	INIT	CR01	05/28/2015	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI SPRING 2015
TF	2015	14189257	PR	61054262	NOCO ORAS	INIT	CR01	09/15/2015	N-TS-PRESTONTS -TF-T3	STN BUS -M21D- PWR WASH 2015
TF	2017	14917931	PR	61341028	NOCO ORAS	INIT	CR01	06/14/2017	N-TS-PRESTONTS -TF-T3	TF-GENERAL-GOT
TF	2015	14435578	PR	61065142	NOCO ORAS	INIT	CR01	12/02/2015	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI FALL 2015
TF	2020	18758947	PR	62289509	NOCO ORAS	INIT	CR01	04/14/2020	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI Spr 2020
TF	2019	17649225	PR	62215117	NOCO ORAS	INIT	CR01	07/26/2019	N-TS-PRESTONTS -TF-T3	TF-GENERAL-(SPECIAL)DGA-MAIN TANK
TF	2016	14528041	PR	61168865	NOCO ORAS	INIT	CR01	03/02/2016	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI SPRING 2016
TF	2015	14056865	PR	61196713	NOCO ORAS	INIT	CR03	11/27/2015	N-TS-PRESTONTS -TF-T3	TF-GENERAL-D1
TF	2016	14044203	PR	61184072	NOCO ORAS	INIT	CR01	06/30/2016	N-TS-PRESTONTS -TF-T3	TF-GENERAL-GOT
TF	2015	14059840	PR	61199688	NOCO ORAS	INIT	CR01	11/27/2015	N-TS-PRESTONTS -TF-T3	TF-GENERAL-D2
TF	2016	15210791	PR	61168866	NOCO ORAS	INIT	CR01	11/01/2016	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI FALL 2016
TF	2016	15184582	PR	61188367	NOCO ORAS	INIT	CR01	10/20/2016	N-TS-PRESTONTS -TF-T3	STN BUS -M21D- PWR WASH 2016
TF	2019	18393236	PR	61926770	NOCO ORAS	INIT	CR01	12/11/2019	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI Fall 2019
TF	2020	17811426	PR	62292299	NOCO ORAS	INIT	CR02	05/21/2020	N-TS-PRESTONTS -TF-T4	TF-GENERAL-GOT
TF	2020	18758949	PR	62289509	NOCO ORAS	INIT	CR01	04/14/2020	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI Spr 2020
TF	2019	17484803	PR	62174481	NOCO ORAS	INIT	CR03	04/17/2019	N-TS-PRESTONTS -TF-T4	TF-GENERAL-(SPECIAL)RUSH-DGA MAIN TANK
TF	2018	15895189	PR	61576699	NOCO ORAS	INIT	CR02	04/06/2018	N-TS-PRESTONTS -TF-T4	TF-GENERAL-GOT
TF	2021	19201604	PR	62689540	NOCO ORAS	INIT	CR02	08/24/2021	N-TS-PRESTONTS -TF-T4	TF-GENERAL-GOT
TF	2019	17514541	PR	62182851	NOCO ORAS	INIT	CR03	07/15/2019	N-TS-PRESTONTS -TF-T4	TF-GENERAL-SPECIAL)DGA-MAIN TANK
TF	2018	16977758	PR	61574507	NOCO ORAS	INIT	CR01	09/08/2018	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI Fall 2018
TF	2018	16977776	PR	61577720	NOCO ORAS	INIT	CR01	09/08/2018	N-TS-PRESTONTS -TF-T4	STN BUS -M20D- PWR WASH 2018
TF	2015	13819959	PR	61065141	NOCO ORAS	INIT	CR01	05/28/2015	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI SPRING 2015
TF	2016	14044204	PR	61184073	NOCO ORAS	INIT	CR01	06/30/2016	N-TS-PRESTONTS -TF-T4	TF-GENERAL-GOT
TF	2017	16162227	PR	61345971	NOCO ORAS	INIT	CR01	10/28/2017	N-TS-PRESTONTS -TF-T4	STN BUS -M20D- PWR WASH 2017
TF	2019	17834933	PR	62303562	NOCO ORAS	INIT	CR01	07/26/2019	N-TS-PRESTONTS -TF-T4	TF-GENERAL-(SPECIAL)RUSH-DGA-MAIN TANK
TF	2016	14528043	PR	61168865	NOCO ORAS	INIT	CR01	03/02/2016	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI SPRING 2016
TF	2019	18290933	PR	61929432	NOCO ORAS	INIT	CR01	11/07/2019	N-TS-PRESTONTS -TF-T4	STN BUS -M20D- PWR WASH 2019
TF	2018	16418269	PR	61574506	NOCO ORAS	INIT	CR01	03/05/2018	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI Spr 2018
TF	2020	19391720	PR	62293207	NOCO ORAS	INIT	CR01	09/29/2020	N-TS-PRESTONTS -TF-T4	STN BUS -M20D- PWR WASH 2020
TF	2017	16176648	PR	61320088	NOCO ORAS	INIT	CR01	11/06/2017	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI Fall 2017
TF	2015	14435590	PR	61065142	NOCO ORAS	INIT	CR01	12/02/2015	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI FALL 2015
TF	2015	14322127	PR	61054261	NOCO ORAS	INIT	CR01	10/25/2015	N-TS-PRESTONTS -TF-T4	STN BUS -M20D- PWR WASH 2015
TF	2017	14917932	PR	61341029	NOCO ORAS	INIT	CR01	06/14/2017	N-TS-PRESTONTS -TF-T4	TF-GENERAL-GOT
TF	2016	15210793	PR	61168866	NOCO ORAS	INIT	CR01	11/01/2016	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI FALL 2016
TF	2015	13510104	PR	60760558	NOCO ORAS	INIT	CR01	01/27/2015	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI FALL 2013
TF	2020	19446759	PR	62289510	NOCO ORAS	INIT	CR01	10/19/2020	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI Fall 2020
TF	2019	17503794	PR	61926769	NOCO ORAS	INIT	CR01	04/12/2019	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI Spr 2019
TF	2017	15794091	PR	61320087	NOCO ORAS	INIT	CR01	06/14/2017	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI Spr 2017
TF	2018	15895188	PR	61576698	NOCO ORAS	INIT	CR01	09/08/2018	N-TS-PRESTONTS -TF-T4	TF-GENERAL-D1
TF	2016	15118583	PR	61188366	NOCO ORAS	INIT	CR01	09/26/2016	N-TS-PRESTONTS -TF-T4	STN BUS -M20D- PWR WASH 2016
TF	2018	15895193	PR	61576703	NOCO ORAS	INIT	CR01	08/13/2018	N-TS-PRESTONTS -TF-T4	TF-GENERAL-DBT
TF	2019	16897532	PR	61929222	NOCO ORAS	INIT	CR03	05/31/2019	N-TS-PRESTONTS -TF-T4	TF-GENERAL-GOT
TF	2015	13820236	PR	61065141	NOCO ORAS	INIT	CR01	05/28/2015	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI SPRING 2015
TF	2016	15210825	PR	61168866	NOCO ORAS	INIT	CR01	11/01/2016	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI FALL 2016
TF	2015	14435645	PR	61065142	NOCO ORAS	INIT	CR01	12/02/2015	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI FALL 2015
TF	2015	13510120	PR	60760558	NOCO ORAS	INIT	CR01	01/27/2015	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI FALL 2013
TF	2020	19446825	PR	62289510	NOCO ORAS	INIT	CR01	10/19/2020	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI Fall 2020
TF	2021	19456539	PR	62802926	NOCO ORAS	INIT	CR03	03/04/2021	N-TS-PRESTONTS -TF-T3	UT-AEG-CRND/CRNDS-(SPECIAL)DGA-DIV
TF	2017	15909739	PR	61593416	NOCO ORAS	INIT	CR03	10/02/2017	N-TS-PRESTONTS -TF-T3	UT-AEG-CRND/CRNDS-(SPECIAL)MCT DLT
TF	2021	19201735	PR	62689671	NOCO ORAS	INIT	CR01	07/08/2021	N-TS-PRESTONTS -TF-T3	UT-AEG-CRND/CRNDS-UTOA

TF	2020	18759070	PR	62289509	NOCO ORAS	INIT	CR01	04/14/2020	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI Spr 2020
TF	2018	16418224	PR	61574506	NOCO ORAS	INIT	CR01	03/05/2018	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI Spr 2018
TF	2019	18393284	PR	61926770	NOCO ORAS	INIT	CR01	12/11/2019	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI Fall 2019
TF	2020	17812134	PR	62293007	NOCO ORAS	INIT	CR03	05/21/2020	N-TS-PRESTONTS -TF-T3	UT-AEG-CRND/CRNDS-UTOA
TF	2019	17695092	PR	62227486	NOCO ORAS	INIT	CR01	07/26/2019	N-TS-PRESTONTS -TF-T3	UT-AEG-CRND/CRNDS-(SPECIAL)DGA-ULTC
TF	2019	17503821	PR	61926769	NOCO ORAS	INIT	CR01	04/12/2019	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI Spr 2019
TF	2018	16977854	PR	61574507	NOCO ORAS	INIT	CR01	09/08/2018	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI Fall 2018
TF	2019	16897696	PR	61929386	NOCO ORAS	INIT	CR03	06/10/2019	N-TS-PRESTONTS -TF-T3	UT-AEG-CRND/CRNDS-UTOA
TF	2017	16176713	PR	61320088	NOCO ORAS	INIT	CR01	11/06/2017	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI Fall 2017
TF	2018	16118666	PR	61662502	NOCO ORAS	INIT	CR01	01/15/2018	N-TS-PRESTONTS -TF-T3	UT-AEG-CRND/CRNDS-(SPECIAL)MCT-DIV
TF	2017	15794114	PR	61320087	NOCO ORAS	INIT	CR01	06/14/2017	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI Spr 2017
TF	2018	15895920	PR	61577420	NOCO ORAS	INIT	CR02	04/06/2018	N-TS-PRESTONTS -TF-T3	UT-AEG-CRND/CRNDS-UTOA
TF	2020	18957208	PR	62590891	NOCO ORAS	INIT	CR03	10/20/2020	N-TS-PRESTONTS -TF-T3	UT-AEG-CRND/CRNDS-(SPECIAL) UTOA
TF	2017	14922244	PR	61345333	NOCO ORAS	INIT	CR03	07/27/2017	N-TS-PRESTONTS -TF-T3	UT-AEG-CRND/CRNDS-UTOA
TF	2016	14528165	PR	61168865	NOCO ORAS	INIT	CR01	03/02/2016	N-TS-PRESTONTS -TF-T3	STN 'B' PWR EQ INSP-SVI SPRING 2016
TF	2016	14047386	PR	61187255	NOCO ORAS	INIT	CR01	11/29/2016	N-TS-PRESTONTS -TF-T3	UT-AEG-CRND/CRNDS-UTOA
TF	2019	17503677	PR	61926769	NOCO ORAS	INIT	CR01	04/12/2019	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI Spr 2019
TF	2016	14048068	PR	61187937	NOCO ORAS	INIT	CR03	08/25/2016	N-TS-PRESTONTS -TF-T4	UT-AEG-CRND/CRNDS-UTOA
TF	2018	16977840	PR	61574507	NOCO ORAS	INIT	CR01	09/08/2018	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI Fall 2018
TF	2017	14922760	PR	61345899	NOCO ORAS	INIT	CR03	07/27/2017	N-TS-PRESTONTS -TF-T4	UT-AEG-CRND/CRNDS-UTOA
TF	2020	17812274	PR	62293147	NOCO ORAS	INIT	CR03	05/25/2020	N-TS-PRESTONTS -TF-T4	UT-AEG-CRND/CRNDS-UTOA
TF	2020	19203472	PR	62691645	NOCO ORAS	INIT	CR03	08/05/2020	N-TS-PRESTONTS -TF-T4	UT-AEG-CRND/CRNDS-(SPECIAL)RUSH-MCT-ULTC
TF	2015	13579357	PR	61125651	NOCO ORAS	INIT	CR01	07/15/2015	N-TS-PRESTONTS -TF-T4	UT-AEG-CRND/CRNDS-(SPECIAL)DGA -ULTC-DIV
TF	2017	16176717	PR	61320088	NOCO ORAS	INIT	CR01	11/06/2017	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI Fall 2017
TF	2016	15033272	PR	61361325	NOCO ORAS	INIT	CR01	11/30/2016	N-TS-PRESTONTS -TF-T4	UT-AEG-CRND/CRNDS-(SPECIAL)MCT-DIV
TF	2018	15896091	PR	61577601	NOCO ORAS	INIT	CR02	05/09/2018	N-TS-PRESTONTS -TF-T4	UT-AEG-CRND/CRNDS-UTOA
TF	2017	15794118	PR	61320087	NOCO ORAS	INIT	CR01	06/14/2017	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI Spr 2017
TF	2020	19231787	PR	62711162	NOCO ORAS	INIT	CR02	10/20/2020	N-TS-PRESTONTS -TF-T4	UT-AEG-CRND/CRNDS-(SPECIAL)MCT-ULTC
TF	2019	18393285	PR	61926770	NOCO ORAS	INIT	CR02	12/11/2019	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI Fall 2019
TF	2020	18972913	PR	62592762	NOCO ORAS	INIT	CR03	07/20/2020	N-TS-PRESTONTS -TF-T4	UT-AEG-CRND/CRNDS-(SPECIAL)UTOA
TF	2020	18759045	PR	62289509	NOCO ORAS	INIT	CR01	04/14/2020	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI Spr 2020
TF	2019	17695094	PR	62227489	NOCO ORAS	INIT	CR01	07/26/2019	N-TS-PRESTONTS -TF-T4	UT-AEG-CRND/CRNDS-(SPECIAL)DGA-ULTC
TF	2019	16897725	PR	61929415	NOCO ORAS	INIT	CR03	06/10/2019	N-TS-PRESTONTS -TF-T4	UT-AEG-CRND/CRNDS-UTOA
TF	2018	16418223	PR	61574506	NOCO ORAS	INIT	CR01	03/05/2018	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI Spr 2018
TF	2018	16118668	PR	61662504	NOCO ORAS	INIT	CR01	01/15/2018	N-TS-PRESTONTS -TF-T4	UT-AEG-CRND/CRNDS-(SPECIAL)MCT-ULTC
TF	2017	15909790	PR	61593418	NOCO ORAS	INIT	CR03	10/02/2017	N-TS-PRESTONTS -TF-T4	UT-AEG-CRND/CRNDS-(SPECIAL)MCT & DLT
TF	2016	15210826	PR	61168866	NOCO ORAS	INIT	CR01	11/01/2016	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI FALL 2016
TF	2016	14528167	PR	61168865	NOCO ORAS	INIT	CR01	03/02/2016	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI SPRING 2016
TF	2015	14435643	PR	61065142	NOCO ORAS	INIT	CR01	12/02/2015	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI FALL 2015
TF	2015	13820140	PR	61065141	NOCO ORAS	INIT	CR01	05/28/2015	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI SPRING 2015
TF	2015	13510121	PR	60760558	NOCO ORAS	INIT	CR01	01/27/2015	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI FALL 2013
TF	2020	19446785	PR	62289510	NOCO ORAS	INIT	CR01	10/19/2020	N-TS-PRESTONTS -TF-T4	STN 'B' PWR EQ INSP-SVI Fall 2020
TF	2021	19201761	PR	62689697	NOCO ORAS	INIT	CR03	08/24/2021	N-TS-PRESTONTS -TF-T4	UT-AEG-CRND/CRNDS-UTOA
TF	2015	13727445	PR	60978816	NOCO ORAS	INIT	CR01	05/11/2015	N-TS-PRESTONTS -TF-T4	Tx PCB Reduction Oil Sample
TF	2015	13727446	PR	60978816	NOCO ORAS	INIT	CR01	05/11/2015	N-TS-PRESTONTS -TF-T4	Tx PCB Reduction Oil Sample
TF	2015	13727447	PR	60978816	NOCO ORAS	INIT	CR01	05/11/2015	N-TS-PRESTONTS -TF-T4	Tx PCB Reduction Oil Sample
TF	2015	13727448	PR	60978816	NOCO ORAS	INIT	CR01	05/11/2015	N-TS-PRESTONTS -TF-T4	Tx PCB Reduction Oil Sample
TF	2015	13727449	PR	60978816	NOCO ORAS	INIT	CR01	05/11/2015	N-TS-PRESTONTS -TF-T4	Tx PCB Reduction Oil Sample
TF	2015	13727450	PR	60978816	NOCO ORAS	INIT	CR01	05/11/2015	N-TS-PRESTONTS -TF-T4	Tx PCB Reduction Oil Sample
TF	2015	13727451	PR	60978816	NOCO ORAS	INIT	CR01	05/11/2015	N-TS-PRESTONTS -TF-T4	Tx PCB Reduction Oil Sample
TF	2015	13727452	PR	60978816	NOCO ORAS	INIT	CR01	05/11/2015	N-TS-PRESTONTS -TF-T4	Tx PCB Reduction Oil Sample
TF	2015	13727453	PR	60978816	NOCO ORAS	INIT	CR01	05/11/2015	N-TS-PRESTONTS -TF-T4	Tx PCB Reduction Oil Sample
TF	2015	13727454	PR	60978816	NOCO ORAS	INIT	CR01	05/11/2015	N-TS-PRESTONTS -TF-T4	Tx PCB Reduction Oil Sample
TF	2015	13727455	PR	60978816	NOCO ORAS	INIT	CR01	05/11/2015	N-TS-PRESTONTS -TF-T4	Tx PCB Reduction Oil Sample
TF	2015	13727456	PR	60978816	NOCO ORAS	INIT	CR01	05/11/2015	N-TS-PRESTONTS -TF-T4	Tx PCB Reduction Oil Sample
TF	2015	14423953	PR	60978815	NOCO ORAS	INIT	CR01	11/27/2015	N-TS-PRESTONTS -TF-T3	Tx PCB Reduction Oil Sample
TF	2015	14423954	PR	60978815	NOCO ORAS	INIT	CR01	11/27/2015	N-TS-PRESTONTS -TF-T3	Tx PCB Reduction Oil Sample
TF	2015	14423955	PR	60978815	NOCO ORAS	INIT	CR01	11/27/2015	N-TS-PRESTONTS -TF-T3	Tx PCB Reduction Oil Sample
TF	2015	14423956	PR	60978815	NOCO ORAS	INIT	CR01	11/27/2015	N-TS-PRESTONTS -TF-T3	Tx PCB Reduction Oil Sample
TF	2015	14423984	PR	60978815	NOCO ORAS	INIT	CR01	11/27/2015	N-TS-PRESTONTS -TF-T3	Tx PCB Reduction Oil Sample
TF	2015	14423957	PR	60978815	NOCO ORAS	INIT	CR01	11/27/2015	N-TS-PRESTONTS -TF-T3	Tx PCB Reduction Oil Sample
TF	2015	14423958	PR	60978815	NOCO ORAS	INIT	CR01	11/27/2015	N-TS-PRESTONTS -TF-T3	Tx PCB Reduction Oil Sample
TF	2015	14423959	PR	60978815	NOCO ORAS	INIT	CR01	11/27/2015	N-TS-PRESTONTS -TF-T3	Tx PCB Reduction Oil Sample
TF	2015	14423980	PR	60978815	NOCO ORAS	INIT	CR01	11/27/2015	N-TS-PRESTONTS -TF-T3	Tx PCB Reduction Oil Sample
TF	2015	14423981	PR	60978815	NOCO ORAS	INIT	CR01	11/27/2015	N-TS-PRESTONTS -TF-T3	Tx PCB Reduction Oil Sample
TF	2015	14423982	PR	60978815	NOCO ORAS	INIT	CR01	11/27/2015	N-TS-PRESTONTS -TF-T3	Tx PCB Reduction Oil Sample
TF	2015	14423983	PR	60978815	NOCO ORAS	INIT	CR01	11/27/2015	N-TS-PRESTONTS -TF-T3	Tx PCB Reduction Oil Sample

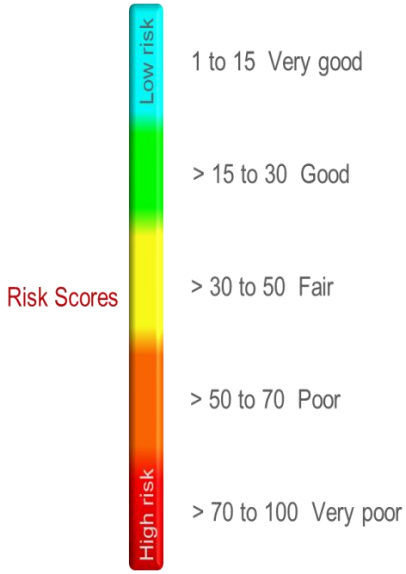
Health Assessments for T1, T3 and T4 Transformers at Fairchild TS

Prepared by: Peter Zhao

Approved by: Behdad Biglar

Rev.#: 00

APPENDIX – Health Index Summary



The asset risk assessment process relies on the Asset Analytics system to provide initial asset screening and quantitative analysis of the following six risk factors:

- Condition – Asset Health Index or condition risk related to the increased probability of failure that assets experience when their condition degrades over time.
- Demographics - Risk related to the increased probability of failure exhibited by assets of a particular make, manufacturer, and/or vintage.
- Criticality - Represents the impact that the failure of a specific asset would have on the transmission system
- Performance - Risk that reflects the historical performance of an asset, derived from the frequency and duration of outages
- Utilization - Risk that reflects the increased rate of deterioration exhibited by an asset that is highly utilized
- Economics - Risk based on the economic evaluation of the ongoing costs associated with the operation of an asset

The Asset Analytics system enables Hydro One planners to review aggregated information from various enterprise reporting systems to provide a common understanding of asset health and asset risks. This drives efficient and effective planning decisions by ensuring a consistent view of asset information for all planners. The information contained within the asset analytics system includes condition information driven by deficiency and preventative maintenance reports, demographic information (including make, model, type and criticality to the transmission system), performance data based on equipment outages, utilization information, and economics.

Hydro One's planners also take into account additional factors such as load forecasts, equipment ratings, operating restrictions, security incidents, environmental risks and requirements, compliance obligations, equipment defects, obsolescence, and health and safety considerations to ensure capital expenditures target the most appropriate mix of assets.

Table 1 - Health Assessment for Power Transformers at Fairchild TS

Asset	Age	Final review		Conditi	Demog.	Econ.	Perform.	Utiliz.	Critic.	Obsole.	HS&E	PCB
		Risk	Technical Assessments and Recommendations									
T1	52	High	• The assessment concluded that T1 has shown deterioration of the structural integrity, in a very high-risk category. • Faulty gasses were detected in main tank, indicating electrical breakdown and thermal overheating occurring. • Cooling failures were causing unwanted outages, and required repair or replacement. • ULTC malfunctions and require attentions. • High level of PCB contents were detected in bushings and shall be mitigated by 2025. • Recommended for replacement of the T1 transformer within next 5 years in order to mitigate reliability and environmental risk and to lower overall future OM&A cost.	68	100	4	1	1	30	n/a	N	Y
T3	42	High	• The assessment concluded that T3 has shown deterioration of the structural integrity, in a high-risk category. • Faulty gasses were detected in main tank, indicating electrical breakdown and thermal overheating occurring. • High moisture contents in ULTC. • Cooling failures were causing unwanted outages, and required repair or replacement. • Recommended for replacement of the T3 transformer in next 5 years in order to mitigate reliability and environmental risk and to lower overall future OM&A cost.	22	100	8	35	1	30	n/a	N	N

T4	42	High	• The assessment concluded that T4 has shown deterioration of the structural integrity, in a very high-risk category. • Sustained faulty gasses were reported in main tank, indicating electrical breakdown and thermal overheating occurring. • Oil leaks were reported • Cooling failures were causing unwanted outages, and required repair or replacement. • Recommended for replacement of the T4 transformer within next 5 years in order to mitigate reliability and environmental risk and to lower overall future OM&A cost.	84	100	14	20	1	30	n/a	N	N

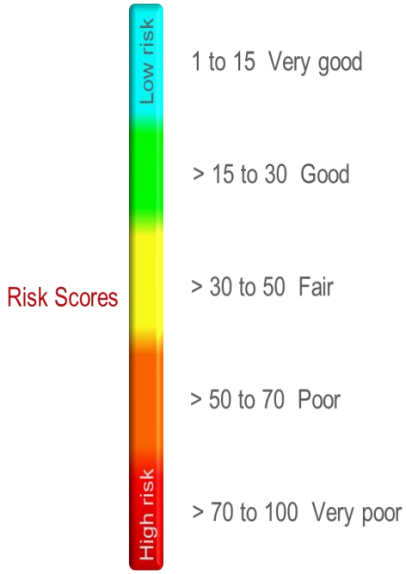
Health Assessment for Protection at Fairchild TS

Prepared by: Elizabeth Duan

Approved by: Jawed Atcha

Rev.#: 00

APPENDIX – Health Index Summary



The asset risk assessment process relies on the Asset Analytics system to provide initial asset screening and quantitative analysis of the following six risk factors:

- Condition – Asset Health Index or condition risk related to the increased probability of failure that assets experience when their condition degrades over time.
- Demographics - Risk related to the increased probability of failure exhibited by assets of a particular make, manufacturer, and/or vintage.
- Criticality - Represents the impact that the failure of a specific asset would have on the transmission system
- Performance - Risk that reflects the historical performance of an asset, derived from the frequency and duration of outages
- Utilization - Risk that reflects the increased rate of deterioration exhibited by an asset that is highly utilized
- Economics - Risk based on the economic evaluation of the ongoing costs associated with the operation of an asset
- Composite - Calculated as a weighted average of the other 6 primary Risk Factors.

The Asset Analytics system enables Hydro One planners to review aggregated information from various enterprise reporting systems to provide a common understanding of asset health and asset risks. This drives efficient and effective planning decisions by ensuring a consistent view of asset information for all planners. The information contained within the asset analytics system includes condition information driven by deficiency and preventative maintenance reports, demographic information (including make, model, type and criticality to the transmission system), performance data based on equipment outages, utilization information, and economics.

Hydro One's planners also take into account additional factors such as load forecasts, equipment ratings, operating restrictions, security incidents, environmental risks and requirements, compliance obligations, equipment defects, obsolescence, and health and safety considerations to ensure capital expenditures target the most appropriate mix of assets.

Station	Asset	Type	Age(2021)	Asset Risk Assessment (ARA)	Comments	Condition RF	Demographics RF	Economics RF	Performance RF	Utilization RF	Criticality	Obsolescence	HS&E
Fairchild TS (Protections)	N-TS-FAIRCHLDTS-PR-J BU	Solid-state Relays	40	High	Solid-state relays are obsolete. It is currently being maintained with spare parts when it fails.	1	100	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-J MAIN		40	High		1	100	74	93	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-JQ BF		40	High		1	100	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-Q BU		40	High		1	100	100	100	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-Q MAIN		40	High		1	100	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-SC2 MAIN		51	High		1	100	1	9	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-SC3 MAIN		29	High		1	75	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-SC4 MAIN		29	High		1	75	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-T3 B		40	High		1	100	1	1	0	19	Y	Y
	N-TS-FAIRCHLDTS-PR-T3J BF		40	High		1	100	1	19	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-T3Q BF		40	High		1	100	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-T4 B		40	High		1	100	1	1	0	19	Y	Y
	N-TS-FAIRCHLDTS-PR-T4J BF		40	High		1	100	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-T4Q BF		40	High		1	100	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-80M11 MAIN	Electromechanical Relays	42	High	Electromechanical relays are obsolete and no longer supported. It is currently being maintained with spare parts at the Meter-shop when it fails.	1	75	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-80M12 MAIN		42	High		1	75	100	100	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-80M25 MAIN		40	High		1	50	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-80M26 MAIN		40	High		1	50	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-80M7 MAIN		51	High		1	100	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-B BU		51	High		1	100	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-B MAIN		51	High		1	100	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-BY BF		37	Fair		100	50	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-C18R BU		51	High		100	100	100	100	0	19	Y	Y
	N-TS-FAIRCHLDTS-PR-C20R BU		51	High		100	100	82	100	0	19	Y	Y
	N-TS-FAIRCHLDTS-PR-T1 A		51	High		1	100	1	1	0	19	Y	Y
	N-TS-FAIRCHLDTS-PR-T1 B		51	High		1	100	1	1	0	19	Y	Y

	N-TS-FAIRCHLDTS-PR-T1B BF	37	Fair	1	50	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-T1Y BF	37	Fair	1	50	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-T2B BF	37	Fair	1	50	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-T2Y BF	37	Fair	1	50	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-T3 A	40	High	1	50	1	1	0	19	Y	Y
	N-TS-FAIRCHLDTS-PR-T4 A	40	High	1	50	1	1	0	19	Y	Y
	N-TS-FAIRCHLDTS-PR-Y BU	51	High	1	100	1	1	0	1	Y	Y
	N-TS-FAIRCHLDTS-PR-Y MAIN	51	High	1	100	1	1	0	1	Y	Y

Floc	Description	Equipment	Make	Year Built	In-service Year	Samples	LAB TEST DATE (YYYYMMDD)	DISSOLVED HYDROGEN IN OIL	DISSOLVED OXYGEN IN OIL
N-TS-FAIRCHLDTS-TF-T1	TF: Stepdn - 125MVA 220-28-28kV	1175893	CGE	1970	1970	2020	20200626	13	16239
N-TS-FAIRCHLDTS-TF-T1		1175893	CGE	1970	1970	2019	20190614	36	16862
N-TS-FAIRCHLDTS-TF-T1		1175893	CGE	1970	1970	2018	20181203	33	8658
N-TS-FAIRCHLDTS-TF-T1		1175893	CGE	1970	1970	2017	20170513	30	12800
N-TS-FAIRCHLDTS-TF-T1		1175893	CGE	1970	1970	2016	20160129	0	17500
N-TS-FAIRCHLDTS-TF-T1		1175893	CGE	1970	1970	2015	20151014	25	10000
N-TS-FAIRCHLDTS-TF-T1		1175893	CGE	1970	1970	2014	20140929	25	7170
N-TS-FAIRCHLDTS-TF-T1		1175893	CGE	1970	1970	2013	20130822	15	6180
N-TS-FAIRCHLDTS-TF-T1		1175893	CGE	1970	1970	2012	20120627	15	11300
N-TS-FAIRCHLDTS-TF-T3	TF: Stepdn - 125MVA 215.5-28-28kV	1186381	CW	1983	1983	2020	20200811	21	24609
N-TS-FAIRCHLDTS-TF-T3		1186381	CW	1983	1983	2019	20190524	32	22337
N-TS-FAIRCHLDTS-TF-T3		1186381	CW	1983	1983	2018	20181203	21	17375
N-TS-FAIRCHLDTS-TF-T3		1186381	CW	1983	1983	2017	20170527	37	24043
N-TS-FAIRCHLDTS-TF-T3		1186381	CW	1983	1983	2015	20151008	40	20500
N-TS-FAIRCHLDTS-TF-T3		1186381	CW	1983	1983	2014	20140723	35	20900
N-TS-FAIRCHLDTS-TF-T3		1186381	CW	1983	1983	2013	20130711	30	21400
N-TS-FAIRCHLDTS-TF-T3		1186381	CW	1983	1983	2012	20120628	25	23000
N-TS-FAIRCHLDTS-TF-T4	TF: Stepdn - 125MVA 215.5-28-28kV	1178740	CW	1983	1983	2020	20201113	17	18319
N-TS-FAIRCHLDTS-TF-T4		1178740	CW	1983	1983	2019	20190718	40	22055
N-TS-FAIRCHLDTS-TF-T4		1178740	CW	1983	1983	2018	20180405	9900	14400
N-TS-FAIRCHLDTS-TF-T4		1178740	CW	1983	1983	2017	20170727	25	24500
N-TS-FAIRCHLDTS-TF-T4		1178740	CW	1983	1983	2016	20160322	35	25700
N-TS-FAIRCHLDTS-TF-T4		1178740	CW	1983	1983	2015	20151014	40	24300
N-TS-FAIRCHLDTS-TF-T4		1178740	CW	1983	1983	2014	20140623	60	24400
N-TS-FAIRCHLDTS-TF-T4		1178740	CW	1983	1983	2013	20130822	35	23200
N-TS-FAIRCHLDTS-TF-T4		1178740	CW	1983	1983	2012	20120712	25	24500

DISSOLVED NITROGEN IN OIL	DISSOLVED (CO) IN OIL	DISSOLVED (CO2) IN OIL	DISSOLVED METHANE IN OIL	DISSOLVED ETHANE IN OIL	DISSOLVED ETHYLENE IN OIL	DISSOLVED ACETYLENE IN OIL	TOTAL VOL OF DISSOLVED GAS
58885	339	1793	2	2	6	5	7.73
78985	652	2216	6	2	6	4	9.88
56812	629	2854	6	3	7	4	6.9
57400	502	2190	6	3	7	3	7.24
45500	175	1180	0	4	8	3	6.41
63100	612	2220	12	8	16	7	7.57
61500	648	2150	18	10	21	4	7.12
66300	780	2680	23	14	16	0	7.57
69100	655	1960	28	16	27	4	8.28
70286	366	1926	5	2	41	20	9.73
64420	416	2157	7	3	54	21	8.95
60618	515	2772	6	4	51	11	8.14
77948	522	2066	8	9	60	17	10.47
59900	446	2130	16	7	68	19	8.28
62900	452	2110	7	3	42	11	8.61
59300	400	1740	5	2	39	8	8.26
66000	391	1550	0	0	34	6	9.07
60354	352	1864	5	0	37	24	8.1
66043	413	1966	8	2	40	43	9.06
58800	481	2410	1170	84	1670	11500	9.98
62100	438	1830	0	0	33	17	8.85
60500	307	1360	6	0	31	25	8.76
61500	414	1840	7	0	34	35	8.78
59100	375	1720	0	0	22	34	8.54
60000	420	1990	0	0	18	12	8.52
57300	228	1050	0	0	13	5	8.28

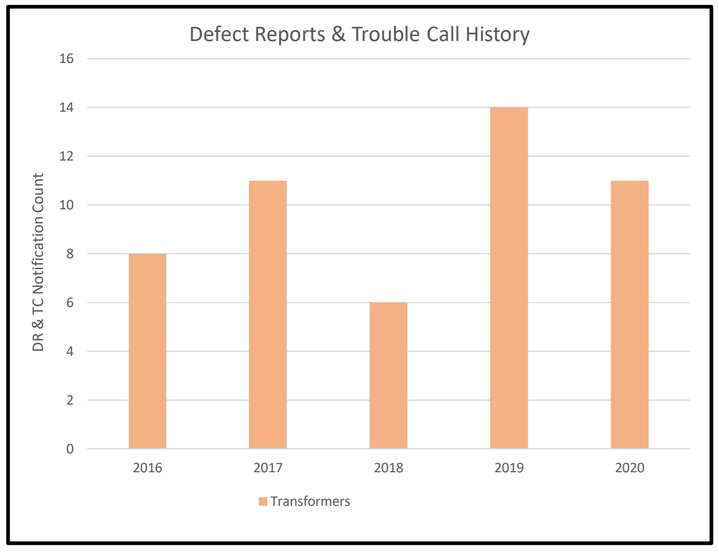
MOISTURE IN OIL	BREAKDOWN VOLTAGE (ASTM D1816)	BREAKDOWN VOLTAGE (ASTM D877)	OIL CONTAMINATION MEASUREMENT	ACIDITY MEASUREMNT (KOH reqd)	OIL POWER FACTOR AT 25 °C	FURAN IN OIL	COLOUR OF INSULATING OIL	SAMPLE OIL TEMPERATURE
8	57	44	25.5	0.06	0.14	8	3	20
6	66	57	25.4	0.04	0.17	10	3	7
6	40	56	25.5	0.05	0.17	12	3	23
7	70	51	25.4	0.05	0.19	12	3	10
2	57	38	26.6	0.04	0.16	11	3	N/A
5	56	54	24.7	0.05	0.19	8	3	20
6	60	47	26.2	0.05	0.18	12	3	N/A
7	61	54	26.8	0.04	0.26	10	3	52
5	58	49	26.8	0.04	0.27	8	3	48
12	61	50	28.4	0.02	0.07	25	3	42
4	60	52	28.9	0.03	0.07	24	3	20
5	41	47	29.6	0.03	0.09	23	3	12
6	69	50	30.7	0.03	0.08	27	3	35
5	63	54	27.5	0.02	0.07	29	3	20
7	34	45	28.8	0.02	0.08	12	3	59
5	45	50	28.6	0.02	0.07	10	2	55
5	48	47	29.3	0.02	0.07	10	3	50
11	62	53	30	0.03	0.06	13	2	52
6	N/A	46	29.5	N/A	0.07	12	2	20
13	63	54	32	0.01	0.2	11	2	20
3	60	51	27.9	0.03	0.06	14	2	65
2	64	53	30.4	0.01	0.05	11	2	N/A
5	48	60	27.8	0.01	0.06	13	2	20
4	55	44	29.3	0.01	0.07	11	3	40
6	54	42	29.4	0.02	0.07	12	2	58
5	50	52	29.1	0.02	0.12	9	2	53

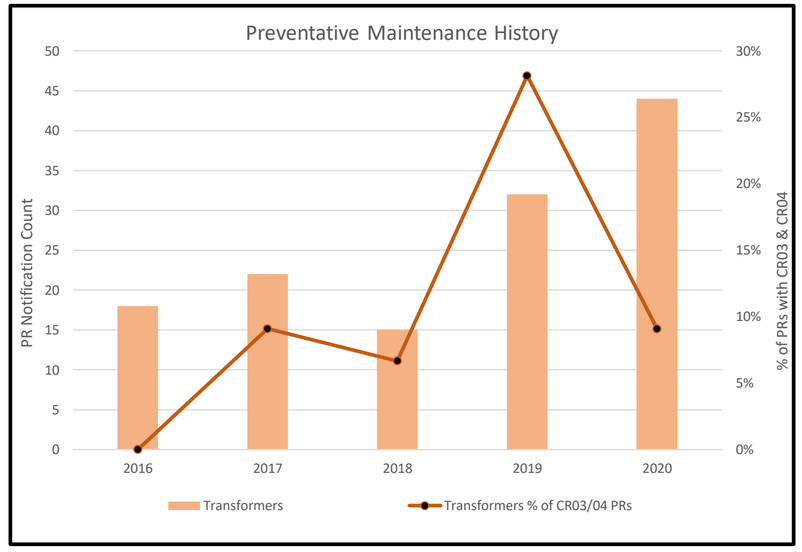
Quantity of Defect Reports and Trouble Calls					
Asset	Year				
	2016	2017	2018	2019	2020
Transformers	8	11	6	14	11

Quantity of Preventative Maintenance Reports					
Asset	Year				
	2016	2017	2018	2019	2020
Transformers	18	22	15	32	44

Assets: N-TS-FAIRCHLDTS-TF-T1
N-TS-FAIRCHLDTS-TF-T3
N-TS-FAIRCHLDTS-TF-T4

Preventative Maintenance Report Condition Ratings																				
	2016				2017				2018				2019				2020			
Asset	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04
Transformers	8	10	0	0	17	3	2	0	3	11	1	0	9	14	9	0	27	13	4	0





Data Extraction Notes:

1. Query SAP DR/TC/PR type completed notifications via t-code IW29
2. Seach by Functional Location (individual assets and parent FLOC)
3. Date range is 2015.1.1 to 2020.12.31
4. Exclude notification completion dates outside of 2016 to 2020.
5. Exclude cancelled or voided notifications.

Asset Type	year	Notification	Notifictn type	Order	System status	User status	Coding	Completn date	Functional Loc.	Description
TF	2020	19028447	DR	62602802	NOCO ORAS	VALD	9900	09/04/2020	N-TS-FAIRCHLDTS-TF-T4	Fairchild T4 Trans Bushing Samples SITE
TF	2019	16943134	DR	61970459	NOCO ORAS	VALD	1600	05/03/2019	N-TS-FAIRCHLDTS-TF-T1	Defective Fan T1 Fairchild
TF	2020	18550102	DR	62528637	NOCO ORAS	VALD	9900	04/16/2020	N-TS-FAIRCHLDTS-TF-T1	T1 Seal Door permanently locked
TF	2020	18752247	DR		NOCO	INIT	3600	04/09/2020	N-TS-FAIRCHLDTS-TF-T1	
TF	2015	13650150	DR	61132182	NOCO ORAS	VALD	9900	10/14/2015	N-TS-FAIRCHLDTS-TF-T1	Fairchild T1 Trojan Unit Connect
TF	2020	18212576	DR	62452487	NOCO ORAS	VALD	0700	09/25/2020	N-TS-FAIRCHLDTS-TF-T4	T/C filtration system leaking
TF	2015	13899542	DR	61147237	NOCO ORAS	VALD	9900	10/28/2015	N-TS-FAIRCHLDTS-TF-T4	Fairchild T4QRMCTVT - B Ph Bus Hot Spot
TF	2020	17541371	DR	62190849	NOCO ORAS	VALD	1600	09/25/2020	N-TS-FAIRCHLDTS-TF-T4	Fan needs to be replaced
TF	2020	16681071	DR	61981747	NOCO ORAS	VALD	9900	09/30/2020	N-TS-FAIRCHLDTS-TF-T4	Fairch T4mech heater
TF	2019	17667144	DR	62220816	NOCO ORAS	VALD	9900	06/03/2019	N-TS-FAIRCHLDTS-TF-T4	Fairchild T4 Secondary Contamination
TF	2016	13543176	DR	61305971	NOCO ORAS	VALD	9900	11/30/2016	N-TS-FAIRCHLDTS-TF-T4	Fairchild T4 - MechBox Heater
TF	2015	13947546	DR	61150747	NOCO ORAS	VALD	9900	11/24/2015	N-TS-FAIRCHLDTS-TF-T4	Fairchild T3'T4 Overloads Cooling
TF	2016	14343886	DR	61231924	NOCO ORAS	VALD	0100	07/20/2016	N-TS-FAIRCHLDTS-TF-T4	Fairchild T4 Cooling Control Contactor
TF	2017	16135619	DR	61672820	NOCO ORAS	VALD	9900	10/17/2017	N-TS-FAIRCHLDTS-TF-T3	Fairchild T3 hads D.C. ground repair
TF	2017	16197041	DR	61712765	NOCO ORAS	RECD	4700	11/24/2017	N-TS-FAIRCHLDTS-TF-T3	Fairchild T3 Hads repair
TF	2016	14425624	DR	61240129	NOCO ORAS	VALD	3600	06/27/2016	N-TS-FAIRCHLDTS-TF-T3	Fairchild T3 Cooling Overload Repairs
TF	2017	13543128	DR	61305972	NOCO ORAS	VALD	9900	04/25/2017	N-TS-FAIRCHLDTS-TF-T3	Fairchild T3 - MechBox Heater
TF	2017	15853974	DR	61537591	NOCO ORAS	VALD	0100	07/26/2017	N-TS-FAIRCHLDTS-TF-T3	Fairchild T3 investigate trip
TF	2017	16136065	DR	61674083	NOCO ORAS	VALD	9900	10/30/2017	N-TS-FAIRCHLDTS-TF-T3	Fairchild T3 hads D.C. ground repair
TF	2019	16846348	DR	61877760	NOCO ORAS	VALD	0100	05/03/2019	N-TS-FAIRCHLDTS-TF-T1	Fairchild T1 T/C low oil alarm
TF	2019	15906851	DR	61588779	NOCO ORAS	VALD	0700	06/13/2019	N-TS-FAIRCHLDTS-TF-T4	Fairchild T4 Fluidex leaking
TF	2019	16148417	DR	61754623	NOCO ORAS	VALD	0700	07/04/2019	N-TS-FAIRCHLDTS-TF-T4	FairchFluidex filter needs to be changed
TF	2019	16681054	DR	61984613	NOCO ORAS	VALD	0700	06/13/2019	N-TS-FAIRCHLDTS-TF-T4	Fluidix filter @ high pressure and leaki
TF	2020	18477592	TC	62514667	NOCO ORAS	RECD		01/31/2020	N-TS-FAIRCHLDTS-TF	NA80 CONTAINMENT PIT HIGH WATER LEVEl
TF	2020	18413586	TC	62498784	NOCO ORAS	RECD		01/20/2020	N-TS-FAIRCHLDTS-TF	S3 - EMD RE: OIL WATER SEPARATOR HIGH
TF	2019	17894471	TC	62327017	NOCO ORAS	RECD		08/07/2019	N-TS-FAIRCHLDTS-TF	S3 - **PENDING FOR WEDNESDAY** EMD FAIRC
TF	2020	19210522	TC	62699884	NOCO ORAS	RECD		08/17/2020	N-TS-FAIRCHLDTS-TF	S3 RE: OIL/WATER SEPARATOR HIGH LEVEL
TF	2019	17851655	TC	62311839	NOCO ORAS	RECD		07/24/2019	N-TS-FAIRCHLDTS-TF	S3: EMD RE: OIL WATER SEPARATOR 2 HIGH L
TF	2019	17247039	TC	62132980	NOCO ORAS	RECD		02/08/2019	N-TS-FAIRCHLDTS-TF	S3: EMD RE: OIL WATER SEPARATOR HIGH LEV
TF	2019	17454174	TC	62168103	NOCO ORAS	RECD		03/29/2019	N-TS-FAIRCHLDTS-TF	S3 PND EMD FAIRCHILD TS OIL WATER SEPARA
TF	2019	17485837	TC	62175104	NOCO ORAS	RECD		04/08/2019	N-TS-FAIRCHLDTS-TF	s3 pd emd re: oil/water sep high level
TF	2018	17102671	TC	62058670	NOCO ORAS	RECD		11/07/2018	N-TS-FAIRCHLDTS-TF	SEC3-EMD PENDING-FAIRCHILD TS-OIL WATER
TF	2019	17446099	TC	62167919	NOCO ORAS	RECD		03/29/2019	N-TS-FAIRCHLDTS-TF	S3 PND EMD FAIRCHILD TS OIL/WATER SEPARA
TF	2019	18370992	TC	62475464	NOCO ORAS	RECD		12/18/2019	N-TS-FAIRCHLDTS-TF	S3 PND EMD FAIRCHILD TS SUMP HIGH ALARM
TF	2016	14544447	TC	61273498	NOCO ORAS	RECD		08/11/2016	N-TS-FAIRCHLDTS-TF	S3: PC - PENDING - GIVEN OUT OF STEPS (T
TF	2016	15105087	TC	61370518	NOCO ORAS	RECD		09/21/2016	N-TS-FAIRCHLDTS-TF	S3 - EMD - FAIRCHILD OIL^WATER SEPERATOR
TF	2016	15332139	TC	61410035	NOCO ORAS	RECD		12/30/2016	N-TS-FAIRCHLDTS-TF	S3 EMD RE:OIL WATER SEPERATOR HIGH LEVEL
TF	2017	16172497	TC	61702142	NOCO ORAS	RECD		11/07/2017	N-TS-FAIRCHLDTS-TF	S3 - PENDING EMD - OIL WATER SEPARATOR 2
TF	2018	16853332	TC	61884060	NOCO ORAS	RECD		07/05/2018	N-TS-FAIRCHLDTS-TF	S3 - EMD - HIGH LEVEL IN OIL/WATER SEPAR
TF	2016	14542255	TC	61272746	NOCO ORAS	RECD		03/23/2016	N-TS-FAIRCHLDTS-TF-T1	S3 - T1 T2 TAP CHANGER OUT OF STEP ALLAR
TF	2020	18572185	TC	62533004	NOCO ORAS	RECD		02/28/2020	N-TS-FAIRCHLDTS-TF-T1	S3 EMD PEND RE: OIL WATER SEPARATOR HIGH
TF	2017	15175039	TC	61383226	NOCO ORAS	RECD		04/27/2017	N-TS-FAIRCHLDTS-TF-T1	S3 PD P&C T1 T2 TAP CHANGER OUT OF STEP
TF	2018	16846007	TC	61877135	NOCO ORAS	RECD		06/25/2018	N-TS-FAIRCHLDTS-TF-T1	S3: EMD FOR T1 LOW OIL
TF	2017	15763801	TC	61501360	NOCO ORAS	RECD		06/23/2017	N-TS-FAIRCHLDTS-TF-T1	S3 EMD RE: T1 TAP CHANGER CONTROL
TF	2017	15961387	TC	61618021	NOCO ORAS	RECD		08/24/2017	N-TS-FAIRCHLDTS-TF-T4	RE: T4 COOLING FAIL
TF	2020	19141289	TC	62638105	NOCO ORAS	RECD		07/16/2020	N-TS-FAIRCHLDTS-TF-T4	S3 IMM EMD RE: T4 COOLING FAIL
TF	2015	14341887	TC	61231713	NOCO ORAS	RECD		11/03/2015	N-TS-FAIRCHLDTS-TF-T4	S3 RE: T4 COOLING FAIL
TF	2015	14336335	TC	61231714	NOCO ORAS	RECD		11/03/2015	N-TS-FAIRCHLDTS-TF-T4	S3 RE: FAIRCHILD T4 COOLING FAIL
TF	2015	13920947	TC	61149554	NOCO ORAS	RECD		07/09/2015	N-TS-FAIRCHLDTS-TF-T4	NA80 T4 COOLING FAIL ALARM.
TF	2015	13944225	TC	61150575	NOCO ORAS	RECD		06/30/2015	N-TS-FAIRCHLDTS-TF-T4	S3 EMD T4 COOLING FAIL
TF	2015	13945944	TC	61150807	NOCO ORAS	RECD		07/09/2015	N-TS-FAIRCHLDTS-TF-T4	S3 EMD T4 COOLING FAIL
TF	2018	16902660	TC	61935224	NOCO ORAS	RECD		07/12/2018	N-TS-FAIRCHLDTS-TF-T3	SEC3-EMD PENDING-T3 WILL NOT TAP
TF	2018	16826210	TC	61867827	NOCO ORAS	RECD		06/15/2018	N-TS-FAIRCHLDTS-TF-T3	s3 fairchild
TF	2015	13947116	TC	61150808	NOCO ORAS	RECD		07/09/2015	N-TS-FAIRCHLDTS-TF-T3	S3 RE; T3 COOLING FAIL
TF	2017	15853937	TC	61537589	NOCO ORAS	RECD		07/14/2017	N-TS-FAIRCHLDTS-TF-T3	S2 RE: INSPECT T3 AFTER GAS TRIP
TF	2017	15661952	TC	61486923	NOCO ORAS	RECD		06/21/2017	N-TS-FAIRCHLDTS-TF-T3	S3-EMD-T3 COOLING FAILURE
TF	2018	16802236	TC	61865371	NOCO ORAS	RECD		06/11/2018	N-TS-FAIRCHLDTS-TF-T3	S3 EMD T3 COOLING FAILURE
TF	2016	14996906	TC	61358132	NOCO ORAS	RECD		08/18/2016	N-TS-FAIRCHLDTS-TF-T3	S3 - T3 COOLING FAILURE
TF	2019	17777494	TC	62296107	NOCO ORAS	RECD		07/08/2019	N-TS-FAIRCHLDTS-TF-T3	S3 - EMD FAIRCHILD TS T3 COOLING FAIL SU
TF	2015	14161880	TC	61214899	NOCO ORAS	RECD		09/14/2015	N-TS-FAIRCHLDTS-TF-T3	s3 imd emd re: t3,t4 cooling on auto
TF	2015	13811984	TC	61140760	NOCO ORAS	RECD		05/28/2015	N-TS-FAIRCHLDTS-TF-T3	S3, T3 COOLING FAILURE
TF	2015	14064081	TC	61201830	NOCO ORAS	RECD		07/30/2015	N-TS-FAIRCHLDTS-TF-T3	S3 EMD T3 Cooling Fail
TF	2015	14144412	TC	61213498	NOCO ORAS	RECD		09/03/2015	N-TS-FAIRCHLDTS-TF-T3	NA80 T3 COOLING FAIL.
TF	2015	14143929	TC	61213276	NOCO ORAS	RECD		09/03/2015	N-TS-FAIRCHLDTS-TF-T3	NA80 T3 COOLING FAIL.
TF	2015	14064073	TC	61201827	NOCO ORAS	RECD		07/30/2015	N-TS-FAIRCHLDTS-TF-T3	S3 - EMD FAIRCHILD TS T3 COOLING FAILURE

Asset Type	Year	Notification	Notifictn type	Order	System status	User stat	Coding	Completn date	Functional Loc.	Description
TF	2021	19180499	PR	62669175	NOCO ORAS	INIT	CR01	09/10/2021	N-TS-FAIRCHLDTS-TF	TF-TS-GENERAL-FANS AUTO
TF	2021	19179323	PR	62668170	NOCO ORAS	INIT	CR01	05/06/2021	N-TS-FAIRCHLDTS-TF	TF-TS-GENERAL-FANS ON
TF	2020	18605494	PR	62538804	NOCO ORAS	INIT	CR01	11/25/2020	N-TS-FAIRCHLDTS-TF-T1	Fairchild T1 oil samples required/SITE
TF	2020	18384826	PR	62477739	NOCO ORAS	INIT	CR01	11/03/2020	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample
TF	2020	18384743	PR	62477686	NOCO ORAS	INIT	CR01	09/25/2020	N-TS-FAIRCHLDTS-TF-T4	Tx PCB Reduction Oil Sample
TF	2020	18417141	PR	62497401	NOCO ORAS	INIT	CR02	04/16/2020	N-TS-FAIRCHLDTS-TF-T1	TF-GENERAL-(SPECIAL)DGA-MAIN TANK
TF	2018	17118773	PR	61554472	NOCO ORAS	INIT	CR02	11/16/2018	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI Fall 2018
TF	2021	19191093	PR	62679031	NOCO ORAS	INIT	CR02	09/23/2021	N-TS-FAIRCHLDTS-TF-T1	TF-GENERAL-GOT
TF	2019	18213023	PR	61910304	NOCO ORAS	INIT	CR02	10/16/2019	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI Fall 2019
TF	2020	17804489	PR	62285319	NOCO ORAS	INIT	CR01	05/01/2020	N-TS-FAIRCHLDTS-TF-T1	TF-GENERAL-GOT
TF	2018	14909246	PR	61332353	ATCO NOCO ORAS	INIT	CR01	02/20/2018	N-TS-FAIRCHLDTS-TF-T1	TF-GENERAL-GOT
TF	2017	15393644	PR	61427612	NOCO ORAS	INIT	CR01	04/07/2017	N-TS-FAIRCHLDTS-TF-T1	TF-GENERAL-(SPECIAL)DGA-MAIN TANK
TF	2019	17541430	PR	61910303	NOCO ORAS	INIT	CR01	04/25/2019	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI Spr 2019
TF	2019	16883474	PR	61915014	NOCO NOPT ORAS	INIT	CR02	05/03/2019	N-TS-FAIRCHLDTS-TF-T1	TF-GENERAL-D1
TF	2017	15600887	PR	61324937	NOCO ORAS	INIT	CR01	05/04/2017	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI Spr 2017
TF	2019	16883472	PR	61915012	NOCO ORAS	INIT	CR02	06/18/2019	N-TS-FAIRCHLDTS-TF-T1	TF-GENERAL-GOT
TF	2016	14687057	PR	61170657	NOCO ORAS	INIT	CR02	05/19/2016	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI SPRING 2016
TF	2017	16148421	PR	61324938	NOCO ORAS	INIT	CR01	10/18/2017	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI Fall 2017
TF	2019	16883473	PR	61915013	NOCO ORAS	INIT	CR02	05/07/2019	N-TS-FAIRCHLDTS-TF-T1	TF-GENERAL-DBT
TF	2019	17232421	PR	62125595	NOCO ORAS	INIT	CR03	03/18/2019	N-TS-FAIRCHLDTS-TF-T1	TF-GENERAL-(SEPCIAL)DGA-MAIN TANK
TF	2019	17399128	PR	62159481	NOCO ORAS	INIT	CR03	06/18/2019	N-TS-FAIRCHLDTS-TF-T1	TF-GENERAL-(SPECIAL)DGA-MAIN TANK
TF	2020	18430758	PR	62502496	NOCO ORAS	INIT	CR02	06/16/2020	N-TS-FAIRCHLDTS-TF-T1	TF-GENERAL-(SPECIAL)DGA-MAIN TANK
TF	2020	19414165	PR	62283557	NOCO ORAS	INIT	CR01	10/07/2020	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI Fall 2020
TF	2016	14042219	PR	61182088	NOCO ORAS	INIT	CR01	03/22/2016	N-TS-FAIRCHLDTS-TF-T1	TF-GENERAL-GOT
TF	2015	13543303	PR	61065541	NOCO ORAS	INIT	CR02	02/26/2015	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI SPRING 2015
TF	2019	15873917	PR	61555523	ATCO NOCO ORAS	INIT	CR03	01/28/2019	N-TS-FAIRCHLDTS-TF-T1	TF-GENERAL-GOT
TF	2017	15393642	PR	61427610	NOCO ORAS	INIT	CR01	04/12/2017	N-TS-FAIRCHLDTS-TF-T1	TF-GENERAL-(SPECIAL)DGA-MAIN TANK
TF	2017	15393643	PR	61427611	NOCO ORAS	INIT	CR02	05/24/2017	N-TS-FAIRCHLDTS-TF-T1	TF-GENERAL-(SPECIAL)DGA-MAIN TANK
TF	2018	15393645	PR	61427613	ATCO NOCO ORAS	INIT	CR01	03/06/2018	N-TS-FAIRCHLDTS-TF-T1	TF-GENERAL-(SPECIAL)DGA-MAIN TANK
TF	2017	15393641	PR	61427609	NOCO ORAS	INIT	CR01	04/12/2017	N-TS-FAIRCHLDTS-TF-T1	TF-GENERAL-(SPECIAL)DGA-RUSH-MAIN TANK
TF	2016	15097368	PR	61170658	NOCO ORAS	INIT	CR02	09/16/2016	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI FALL 2016
TF	2015	14272115	PR	61065542	NOCO ORAS	INIT	CR01	10/09/2015	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI FALL 2015
TF	2019	17717811	PR	62234600	NOCO ORAS	INIT	CR03	12/17/2019	N-TS-FAIRCHLDTS-TF-T1	TF-GENERAL-(SPECIAL)DGA-MAIN TANK
TF	2020	18782271	PR	62283556	NOCO ORAS	INIT	CR02	04/17/2020	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI Spr 2020
TF	2020	18782229	PR	62283556	NOCO ORAS	INIT	CR01	04/17/2020	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI Spr 2020
TF	2017	15846572	PR	61531970	NOCO ORAS	INIT	CR01	07/24/2017	N-TS-FAIRCHLDTS-TF-T4	PREOUTAGE INSPECTION- CAT 1 - ELEC
TF	2017	15846573	PR	61531971	NOCO ORAS	INIT	CR01	08/02/2017	N-TS-FAIRCHLDTS-TF-T4	PREOUTAGE INSPECTION- CAT 1 - G&S
TF	2020	19473093	PR	62806441	NOCO ORAS	INIT	CR02	11/19/2020	N-TS-FAIRCHLDTS-TF-T4	PREOUTAGE INSPECTION- CAT 1 - ELEC
TF	2021	19403462	PR	62783800	NOCO ORAS	INIT	CR03	03/16/2021	N-TS-FAIRCHLDTS-TF-T4	TF-GENERAL-(SPECIAL)DGA-MAIN TANK 2021
TF	2015	14272116	PR	61065542	NOCO ORAS	INIT	CR01	10/09/2015	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI FALL 2015
TF	2016	14042222	PR	61182091	NOCO ORAS	INIT	CR01	02/26/2016	N-TS-FAIRCHLDTS-TF-T4	TF-GENERAL-GOT
TF	2016	14687026	PR	61170657	NOCO ORAS	INIT	CR02	05/19/2016	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI SPRING 2016
TF	2017	14909273	PR	61332420	NOCO ORAS	INIT	CR01	07/31/2017	N-TS-FAIRCHLDTS-TF-T4	TF-GENERAL-GOT
TF	2017	15600888	PR	61324937	NOCO ORAS	INIT	CR01	05/04/2017	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI Spr 2017
TF	2017	16148422	PR	61324938	NOCO ORAS	INIT	CR01	10/18/2017	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI Fall 2017
TF	2019	16883477	PR	61915017	NOCO ORAS	INIT	CR01	06/13/2019	N-TS-FAIRCHLDTS-TF-T4	TF-GENERAL-GOT
TF	2019	16883476	PR	61915016	NOCO ORAS	INIT	CR01	06/13/2019	N-TS-FAIRCHLDTS-TF-T4	TF-GENERAL-D1
TF	2018	17118799	PR	61554472	NOCO ORAS	INIT	CR02	11/16/2018	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI Fall 2018
TF	2020	17804561	PR	62285441	NOCO ORAS	INIT	CR03	10/01/2020	N-TS-FAIRCHLDTS-TF-T4	TF-GENERAL-GOT
TF	2019	17541690	PR	61910303	NOCO ORAS	INIT	CR02	04/25/2019	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI Spr 2019
TF	2021	19191097	PR	62679035	NOCO ORAS	INIT	CR02	09/24/2021	N-TS-FAIRCHLDTS-TF-T4	TF-GENERAL-GOT
TF	2020	19414166	PR	62283557	NOCO ORAS	INIT	CR01	10/07/2020	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI Fall 2020
TF	2018	15873919	PR	61555525	NOCO ORAS	INIT	CR02	05/16/2018	N-TS-FAIRCHLDTS-TF-T4	TF-GENERAL-GOT
TF	2016	15097369	PR	61170658	NOCO ORAS	INIT	CR02	09/16/2016	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI FALL 2016
TF	2015	13543302	PR	61065541	NOCO ORAS	INIT	CR02	02/26/2015	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI SPRING 2015
TF	2018	17118736	PR	61554472	NOCO ORAS	INIT	CR02	11/16/2018	N-TS-FAIRCHLDTS-TF-T3	STN 'C' PWR EQ INSP-SVI Fall 2018
TF	2015	14272123	PR	61065542	NOCO ORAS	INIT	CR01	10/09/2015	N-TS-FAIRCHLDTS-TF-T3	STN 'C' PWR EQ INSP-SVI FALL 2015
TF	2015	13543300	PR	61065541	NOCO ORAS	INIT	CR02	02/26/2015	N-TS-FAIRCHLDTS-TF-T3	STN 'C' PWR EQ INSP-SVI SPRING 2015
TF	2016	14042221	PR	61182090	NOCO ORAS	INIT	CR01	02/26/2016	N-TS-FAIRCHLDTS-TF-T3	TF-GENERAL-GOT
TF	2020	18537598	PR	62526125	NOCO ORAS	INIT	CR02	04/16/2020	N-TS-FAIRCHLDTS-TF-T3	PREOUTAGE INSPECTION- CAT 1 - ELEC

TF	2019	17578500	PR	62196269	NOCO ORAS	INIT	CR01	05/17/2019	N-TS-FAIRCHLDTS-TF-T3	PREOUTAGE INSPECTION- CAT 1 - ELEC
TF	2021	19191095	PR	62679033	NOCO ORAS	INIT	CR02	09/23/2021	N-TS-FAIRCHLDTS-TF-T3	TF-GENERAL-GOT
TF	2019	17722042	PR	62235819	NOCO ORAS	INIT	CR02	12/19/2019	N-TS-FAIRCHLDTS-TF-T3	TF-GENERAL-(SPECIAL)DGA-MAIN TANK
TF	2019	17541438	PR	61910303	NOCO ORAS	INIT	CR01	04/25/2019	N-TS-FAIRCHLDTS-TF-T3	STN 'C' PWR EQ INSP-SVI Spr 2019
TF	2019	16883475	PR	61915015	NOCO ORAS	INIT	CR03	06/04/2019	N-TS-FAIRCHLDTS-TF-T3	TF-GENERAL-GOT
TF	2017	15600955	PR	61324937	NOCO ORAS	INIT	CR01	05/04/2017	N-TS-FAIRCHLDTS-TF-T3	STN 'C' PWR EQ INSP-SVI Spr 2017
TF	2019	15873918	PR	61555524	ATCO NOCO ORAS	INIT	CR03	01/28/2019	N-TS-FAIRCHLDTS-TF-T3	TF-GENERAL-GOT
TF	2017	14909272	PR	61332359	NOCO ORAS	INIT	CR02	05/01/2017	N-TS-FAIRCHLDTS-TF-T3	TF-GENERAL-D1
TF	2018	14909271	PR	61332358	NOCO ORAS	INIT	CR03	02/28/2018	N-TS-FAIRCHLDTS-TF-T3	TF-GENERAL-GOT
TF	2016	14686970	PR	61170657	NOCO ORAS	INIT	CR02	05/19/2016	N-TS-FAIRCHLDTS-TF-T3	STN 'C' PWR EQ INSP-SVI SPRING 2016
TF	2020	19218709	PR	62701117	NOCO ORAS	INIT	CR03	08/11/2020	N-TS-FAIRCHLDTS-TF-T3	PREOUTAGE INSPECTION- CAT 1 - ELEC
TF	2020	19073687	PR	62613063	NOCO ORAS	INIT	CR03	06/23/2020	N-TS-FAIRCHLDTS-TF-T3	PREOUTAGE INSPECTION- CAT 1 - ELEC
TF	2020	18537508	PR	62525979	NOCO ORAS	INIT	CR02	11/13/2020	N-TS-FAIRCHLDTS-TF-T3	PREOUTAGE INSPECTION- CAT 1 - G&S
TF	2019	17578501	PR	62196270	NOCO ORAS	INIT	CR01	05/14/2019	N-TS-FAIRCHLDTS-TF-T3	PREOUTAGE INSPECTION- CAT 1 - G&S
TF	2015	13864821	PR	61144877	NOCO ORAS	INIT	CR01	07/24/2015	N-TS-FAIRCHLDTS-TF-T3	PREOUTAGE INSPECTION- CAT 1 - G&S
TF	2015	14163323	PR	61214893	NOCO ORAS	INIT	CR01	09/21/2015	N-TS-FAIRCHLDTS-TF-T3	PREOUTAGE INSPECTION- CAT 1 - ELEC
TF	2015	14163324	PR	61214894	NOCO ORAS	INIT	CR01	09/17/2015	N-TS-FAIRCHLDTS-TF-T3	PREOUTAGE INSPECTION- CAT 1 - G&S
TF	2015	13864820	PR	61144876	NOCO ORAS	INIT		08/24/2015	N-TS-FAIRCHLDTS-TF-T3	PREOUTAGE INSPECTION- CAT 1 - ELEC
TF	2019	17232423	PR	62125597	NOCO ORAS	INIT	CR03	03/18/2019	N-TS-FAIRCHLDTS-TF-T3	TF-GENERAL-(SEPCIAL)DGA-MAIN TANK
TF	2020	19414173	PR	62283557	NOCO ORAS	INIT	CR01	10/07/2020	N-TS-FAIRCHLDTS-TF-T3	STN 'C' PWR EQ INSP-SVI Fall 2020
TF	2019	17399129	PR	62159482	NOCO ORAS	INIT	CR03	06/19/2019	N-TS-FAIRCHLDTS-TF-T3	TF-GENERAL-(SPECIAL)DGA-MAIN TANK
TF	2020	19099348	PR	62620284	NOCO ORAS	INIT	CR02	12/23/2020	N-TS-FAIRCHLDTS-TF-T3	TF-GENERAL-(SPECIAL)DGA-MAIN TANK
TF	2020	17804560	PR	62285440	NOCO ORAS	INIT	CR02	03/16/2020	N-TS-FAIRCHLDTS-TF-T3	TF-GENERAL-GOT
TF	2020	18782272	PR	62283556	NOCO ORAS	INIT	CR02	04/17/2020	N-TS-FAIRCHLDTS-TF-T3	STN 'C' PWR EQ INSP-SVI Spr 2020
TF	2016	14252018	PR	61224504	NOCO ORAS	INIT	CR01	02/22/2016	N-TS-FAIRCHLDTS-TF-T1	UT-AEG-CRND/CRNDS-(SPECIAL)UTOA -ULTC
TF	2017	15393647	PR	61427616	NOCO ORAS	INIT	CR03	06/02/2017	N-TS-FAIRCHLDTS-TF-T1	UT-AEG-CRND/CRNDS-(SPECIAL)UTOA
TF	2017	15393646	PR	61427615	NOCO ORAS	INIT	CR03	06/02/2017	N-TS-FAIRCHLDTS-TF-T1	UT-AEG-CRND/CRNDS-(SPECIAL)UYTAO-RUSH
TF	2018	15393648	PR	61427617	ATCO NOCO ORAS	INIT	CR02	03/07/2018	N-TS-FAIRCHLDTS-TF-T1	UT-AEG-CRND/CRNDS-(SPECIAL)UTOA
TF	2019	15875775	PR	61557328	ATCO NOCO ORAS	INIT	CR02	01/08/2019	N-TS-FAIRCHLDTS-TF-T1	UT-AEG-CRND/CRNDS-UTOA
TF	2019	16892705	PR	61924256	NOCO ORAS	INIT	CR02	06/18/2019	N-TS-FAIRCHLDTS-TF-T1	UT-AEG-CRND/CRNDS-UTOA
TF	2018	17118772	PR	61554472	NOCO ORAS	INIT	CR02	11/16/2018	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI Fall 2018
TF	2020	17811810	PR	62292632	NOCO ORAS	INIT	CR01	05/01/2020	N-TS-FAIRCHLDTS-TF-T1	UT-AEG-CRND/CRNDS-UTOA
TF	2021	19192551	PR	62680399	NOCO ORAS	INIT	CR02	09/20/2021	N-TS-FAIRCHLDTS-TF-T1	UT-AEG-CRND/CRNDS-UTOA
TF	2020	19414328	PR	62283557	NOCO ORAS	INIT	CR01	10/07/2020	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI Fall 2020
TF	2017	15601653	PR	61324937	NOCO ORAS	INIT	CR01	05/04/2017	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI Spr 2017
TF	2017	16148492	PR	61324938	NOCO ORAS	INIT	CR02	10/18/2017	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI Fall 2017
TF	2019	17541679	PR	61910303	NOCO ORAS	INIT	CR01	04/25/2019	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI Spr 2019
TF	2019	18212693	PR	61910304	NOCO ORAS	INIT	CR02	10/16/2019	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI Fall 2019
TF	2020	18782296	PR	62283556	NOCO ORAS	INIT	CR02	04/17/2020	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI Spr 2020
TF	2018	16682289	PR	61554471	NOCO ORAS	INIT	CR02	04/20/2018	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI Spr 2018
TF	2015	14272184	PR	61065542	NOCO ORAS	INIT	CR01	10/09/2015	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI FALL 2015
TF	2016	14048553	PR	61188422	NOCO ORAS	INIT	CR01	02/22/2016	N-TS-FAIRCHLDTS-TF-T1	UT-AEG-CRND/CRNDS-UTOA
TF	2016	14687083	PR	61170657	NOCO ORAS	INIT	CR01	05/19/2016	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI SPRING 2016
TF	2016	15097330	PR	61170658	NOCO ORAS	INIT	CR02	09/16/2016	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI FALL 2016
TF	2017	14922894	PR	61346033	ATCO NOCO ORAS	INIT	CR01	06/01/2017	N-TS-FAIRCHLDTS-TF-T1	UT-AEG-CRND/CRNDS-UTOA
TF	2015	13543289	PR	61065541	NOCO ORAS	INIT	CR02	02/26/2015	N-TS-FAIRCHLDTS-TF-T1	STN 'C' PWR EQ INSP-SVI SPRING 2015
TF	2020	19414329	PR	62283557	NOCO ORAS	INIT	CR01	10/07/2020	N-TS-FAIRCHLDTS-TF-T3	STN 'C' PWR EQ INSP-SVI Fall 2020
TF	2020	18782297	PR	62283556	NOCO ORAS	INIT	CR02	04/17/2020	N-TS-FAIRCHLDTS-TF-T3	STN 'C' PWR EQ INSP-SVI Spr 2020
TF	2020	17811811	PR	62292633	NOCO ORAS	INIT	CR02	03/16/2020	N-TS-FAIRCHLDTS-TF-T3	UT-MR-MIII-UTOA
TF	2015	13543287	PR	61065541	NOCO ORAS	INIT	CR02	02/26/2015	N-TS-FAIRCHLDTS-TF-T3	STN 'C' PWR EQ INSP-SVI SPRING 2015
TF	2016	14048555	PR	61188424	NOCO ORAS	INIT	CR01	02/26/2016	N-TS-FAIRCHLDTS-TF-T3	UT-MR-MIII-UTOA
TF	2021	19192552	PR	62680480	NOCO ORAS	INIT	CR03	09/23/2021	N-TS-FAIRCHLDTS-TF-T3	UT-MR-MIII-UTOA
TF	2015	14272200	PR	61065542	NOCO ORAS	INIT	CR01	10/09/2015	N-TS-FAIRCHLDTS-TF-T3	STN 'C' PWR EQ INSP-SVI FALL 2015
TF	2016	14686978	PR	61170657	NOCO ORAS	INIT	CR02	05/19/2016	N-TS-FAIRCHLDTS-TF-T3	STN 'C' PWR EQ INSP-SVI SPRING 2016
TF	2018	16682229	PR	61554471	NOCO ORAS	INIT	CR02	04/20/2018	N-TS-FAIRCHLDTS-TF-T3	STN 'C' PWR EQ INSP-SVI Spr 2018
TF	2016	15097331	PR	61170658	NOCO ORAS	INIT	CR02	09/16/2016	N-TS-FAIRCHLDTS-TF-T3	STN 'C' PWR EQ INSP-SVI FALL 2016
TF	2017	14905525	PR	61328634	NOCO ORAS	INIT	CR01	08/31/2017	N-TS-FAIRCHLDTS-TF-T3	UT-MR-MIII-SI
TF	2019	18212695	PR	61910304	NOCO ORAS	INIT	CR02	10/16/2019	N-TS-FAIRCHLDTS-TF-T3	STN 'C' PWR EQ INSP-SVI Fall 2019
TF	2018	17118774	PR	61554472	NOCO ORAS	INIT	CR01	11/16/2018	N-TS-FAIRCHLDTS-TF-T3	STN 'C' PWR EQ INSP-SVI Fall 2018
TF	2019	16892706	PR	61924257	NOCO ORAS	INIT	CR02	06/04/2019	N-TS-FAIRCHLDTS-TF-T3	UT-MR-MIII-UTOA
TF	2019	17541677	PR	61910303	NOCO ORAS	INIT	CR01	04/25/2019	N-TS-FAIRCHLDTS-TF-T3	STN 'C' PWR EQ INSP-SVI Spr 2019

TF	2017	15601654	PR	61324937	NOCO ORAS	INIT	CR01	05/04/2017	N-TS-FAIRCHLDTS-TF-T3	STN 'C' PWR EQ INSP-SVI Spr 2017
TF	2018	14922896	PR	61346035	NOCO ORAS	INIT	CR02	02/28/2018	N-TS-FAIRCHLDTS-TF-T3	UT-MR-MIII-UTOA
TF	2019	15875777	PR	61557329	ATCO NOCO ORAS	INIT	CR02	01/08/2019	N-TS-FAIRCHLDTS-TF-T3	UT-MR-MIII-UTOA
TF	2016	14047394	PR	61187263	NOCO ORAS	INIT	CR01	05/10/2016	N-TS-FAIRCHLDTS-TF-T4	UT-MR-MIII-UTOA
TF	2017	14922311	PR	61345410	NOCO ORAS	INIT	CR01	08/03/2017	N-TS-FAIRCHLDTS-TF-T4	UT-MR-MIII-UTOA
TF	2018	15875650	PR	61557204	NOCO ORAS	INIT	CR02	05/16/2018	N-TS-FAIRCHLDTS-TF-T4	UT-MR-MIII-UTOA
TF	2019	17541687	PR	61910303	NOCO ORAS	INIT	CR01	04/25/2019	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI Spr 2019
TF	2018	17118775	PR	61554472	NOCO ORAS	INIT	CR02	11/16/2018	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI Fall 2018
TF	2019	16891776	PR	61923447	NOCO ORAS	INIT	CR03	08/13/2019	N-TS-FAIRCHLDTS-TF-T4	UT-MR-MIII-UTOA
TF	2016	15097337	PR	61170658	NOCO ORAS	INIT	CR02	09/16/2016	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI FALL 2016
TF	2016	14686929	PR	61170657	NOCO ORAS	INIT	CR02	05/19/2016	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI SPRING 2016
TF	2015	14272204	PR	61065542	NOCO ORAS	INIT	CR01	10/09/2015	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI FALL 2015
TF	2020	17811545	PR	62292377	NOCO ORAS	INIT	CR03	09/29/2020	N-TS-FAIRCHLDTS-TF-T4	UT-MR-MIII-UTOA
TF	2021	19192275	PR	62680213	NOCO ORAS	INIT	CR03	09/20/2021	N-TS-FAIRCHLDTS-TF-T4	UT-MR-MIII-UTOA
TF	2020	19395074	PR	62780322	NOCO ORAS	INIT	CR01	12/16/2020	N-TS-FAIRCHLDTS-TF-T4	UT-MR-MIII-(SPECIAL)MCT-ULTC
TF	2015	13543266	PR	61065541	NOCO ORAS	INIT	CR02	02/26/2015	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI SPRING 2015
TF	2017	15601655	PR	61324937	NOCO ORAS	INIT	CR01	05/04/2017	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI Spr 2017
TF	2019	17915550	PR	62335791	NOCO ORAS	INIT	CR02	11/01/2019	N-TS-FAIRCHLDTS-TF-T4	UT-MR-MIII-(SPECIAL)MCT-DIV
TF	2020	19414340	PR	62283557	NOCO ORAS	INIT	CR01	10/07/2020	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI Fall 2020
TF	2020	18782298	PR	62283556	NOCO ORAS	INIT	CR02	04/17/2020	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI Spr 2020
TF	2019	18212696	PR	61910304	NOCO ORAS	INIT	CR02	10/16/2019	N-TS-FAIRCHLDTS-TF-T4	STN 'C' PWR EQ INSP-SVI Fall 2019
TF	2020	19508462	PR	62477739	NOCO ORAS	INIT	CR01	11/03/2020	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample 2020
TF	2015	14246989	PR	60979336	NOCO ORAS	INIT	CR01	10/02/2015	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample
TF	2015	14247120	PR	60979336	NOCO ORAS	INIT	CR01	10/02/2015	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample
TF	2020	19508463	PR	62477739	NOCO ORAS	INIT	CR01	11/03/2020	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample 2020
TF	2015	14247121	PR	60979336	NOCO ORAS	INIT	CR01	10/02/2015	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample
TF	2020	19508464	PR	62477739	NOCO ORAS	INIT	CR01	11/03/2020	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample 2020
TF	2020	19508465	PR	62477739	NOCO ORAS	INIT	CR01	11/03/2020	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample 2020
TF	2015	14247123	PR	60979336	NOCO ORAS	INIT	CR01	10/02/2015	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample
TF	2020	19508466	PR	62477739	NOCO ORAS	INIT	CR01	11/03/2020	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample 2020
TF	2015	14247126	PR	60979336	NOCO ORAS	INIT	CR01	10/02/2015	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample
TF	2015	14247129	PR	60979336	NOCO ORAS	INIT	CR01	10/02/2015	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample
TF	2020	19508467	PR	62477739	NOCO ORAS	INIT	CR01	11/03/2020	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample 2020
TF	2015	14247131	PR	60979336	NOCO ORAS	INIT	CR01	10/02/2015	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample
TF	2020	19508468	PR	62477739	NOCO ORAS	INIT	CR01	11/03/2020	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample 2020
TF	2020	19508469	PR	62477739	NOCO ORAS	INIT	CR01	11/03/2020	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample 2020
TF	2015	14247132	PR	60979336	NOCO ORAS	INIT	CR01	10/02/2015	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample
TF	2020	19508500	PR	62477739	NOCO ORAS	INIT	CR01	11/03/2020	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample 2020
TF	2015	14247134	PR	60979336	NOCO ORAS	INIT	CR01	10/02/2015	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample
TF	2020	19508501	PR	62477739	NOCO ORAS	INIT	CR01	11/03/2020	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample 2020
TF	2015	14247136	PR	60979336	NOCO ORAS	INIT	CR01	10/02/2015	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample
TF	2020	19508502	PR	62477739	NOCO ORAS	INIT	CR01	11/03/2020	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample 2020
TF	2015	14247137	PR	60979336	NOCO ORAS	INIT	CR01	10/02/2015	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample
TF	2015	14247138	PR	60979336	NOCO ORAS	INIT	CR01	10/02/2015	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample
TF	2020	19508503	PR	62477739	NOCO ORAS	INIT	CR01	11/03/2020	N-TS-FAIRCHLDTS-TF-T1	Tx PCB Reduction Oil Sample 2020
TF	2020	19382059	PR	62477686	NOCO ORAS	INIT	CR01	09/25/2020	N-TS-FAIRCHLDTS-TF-T4	Tx PCB Reduction Oil Sample 2020
TF	2015	13987823	PR	60977825	NOCO ORAS	INIT	CR01	07/15/2015	N-TS-FAIRCHLDTS-TF-T3	Tx PCB Reduction Oil Sample
TF	2015	13987824	PR	60977825	NOCO ORAS	INIT	CR01	07/15/2015	N-TS-FAIRCHLDTS-TF-T3	Tx PCB Reduction Oil Sample
TF	2015	13987825	PR	60977825	NOCO ORAS	INIT	CR01	07/15/2015	N-TS-FAIRCHLDTS-TF-T3	Tx PCB Reduction Oil Sample
TF	2015	13987826	PR	60977825	NOCO ORAS	INIT	CR01	07/15/2015	N-TS-FAIRCHLDTS-TF-T3	Tx PCB Reduction Oil Sample
TF	2015	13987827	PR	60977825	NOCO ORAS	INIT	CR01	07/15/2015	N-TS-FAIRCHLDTS-TF-T3	Tx PCB Reduction Oil Sample
TF	2015	13987828	PR	60977825	NOCO ORAS	INIT	CR01	07/15/2015	N-TS-FAIRCHLDTS-TF-T3	Tx PCB Reduction Oil Sample
TF	2015	13987829	PR	60977825	NOCO ORAS	INIT	CR01	07/15/2015	N-TS-FAIRCHLDTS-TF-T3	Tx PCB Reduction Oil Sample
TF	2015	13987840	PR	60977825	NOCO ORAS	INIT	CR01	07/15/2015	N-TS-FAIRCHLDTS-TF-T3	Tx PCB Reduction Oil Sample
TF	2015	13987841	PR	60977825	NOCO ORAS	INIT	CR01	07/15/2015	N-TS-FAIRCHLDTS-TF-T3	Tx PCB Reduction Oil Sample
TF	2015	13987842	PR	60977825	NOCO ORAS	INIT	CR01	07/15/2015	N-TS-FAIRCHLDTS-TF-T3	Tx PCB Reduction Oil Sample
TF	2015	13987843	PR	60977825	NOCO ORAS	INIT	CR01	07/15/2015	N-TS-FAIRCHLDTS-TF-T3	Tx PCB Reduction Oil Sample
TF	2015	13987844	PR	60977825	NOCO ORAS	INIT	CR01	07/15/2015	N-TS-FAIRCHLDTS-TF-T3	Tx PCB Reduction Oil Sample
TF	2020	19383530	PR	62477686	NOCO ORAS	INIT	CR01	09/25/2020	N-TS-FAIRCHLDTS-TF-T4	Tx PCB Reduction Oil Sample 2020

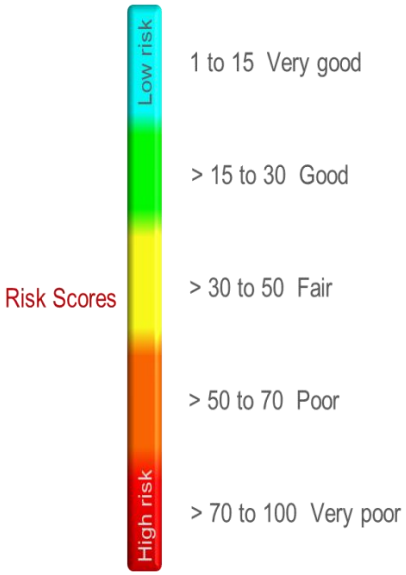
Health Assessment for Breakers at Hawthorne TS

Prepared by: **Harshal Bhatt**

Approved by: Steve Smith

Rev.#: 00

APPENDIX – Health Index Summary



The asset risk assessment process relies on the Asset Analytics system to provide initial asset screening and quantitative analysis of the following six risk factors:

- Condition – Asset Health Index or condition risk related to the increased probability of failure that assets experience when their condition degrades over time.
- Demographics - Risk related to the increased probability of failure exhibited by assets of a particular make, manufacturer, and/or vintage.
- Criticality - Represents the impact that the failure of a specific asset would have on the transmission system
- Performance - Risk that reflects the historical performance of an asset, derived from the frequency and duration of outages
- Utilization - Risk that reflects the increased rate of deterioration exhibited by an asset that is highly utilized
- Economics - Risk based on the economic evaluation of the ongoing costs associated with the operation of an asset

The Asset Analytics system enables Hydro One planners to review aggregated information from various enterprise reporting systems to provide a common understanding of asset health and asset risks. This drives efficient and effective planning decisions by ensuring a consistent view of asset information for all planners. The information contained within the asset analytics system includes condition information driven by deficiency and preventative maintenance reports, demographic information (including make, model, type and criticality to the transmission system), performance data based on equipment outages, utilization information, and economics.

Hydro One's planners also take into account additional factors such as load forecasts, equipment ratings, operating restrictions, security incidents, environmental risks and requirements, compliance obligations, equipment defects, obsolescence, and health and safety considerations to ensure capital expenditures target the most appropriate mix of assets.

Asset	Age	Final review		Conditi	Demog.	Econ.	Perform.	Utiliz.	Critic.	Obsole.	HS&E	PCB
		Risk	Technical Assessments and Recommendations									
BJ	53	High-Long term	These breakers are obsolete with limited parts availability and vendor support.	27	89	1	31	63	42	Y	N	Y
M1	48	High-Long term		27	71	1	100	44	36	Y	N	N
M2	53	High-Long term		42	89	1	4	44	36	Y	N	N
M3	53	High-Long term		67	89	1	100	50	36	Y	N	N
M4	53	High-Long term		14	89	1	12	45	36	Y	N	Y
M5	50	High-Long term		26	100	1	9	43	36	Y	N	Y
T7B	53	High-Long term		14	89	1	1	100	44	Y	N	Y
T8J	53	High-Long term		27	89	1	1	100	44	Y	N	N

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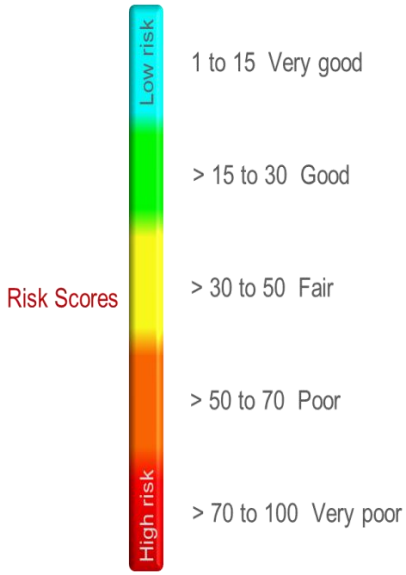
Health Assessment for Protection at Hawthorne TS

Prepared by: Fenghai Sui

Approved by: Jawed Atcha

Rev.#: 00

APPENDIX – Health Index Summary



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Hydro One's planners also take into account additional factors such as load forecasts, equipment ratings, operating restrictions, security incidents, environmental risks and requirements, compliance obligations, equipment defects, obsolescence, and health and safety considerations to ensure capital expenditures target the most appropriate mix of assets.

Station	Asset	Type	Age	Asset Risk Assessment (ARA)	Comments	Condition RF	Demographics RF	Economics RF	Performance RF	Utilization RF	Criticality	Obsolescence	HS&E
Hawthorn TS (Protections)	N-TS-HAWTHORNTS-PR-M31A B	Microprocessor	22	High	Relays are at end of their expected service life. Hardware and firmware deficiencies are being observed in 1st generation of microprocessor relays.	1	75	1	1	0	69	Y	N
	N-TS-HAWTHORNTS-PR-HT5L31 BF	Solid State	49	High	Solid-state relays are obsolete. It is currently being maintained with spare parts when it fails.	1	100	1	1	0	69	Y	N
	N-TS-HAWTHORNTS-PR-HT5L5 BF		51	High		1	100	1	1	0	69	Y	N
	N-TS-HAWTHORNTS-PR-KL5 BF		50	High		1	100	1	1	0	69	Y	N
	N-TS-HAWTHORNTS-PR-L4L8 BF		48	High		1	100	1	1	0	4	Y	N
	N-TS-HAWTHORNTS-PR-L5L2 BF		48	High		1	100	45	28	0	4	Y	N
	N-TS-HAWTHORNTS-PR-LT4L2 BF		48	High		1	100	1	1	0	4	Y	N
	N-TS-HAWTHORNTS-PR-LT5L9 BF		48	High		1	100	1	1	0	4	Y	N
	N-TS-HAWTHORNTS-PR-LT6L8 BF		48	High		1	100	100	100	0	4	Y	N
	N-TS-HAWTHORNTS-PR-LT9L3 BF		48	High		1	100	1	1	0	4	Y	N
	N-TS-HAWTHORNTS-PR-MPS A		33	High		1	100	26	19	0	41	Y	N
	N-TS-HAWTHORNTS-PR-MPS B		33	High		1	100	1	1	0	41	Y	N
	N-TS-HAWTHORNTS-PR-MPS LEO		22	High		1	25	1	1	0	83	Y	N
	N-TS-HAWTHORNTS-PR-QL3 BF		48	High		1	100	1	1	0	4	Y	N
	N-TS-HAWTHORNTS-PR-QLT4 BF		48	High		1	100	1	93	0	4	Y	N
	N-TS-HAWTHORNTS-PR-QLT5 BF		48	High		1	100	1	93	0	4	Y	N

N-TS-HAWTHORNTS-PR-QLT6 BF	48	High	1	100	1	1	0	4	Y	N
N-TS-HAWTHORNTS-PR-SC2 MAIN	42	High	1	100	1	1	0	1	Y	N
N-TS-HAWTHORNTS-PR-T2 B	33	High	1	100	1	1	0	87	Y	N
N-TS-HAWTHORNTS-PR-T2 ZATM B	32	High	1	100	1	1	0	87	Y	N
N-TS-HAWTHORNTS-PR-T3 B	33	High	1	100	1	1	0	87	Y	N
N-TS-HAWTHORNTS-PR-T3 ZATM B	33	High	1	100	1	1	0	87	Y	N
N-TS-HAWTHORNTS-PR-T4 HIROP A	32	High	1	100	1	1	0	69	Y	N
N-TS-HAWTHORNTS-PR-T4 HIROP B	32	High	1	100	1	1	0	69	Y	N
N-TS-HAWTHORNTS-PR-T5 HIROP A	32	High	1	100	1	1	0	69	Y	N
N-TS-HAWTHORNTS-PR-T5 HIROP B	32	High	1	100	1	1	0	69	Y	N
N-TS-HAWTHORNTS-PR-T9 HIROP A	32	High	1	100	1	1	0	69	Y	N
N-TS-HAWTHORNTS-PR-T9 HIROP B	32	High	1	100	1	1	0	69	Y	N
N-TS-HAWTHORNTS-PR-X522A LEO	33	High	1	100	1	1	0	87	Y	N
N-TS-HAWTHORNTS-PR-X522A ZATMB	32	High	0	100	1	1	0	83	Y	N
N-TS-HAWTHORNTS-PR-X523A A	31	High	1	75	19	19	0	87	Y	N
N-TS-HAWTHORNTS-PR-X523A LEO	33	High	1	100	1	1	0	87	Y	N
N-TS-HAWTHORNTS-PR-X523A ZATMB	32	High	1	100	1	1	0	87	Y	N
N-TS-HAWTHORNTS-PR-YL4 BF	34	High	1	100	1	1	0	4	Y	N
N-TS-HAWTHORNTS-PR-YL6 BF	48	High	1	100	1	1	0	4	Y	N

N-TS-HAWTHORNTS-PR-48M1 MAIN	Electromechanical	48	High	Electromechanical relays are obsolete and no longer supported. It is currently being maintained with spare parts when it fails.	1	75	52	47	0	1	Y	N
N-TS-HAWTHORNTS-PR-48M2 MAIN		48	High		1	75	100	100	0	1	Y	N
N-TS-HAWTHORNTS-PR-48M3 MAIN		48	High		1	75	1	1	0	10	Y	N
N-TS-HAWTHORNTS-PR-48M4 MAIN		48	High		1	75	1	100	0	10	Y	N
N-TS-HAWTHORNTS-PR-48M5 MAIN		38	High		1	50	1	1	0	10	Y	N
N-TS-HAWTHORNTS-PR-A2 RT N		43	High		1	75	1	1	0	4	Y	N
N-TS-HAWTHORNTS-PR-A6R RT A		25	High		1	25	1	1	0	4	Y	N
N-TS-HAWTHORNTS-PR-A6R RT B		25	High		1	25	1	1	0	4	Y	N
N-TS-HAWTHORNTS-PR-B BU		53	High		1	100	38	23	0	1	Y	N
N-TS-HAWTHORNTS-PR-B MAIN		53	High		1	100	1	1	0	1	Y	N
N-TS-HAWTHORNTS-PR-BJ BF		49	High		1	75	1	1	0	1	Y	N
N-TS-HAWTHORNTS-PR-D5A TT A		33	High		1	25	1	1	0	33	Y	N
N-TS-HAWTHORNTS-PR-D5A TT B		50	High		1	100	1	1	0	33	Y	N
N-TS-HAWTHORNTS-PR-H9A TT A		42	High		1	75	96	100	0	6	Y	N
N-TS-HAWTHORNTS-PR-H9A TT B		42	High		1	75	1	1	0	6	Y	N
N-TS-HAWTHORNTS-PR-HT1 A		31	High		1	25	1	1	0	87	Y	N
N-TS-HAWTHORNTS-PR-HT1 B		31	High		1	25	70	35	0	87	Y	N
N-TS-HAWTHORNTS-PR-HT2 A		31	High		1	25	1	1	0	87	Y	N
N-TS-HAWTHORNTS-PR-HT2 B		31	High		1	25	55	12	0	87	Y	N
N-TS-HAWTHORNTS-PR-HT3 A		31	High		1	25	1	1	0	87	Y	N
N-TS-HAWTHORNTS-PR-HT3 B		31	High		1	25	1	1	0	87	Y	N

	N-TS-HAWTHORNTS-PR-HT4 A	33	High	1	25	1	1	0	69	Y	N
	N-TS-HAWTHORNTS-PR-HT4 B	33	High	1	25	1	1	0	69	Y	N
	N-TS-HAWTHORNTS-PR-HT5 A	33	High	1	25	1	1	0	69	Y	N
	N-TS-HAWTHORNTS-PR-HT5 B	33	High	1	25	1	1	0	69	Y	N
	N-TS-HAWTHORNTS-PR-J BU	53	High	1	100	79	100	0	1	Y	N
	N-TS-HAWTHORNTS-PR-J MAIN	53	High	1	100	1	1	0	1	Y	N
	N-TS-HAWTHORNTS-PR-K A	33	High	1	25	1	1	0	69	Y	N
	N-TS-HAWTHORNTS-PR-K B	33	High	1	25	1	1	0	69	Y	N
	N-TS-HAWTHORNTS-PR-LT2 A	33	High	1	25	1	1	0	69	Y	N
	N-TS-HAWTHORNTS-PR-LT2 B	33	High	1	25	1	1	0	69	Y	N
	N-TS-HAWTHORNTS-PR-LT3 A	33	High	1	25	1	1	0	69	Y	N
	N-TS-HAWTHORNTS-PR-LT3 B	33	High	1	25	1	1	0	69	Y	N
	N-TS-HAWTHORNTS-PR-LT4 A	45	High	25	75	1	23	0	4	Y	N
	N-TS-HAWTHORNTS-PR-LT4 B	45	High	1	75	1	1	0	4	Y	N
	N-TS-HAWTHORNTS-PR-LT5 A	34	High	1	50	1	100	0	4	Y	N
	N-TS-HAWTHORNTS-PR-LT5 B	34	High	1	50	1	1	0	4	Y	N
	N-TS-HAWTHORNTS-PR-LT6 A	34	High	1	50	1	1	0	4	Y	N
	N-TS-HAWTHORNTS-PR-LT6 B	34	High	1	50	1	1	0	4	Y	N
	N-TS-HAWTHORNTS-PR-LT9 B	17	High	1	1	1	1	0	4	Y	N
	N-TS-HAWTHORNTS-PR-MG MAIN	49	High	1	75	1	1	0	1	Y	N
	N-TS-HAWTHORNTS-PR-Q A	34	High	1	50	31	100	0	4	Y	N

N-TS-HAWTHORNTS-PR-Q B	34	High	1	50	1	1	0	4	Y	N
N-TS-HAWTHORNTS-PR-R2 A	33	High	1	25	1	1	0	1	Y	N
N-TS-HAWTHORNTS-PR-R2 B	33	High	1	25	1	1	0	1	Y	N
N-TS-HAWTHORNTS-PR-R3 A	33	High	1	1	1	1	0	1	Y	N
N-TS-HAWTHORNTS-PR-R3 B	33	High	1	1	1	1	0	1	Y	N
N-TS-HAWTHORNTS-PR-SC1 MAIN	42	High	1	75	1	1	0	1	Y	N
N-TS-HAWTHORNTS-PR-SPS191 GR B	51	High	1	75	1	1	0	22	Y	N
N-TS-HAWTHORNTS-PR-T2 A	33	High	1	25	1	1	0	87	Y	N
N-TS-HAWTHORNTS-PR-T2 ZATM A	32	High	1	25	1	1	0	87	Y	N
N-TS-HAWTHORNTS-PR-T3 A	33	High	1	25	13	23	0	87	Y	N
N-TS-HAWTHORNTS-PR-T3 ZATM A	33	High	1	25	1	1	0	87	Y	N
N-TS-HAWTHORNTS-PR-T4 A	45	High	1	75	100	100	0	69	Y	N
N-TS-HAWTHORNTS-PR-T4 B	45	High	1	75	1	1	0	69	Y	N
N-TS-HAWTHORNTS-PR-T5 A	49	High	1	75	100	100	0	69	Y	N
N-TS-HAWTHORNTS-PR-T5 B	49	High	1	75	1	1	0	69	Y	N
N-TS-HAWTHORNTS-PR-T7B BF	49	High	1	75	1	1	0	1	Y	N
N-TS-HAWTHORNTS-PR-T8J BF	49	High	1	75	1	1	0	1	Y	N
N-TS-HAWTHORNTS-PR-X523A ZATMA	32	High	1	25	1	1	0	87	Y	N
N-TS-HAWTHORNTS-PR-Y A	34	High	1	50	1	1	0	4	Y	N
N-TS-HAWTHORNTS-PR-Y B	34	High	1	50	1	1	0	4	Y	N
N-TS-HAWTHORNTS-PR-T6 A	50	High	1	1	1	69	0	69	Y	N

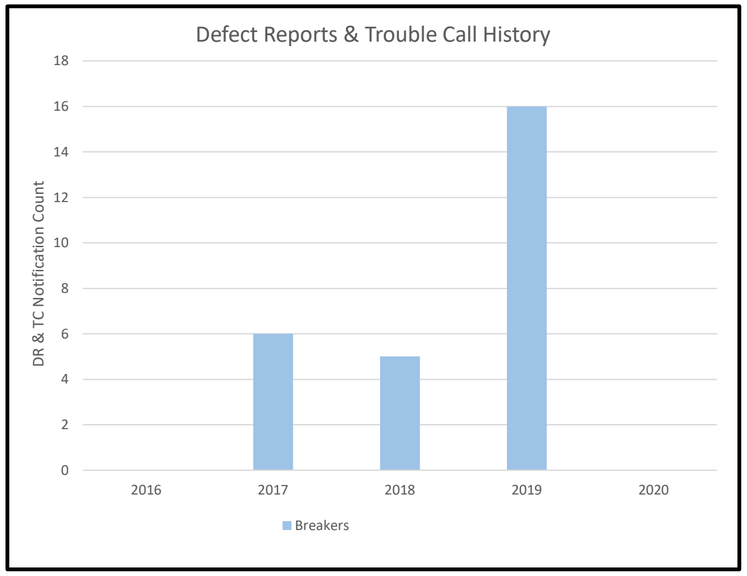
N-TS-HAWTHORNTS-PR-T6 B	50	High	1	1	1	1	0	69	Y	N
N-TS-HAWTHORNTS-PR-T7 A	50	High	1	1	1	100	0	69	Y	N
N-TS-HAWTHORNTS-PR-T7 B	50	High	1	1	1	1	0	69	Y	N
N-TS-HAWTHORNTS-PR-W67 A	34	High	1	1	1	73	0	69	Y	N
N-TS-HAWTHORNTS-PR-W67 B	34	High	1	1	1	1	0	69	Y	N

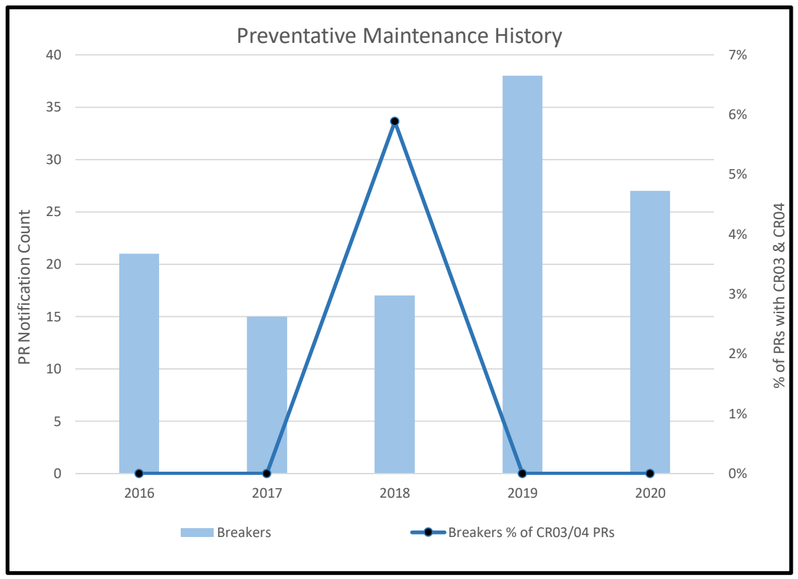
Quantity of Defect Reports and Trouble Calls					
Asset	Year				
	2016	2017	2018	2019	2020
Breakers	0	6	5	16	0

Quantity of Preventative Maintenance Reports					
Asset	Year				
	2016	2017	2018	2019	2020
Breakers	21	15	17	38	27

Assets: N-TS-HAWTHORNTS-BR-BJ
N-TS-HAWTHORNTS-BR-M1
N-TS-HAWTHORNTS-BR-M2
N-TS-HAWTHORNTS-BR-M3
N-TS-HAWTHORNTS-BR-M4
N-TS-HAWTHORNTS-BR-M5
N-TS-HAWTHORNTS-BR-T7B
N-TS-HAWTHORNTS-BR-T8J

Preventative Maintenance Report Condition Ratings																				
	2016				2017				2018				2019				2020			
Station - Asset	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04	CR01	CR02	CR03	CR04
Breakers	21	0	0	0	15	0	0	0	12	4	1	0	24	14	0	0	26	0	0	0





Data Extraction Notes:

1. Query SAP DR/TC/PR type completed notifications via t-code IW29
2. Seach by Functional Location (individual assets and parent FLOC)
3. Date range is 2015.1.1 to 2020.12.31
4. Exclude notification completion dates outside of 2016 to 2020.
5. Exclude cancelled or voided notifications.
6. Exclude parent FLOC notifications not associated with assets in question.

Asset Type	year	Notification	Notifictn type	Order	System status	User status	Coding	Completn date	Functional Loc.	Description
BR	2015	14002815	DR	61156986	NOCO ORAS	INIT		09/11/2015	N-TS-HAWTHORNTS-BR-M1	AR21060 NKL48 M1 Bushing (6) Replace EMD
BR	2021	18981407	DR		NOCO	VALD JHSC		02/01/2021	N-TS-HAWTHORNTS-BR-M3	M3/M4 Feeder pole Rotten and cracked
BR	2017	16224031	DR	61726242	NOCO ORAS	VALD	0100	12/12/2017	N-TS-HAWTHORNTS-BR-M5	no mech box heat
BR	2019	16818714	DR	62085620	NOCO ORAS	VALD	0700	01/07/2019	N-TS-HAWTHORNTS-BR-M5	Duct seal is missing
BR	2019	17631239	DR	62209603	NOCO ORAS	VALD	1400	05/23/2019	N-TS-HAWTHORNTS-BR-M3	Hawthorne M3 open/close trouble
BR	2019	17627529	DR	62208098	NOCO ORAS	VALD	1400	05/23/2019	N-TS-HAWTHORNTS-BR-M3	Hawthorne M3 52X coil replacement
BR	2019	17135382	DR	62087854	NOCO ORAS	VALD	1400	05/23/2019	N-TS-HAWTHORNTS-BR-M3	M3 High Contact resistance
BR	2018	16847208	DR	61882769	NOCO ORAS	VALD	5710	09/13/2018	N-TS-HAWTHORNTS-BR-M1	Hawthorne M1 N/T repairs
BR	2018	16834500	DR	61872786	NOCO ORAS	VALD	0100	06/19/2018	N-TS-HAWTHORNTS-BR-M1	Hawthorne M1 investigate open failure
BR	2015	14143654	DR	61213008	NOCO ORAS	VALD	5710	09/16/2015	N-TS-HAWTHORNTS-BR-M1	Hawthorne TS - M1 Interruptor Rebuild
BR	2019	16818725	DR	62085623	NOCO ORAS	VALD	0700	01/07/2019	N-TS-HAWTHORNTS-BR-M1	Duct seal is missing
BR	2018	16834503	DR	61872785	NOCO ORAS	VALD	0100	06/21/2018	N-TS-HAWTHORNTS-BR-M1	Hawthorne M1 investigate N/T functions
BR	2019	17729781	DR	62238801	NOCO ORAS	VALD	1400	10/07/2019	N-TS-HAWTHORNTS-BR-BJ	Hawthorne BJ breaker trip free
BR	2019	17772155	DR	62159771	NOCO ORAS	INIT		07/24/2019	N-TS-HAWTHORNTS-BR-M2	EX-HAWTHORN M2 6 BUSHINGS PCB RETRO
BR	2019	16818734	DR	62085624	NOCO ORAS	VALD	0700	01/07/2019	N-TS-HAWTHORNTS-BR-M2	Duct seal is missing
BR	2019	16818726	DR	62085625	NOCO ORAS	VALD	0700	01/07/2019	N-TS-HAWTHORNTS-BR-M4	Duct seal is missing
BR	2015	14002810	DR	61156981	NOCO ORAS	INIT		09/11/2015	N-TS-HAWTHORNTS-BR-M1	AR21060 NKL48 M1 Bushing (1) Replace EMD
BR	2015	14002811	DR	61156982	NOCO ORAS	INIT		09/11/2015	N-TS-HAWTHORNTS-BR-M1	AR21060 NKL48 M1 Bushing (2) Replace EMD
BR	2015	14002812	DR	61156983	NOCO ORAS	INIT		09/11/2015	N-TS-HAWTHORNTS-BR-M1	AR21060 NKL48 M1 Bushing (3) Replace EMD
BR	2015	14002813	DR	61156984	NOCO ORAS	INIT		09/11/2015	N-TS-HAWTHORNTS-BR-M1	AR21060 NKL48 M1 Bushing (4) Replace EMD
BR	2015	14002814	DR	61156985	NOCO ORAS	INIT		09/11/2015	N-TS-HAWTHORNTS-BR-M1	AR21060 NKL48 M1 Bushing (5) Replace EMD
BR	2017	15931161	TC	61606434	NOCO ORAS	RECD		08/10/2017	N-TS-HAWTHORNTS-BR-M1	S4- EMD - RE: OPERATION OF THE M1 BKR
BR	2017	15931160	TC	61607582	NOCO ORAS	RECD		08/14/2017	N-TS-HAWTHORNTS-BR-M1	S4- P&C - RE: OPERATION OF THE M1 BREAKR
BR	2019	17574783	TC	62195766	NOCO ORAS	RECD		06/05/2019	N-TS-HAWTHORNTS-BR-M2	S4 REQ PC PN NH RE: UPDATE ON M2 FEEDER
BR	2019	17248834	TC	62135641	NOCO ORAS	RECD		02/20/2019	N-TS-HAWTHORNTS-BR-M2	SEC 4 - EMD - M2 SWITCHING
BR	2019	17525252	TC	62185970	NOCO ORAS	RECD		04/26/2019	N-TS-HAWTHORNTS-BR-M2	S4 REQ EMD PN SATURDAY RE: SWITCHING ON
BR	2019	18320125	TC	62463020	NOCO ORAS	RECD		12/02/2019	N-TS-HAWTHORNTS-BR-M5	S4 P&C IMMD RE: M5 RE
BR	2015	13535753	TC	61116361	NOCO ORAS	RECD		03/05/2015	N-TS-HAWTHORNTS-BR-T7B	S4 EMD PD OUT OF STEP ALARM T7 TFR
BR	2019	17514630	TC	62183479	NOCO ORAS	RECD		05/02/2019	N-TS-HAWTHORNTS-BR-M1	S4 EMD RE RESTORING M1 TERMINAL
BR	2018	16815449	TC	61865369	NOCO ORAS	RECD		09/13/2018	N-TS-HAWTHORNTS-BR-M1	S4 - EMD HAWTHORNE TS STUCK M1 BRKR
BR	2017	15932922	TC	61608581	NOCO ORAS	RECD		08/21/2017	N-TS-HAWTHORNTS-BR-M1	S4 -INVESTIGATE M1 BREAKER
BR	2017	15931869	TC	61607068	NOCO ORAS	RECD		08/24/2017	N-TS-HAWTHORNTS-BR-M1	S4 - TROUBLE SHOOT M1 BREAKER
BR	2017	15931868	TC	61607588	NOCO ORAS	RECD		08/21/2017	N-TS-HAWTHORNTS-BR-M1	S4 - TROUBLE SHOOT M1 BREAKER
BR	2019	17521854	TC	62185976	NOCO ORAS	RECD		05/03/2019	N-TS-HAWTHORNTS-BR-M1	S4 - M1 FEEDER SETTING CHANGES
BR	2019	18096370	TC	62416711	NOCO ORAS	RECD		11/01/2019	N-TS-HAWTHORNTS-BR-BJ	S4 EMD BJ BREAKER NOT RESPONDING FROM CO
BR	2018	16989894	TC	62002873	NOCO ORAS	RECD		09/21/2018	N-TS-HAWTHORNTS-BR-M4	S4 IMD EMD RE: SWITCHING ON M4 BREAKER

Asset Type	Year	Notification	Notifictn type	Order	System status	User stat	Coding	Completn date	Functional Loc.	Description
BR	2020	17743270	PR	62242937	NOCO ORAS	INIT	CR01	09/04/2020	N-TS-HAWTHORNTS-BR-BJ	AR21060 NKL48 BJ CT Test bush repl PnC
BR	2019	16938427	PR	61959001	NOCO ORAS	INIT	CR01	06/04/2019	N-TS-HAWTHORNTS-BR-M2	AR21060 NKL48 CT CHECKS P&C
BR	2019	17642306	PR	62117766	NOCO ORAS	INIT	CR01	05/23/2019	N-TS-HAWTHORNTS-BR-M3	Tx PCB Reduction Oil Sample
BR	2020	18009046	PR	62377520	NOCO ORAS	INIT	CR01	07/08/2020	N-TS-HAWTHORNTS-BR-M4	NKL48 Hawthorne M4 NEW Bushings
BR	2020	17743277	PR	62242944	NOCO ORAS	INIT	CR01	08/12/2020	N-TS-HAWTHORNTS-BR-M4	AR21060 NKL48 M4 CT Test bush repl PnC
BR	2021	19171299	PR	62660430	NOCO ORAS	INIT	CR01	05/20/2021	N-TS-HAWTHORNTS-BR-M5	AR21060 NKL48 M5 CT Testing PnC
BR	2021	19171326	PR	62660438	NOCO ORAS	INIT	CR01	06/03/2021	N-TS-HAWTHORNTS-BR-T7B	AR21060 NKL48 T7B CT Testing PnC
BR	2016	15254288	PR	61170528	NOCO ORAS	INIT	CR01	11/16/2016	N-TS-HAWTHORNTS-BR-M5	STN 'E' PWR EQ INSP-SVI FALL 2016
BR	2018	15900973	PR	61582492	NOCO ORAS	INIT	CR01	10/10/2018	N-TS-HAWTHORNTS-BR-M5	BR-OIL-KSO-LV- BOA
BR	2019	17648110	PR	61927391	NOCO ORAS	INIT	CR01	05/27/2019	N-TS-HAWTHORNTS-BR-M5	STN 'E' PWR EQ INSP-SVI Spr 2019
BR	2019	18377868	PR	61927392	NOCO ORAS	INIT	CR02	12/05/2019	N-TS-HAWTHORNTS-BR-M5	STN 'E' PWR EQ INSP-SVI Fall 2019
BR	2020	18992913	PR	62283034	NOCO ORAS	INIT	CR01	05/27/2020	N-TS-HAWTHORNTS-BR-M5	STN 'E' PWR EQ INSP-SVI Spr 2020
BR	2021	19200051	PR	62687970	NOCO ORAS	INIT	CR01	08/08/2021	N-TS-HAWTHORNTS-BR-M5	BR-OIL-KSO-LV- BOA
BR	2021	19148819	PR	62642955	NOCO ORAS	INIT	CR01	05/26/2021	N-TS-HAWTHORNTS-BR-M5	BR-OIL-KSO-LV- Strategy
BR	2015	13937466	PR	61065519	NOCO ORAS	INIT	CR01	06/25/2015	N-TS-HAWTHORNTS-BR-M5	STN 'E' PWR EQ INSP-SVI SPRING 2015
BR	2018	17100167	PR	61582073	NOCO ORAS	INIT	CR01	11/02/2018	N-TS-HAWTHORNTS-BR-M5	STN 'E' PWR EQ INSP-SVI Fall 2018
BR	2018	16819414	PR	61582072	NOCO ORAS	INIT	CR02	06/11/2018	N-TS-HAWTHORNTS-BR-M5	STN 'E' PWR EQ INSP-SVI Spr 2018
BR	2017	15764872	PR	61324638	NOCO ORAS	INIT	CR01	06/06/2017	N-TS-HAWTHORNTS-BR-M5	STN 'E' PWR EQ INSP-SVI Spr 2017
BR	2017	16229334	PR	61324639	NOCO ORAS	INIT	CR01	11/27/2017	N-TS-HAWTHORNTS-BR-M5	STN 'E' PWR EQ INSP-SVI Fall 2017
BR	2016	14753044	PR	61170527	NOCO ORAS	INIT	CR01	06/09/2016	N-TS-HAWTHORNTS-BR-M5	STN 'E' PWR EQ INSP-SVI SPRING 2016
BR	2015	14363002	PR	61065520	NOCO ORAS	INIT	CR01	11/05/2015	N-TS-HAWTHORNTS-BR-M5	STN 'E' PWR EQ INSP-SVI FALL 2015
BR	2019	16896267	PR	61927944	NOCO ORAS	INIT	CR01	05/07/2019	N-TS-HAWTHORNTS-BR-M3	BR-OIL-KSO-LV- BOA
BR	2019	18377893	PR	61927392	NOCO ORAS	INIT	CR02	12/05/2019	N-TS-HAWTHORNTS-BR-M3	STN 'E' PWR EQ INSP-SVI Fall 2019
BR	2018	16819412	PR	61582072	NOCO ORAS	INIT	CR01	06/11/2018	N-TS-HAWTHORNTS-BR-M3	STN 'E' PWR EQ INSP-SVI Spr 2018
BR	2016	14055667	PR	61195519	NOCO ORAS	INIT	CR01	06/20/2016	N-TS-HAWTHORNTS-BR-M3	BR-OIL-KSO-LV- BOA
BR	2016	14752694	PR	61170527	NOCO ORAS	INIT	CR01	06/09/2016	N-TS-HAWTHORNTS-BR-M3	STN 'E' PWR EQ INSP-SVI SPRING 2016
BR	2016	15254805	PR	61170528	NOCO ORAS	INIT	CR01	11/16/2016	N-TS-HAWTHORNTS-BR-M3	STN 'E' PWR EQ INSP-SVI FALL 2016
BR	2019	17216776	PR	62117766	NOCO ORAS	INIT	CR01	05/23/2019	N-TS-HAWTHORNTS-BR-M3	Tx PCB Reduction Oil Sample
BR	2019	17642307	PR	62117766	NOCO ORAS	INIT	CR01	05/23/2019	N-TS-HAWTHORNTS-BR-M3	Tx PCB Reduction Oil Sample
BR	2015	13937173	PR	61065519	NOCO ORAS	INIT	CR01	06/25/2015	N-TS-HAWTHORNTS-BR-M3	STN 'E' PWR EQ INSP-SVI SPRING 2015
BR	2015	14362964	PR	61065520	NOCO ORAS	INIT	CR01	11/05/2015	N-TS-HAWTHORNTS-BR-M3	STN 'E' PWR EQ INSP-SVI FALL 2015
BR	2017	15764641	PR	61324638	NOCO ORAS	INIT	CR01	06/06/2017	N-TS-HAWTHORNTS-BR-M3	STN 'E' PWR EQ INSP-SVI Spr 2017
BR	2017	16229377	PR	61324639	NOCO ORAS	INIT	CR01	11/27/2017	N-TS-HAWTHORNTS-BR-M3	STN 'E' PWR EQ INSP-SVI Fall 2017
BR	2018	17100300	PR	61582073	NOCO ORAS	INIT	CR01	11/02/2018	N-TS-HAWTHORNTS-BR-M3	STN 'E' PWR EQ INSP-SVI Fall 2018
BR	2019	17648086	PR	61927391	NOCO ORAS	INIT	CR01	05/27/2019	N-TS-HAWTHORNTS-BR-M3	STN 'E' PWR EQ INSP-SVI Spr 2019
BR	2020	18992993	PR	62283034	NOCO ORAS	INIT	CR01	05/27/2020	N-TS-HAWTHORNTS-BR-M3	STN 'E' PWR EQ INSP-SVI Spr 2020
BR	2019	17642308	PR	62117766	NOCO ORAS	INIT	CR01	05/23/2019	N-TS-HAWTHORNTS-BR-M3	Tx PCB Reduction Oil Sample
BR	2018	14906262	PR	61329401	NOCO ORAS	INIT	CR03	12/05/2018	N-TS-HAWTHORNTS-BR-M3	BR-OIL-KSO-LV- Strategy
BR	2020	18993004	PR	62283034	NOCO ORAS	INIT	CR01	05/27/2020	N-TS-HAWTHORNTS-BR-T8J	STN 'E' PWR EQ INSP-SVI Spr 2020
BR	2019	18377894	PR	61927392	NOCO ORAS	INIT	CR02	12/05/2019	N-TS-HAWTHORNTS-BR-T8J	STN 'E' PWR EQ INSP-SVI Fall 2019
BR	2017	15764744	PR	61324638	NOCO ORAS	INIT	CR01	06/06/2017	N-TS-HAWTHORNTS-BR-T8J	STN 'E' PWR EQ INSP-SVI Spr 2017
BR	2019	17648117	PR	61927391	NOCO ORAS	INIT	CR01	05/27/2019	N-TS-HAWTHORNTS-BR-T8J	STN 'E' PWR EQ INSP-SVI Spr 2019
BR	2016	15254826	PR	61170528	NOCO ORAS	INIT	CR01	11/16/2016	N-TS-HAWTHORNTS-BR-T8J	STN 'E' PWR EQ INSP-SVI FALL 2016
BR	2016	14753053	PR	61170527	NOCO ORAS	INIT	CR01	06/09/2016	N-TS-HAWTHORNTS-BR-T8J	STN 'E' PWR EQ INSP-SVI SPRING 2016
BR	2015	14362990	PR	61065520	NOCO ORAS	INIT	CR01	11/05/2015	N-TS-HAWTHORNTS-BR-T8J	STN 'E' PWR EQ INSP-SVI FALL 2015
BR	2015	13937260	PR	61065519	NOCO ORAS	INIT	CR01	06/25/2015	N-TS-HAWTHORNTS-BR-T8J	STN 'E' PWR EQ INSP-SVI SPRING 2015
BR	2021	19200052	PR	62687971	NOCO ORAS	INIT	CR01	09/28/2021	N-TS-HAWTHORNTS-BR-T8J	BR-OIL-KSO-LV- BOA
BR	2019	16896272	PR	61927949	NOCO ORAS	INIT	CR01	05/07/2019	N-TS-HAWTHORNTS-BR-T7B	BR-OIL-KSO-LV- BOA
BR	2019	17648118	PR	61927391	NOCO ORAS	INIT	CR01	05/27/2019	N-TS-HAWTHORNTS-BR-T7B	STN 'E' PWR EQ INSP-SVI Spr 2019
BR	2020	18993009	PR	62283034	NOCO ORAS	INIT	CR01	05/27/2020	N-TS-HAWTHORNTS-BR-T7B	STN 'E' PWR EQ INSP-SVI Spr 2020
BR	2016	14055669	PR	61195521	NOCO ORAS	INIT	CR01	06/20/2016	N-TS-HAWTHORNTS-BR-T7B	BR-OIL-KSO-LV- BOA
BR	2018	17100267	PR	61582073	NOCO ORAS	INIT	CR01	11/02/2018	N-TS-HAWTHORNTS-BR-T7B	STN 'E' PWR EQ INSP-SVI Fall 2018
BR	2018	16819392	PR	61582072	NOCO ORAS	INIT	CR01	06/11/2018	N-TS-HAWTHORNTS-BR-T7B	STN 'E' PWR EQ INSP-SVI Spr 2018
BR	2017	16229278	PR	61324639	NOCO ORAS	INIT	CR01	11/27/2017	N-TS-HAWTHORNTS-BR-T7B	STN 'E' PWR EQ INSP-SVI Fall 2017
BR	2016	14753054	PR	61170527	NOCO ORAS	INIT	CR01	06/09/2016	N-TS-HAWTHORNTS-BR-T7B	STN 'E' PWR EQ INSP-SVI SPRING 2016
BR	2015	14362963	PR	61065520	NOCO ORAS	INIT	CR01	11/05/2015	N-TS-HAWTHORNTS-BR-T7B	STN 'E' PWR EQ INSP-SVI FALL 2015
BR	2015	13937193	PR	61065519	NOCO ORAS	INIT	CR01	06/25/2015	N-TS-HAWTHORNTS-BR-T7B	STN 'E' PWR EQ INSP-SVI SPRING 2015
BR	2016	15254827	PR	61170528	NOCO ORAS	INIT	CR01	11/16/2016	N-TS-HAWTHORNTS-BR-T7B	STN 'E' PWR EQ INSP-SVI FALL 2016
BR	2017	15764784	PR	61324638	NOCO ORAS	INIT	CR01	06/06/2017	N-TS-HAWTHORNTS-BR-T7B	STN 'E' PWR EQ INSP-SVI Spr 2017
BR	2021	19148820	PR	62642956	NOCO ORAS	INIT	CR01	06/14/2021	N-TS-HAWTHORNTS-BR-T7B	BR-OIL-KSO-LV- Strategy

BR	2017	15764787	PR	61324638	NOCO ORAS	INIT	CR01	06/06/2017	N-TS-HAWTHORNTS-BR-M1	STN 'E' PWR EQ INSP-SVI Spr 2017
BR	2018	16819411	PR	61582072	NOCO ORAS	INIT	CR02	06/11/2018	N-TS-HAWTHORNTS-BR-M1	STN 'E' PWR EQ INSP-SVI Spr 2018
BR	2018	17100288	PR	61582073	NOCO ORAS	INIT	CR01	11/02/2018	N-TS-HAWTHORNTS-BR-M1	STN 'E' PWR EQ INSP-SVI Fall 2018
BR	2019	18377895	PR	61927392	NOCO ORAS	INIT	CR02	12/05/2019	N-TS-HAWTHORNTS-BR-M1	STN 'E' PWR EQ INSP-SVI Fall 2019
BR	2016	14055665	PR	61195517	NOCO ORAS	INIT	CR01	06/20/2016	N-TS-HAWTHORNTS-BR-M1	BR-OIL-KSO-LV- BOA
BR	2019	17648082	PR	61927391	NOCO ORAS	INIT	CR01	05/27/2019	N-TS-HAWTHORNTS-BR-M1	STN 'E' PWR EQ INSP-SVI Spr 2019
BR	2019	16896263	PR	61927940	NOCO ORAS	INIT	CR01	05/07/2019	N-TS-HAWTHORNTS-BR-M1	BR-OIL-KSO-LV- BOA
BR	2016	14753021	PR	61170527	NOCO ORAS	INIT	CR01	06/09/2016	N-TS-HAWTHORNTS-BR-M1	STN 'E' PWR EQ INSP-SVI SPRING 2016
BR	2015	14362966	PR	61065520	NOCO ORAS	INIT	CR01	11/05/2015	N-TS-HAWTHORNTS-BR-M1	STN 'E' PWR EQ INSP-SVI FALL 2015
BR	2016	15253759	PR	61170528	NOCO ORAS	INIT	CR01	11/16/2016	N-TS-HAWTHORNTS-BR-M1	STN 'E' PWR EQ INSP-SVI FALL 2016
BR	2015	13937316	PR	61065519	NOCO ORAS	INIT	CR01	06/25/2015	N-TS-HAWTHORNTS-BR-M1	STN 'E' PWR EQ INSP-SVI SPRING 2015
BR	2017	16229375	PR	61324639	NOCO ORAS	INIT	CR01	11/27/2017	N-TS-HAWTHORNTS-BR-M1	STN 'E' PWR EQ INSP-SVI Fall 2017
BR	2020	18992997	PR	62283034	NOCO ORAS	INIT	CR01	05/27/2020	N-TS-HAWTHORNTS-BR-M1	STN 'E' PWR EQ INSP-SVI Spr 2020
BR	2021	19200050	PR	62687969	NOCO ORAS	INIT	CR01	08/13/2021	N-TS-HAWTHORNTS-BR-BJ	BR-OIL-KSO-LV- BOA
BR	2016	14753019	PR	61170527	NOCO ORAS	INIT	CR01	06/09/2016	N-TS-HAWTHORNTS-BR-BJ	STN 'E' PWR EQ INSP-SVI SPRING 2016
BR	2016	15254038	PR	61170528	NOCO ORAS	INIT	CR01	11/16/2016	N-TS-HAWTHORNTS-BR-BJ	STN 'E' PWR EQ INSP-SVI FALL 2016
BR	2015	14362965	PR	61065520	NOCO ORAS	INIT	CR01	11/05/2015	N-TS-HAWTHORNTS-BR-BJ	STN 'E' PWR EQ INSP-SVI FALL 2015
BR	2020	19232203	PR	62711328	NOCO ORAS	INIT	CR01	09/09/2020	N-TS-HAWTHORNTS-BR-BJ	BR-OIL-KSO-LV- Strategy
BR	2017	16229330	PR	61324639	NOCO ORAS	INIT	CR01	11/27/2017	N-TS-HAWTHORNTS-BR-BJ	STN 'E' PWR EQ INSP-SVI Fall 2017
BR	2020	18992964	PR	62283034	NOCO ORAS	INIT	CR01	05/27/2020	N-TS-HAWTHORNTS-BR-BJ	STN 'E' PWR EQ INSP-SVI Spr 2020
BR	2019	18377874	PR	61927392	NOCO ORAS	INIT	CR02	12/05/2019	N-TS-HAWTHORNTS-BR-BJ	STN 'E' PWR EQ INSP-SVI Fall 2019
BR	2020	18009045	PR	62377479	NOCO ORAS	INIT		07/30/2020	N-TS-HAWTHORNTS-BR-BJ	NKL48 Hawthorne BJ NEW Bushings
BR	2020	17754731	PR	62246554	NOCO ORAS	INIT	CR01	09/02/2020	N-TS-HAWTHORNTS-BR-BJ	BR-OIL-KSO-LV- Strategy
BR	2019	17648112	PR	61927391	NOCO ORAS	INIT	CR01	05/27/2019	N-TS-HAWTHORNTS-BR-BJ	STN 'E' PWR EQ INSP-SVI Spr 2019
BR	2018	17100266	PR	61582073	NOCO ORAS	INIT	CR01	11/02/2018	N-TS-HAWTHORNTS-BR-BJ	STN 'E' PWR EQ INSP-SVI Fall 2018
BR	2018	16819415	PR	61582072	NOCO ORAS	INIT	CR01	06/11/2018	N-TS-HAWTHORNTS-BR-BJ	STN 'E' PWR EQ INSP-SVI Spr 2018
BR	2017	15764830	PR	61324638	NOCO ORAS	INIT	CR01	06/06/2017	N-TS-HAWTHORNTS-BR-BJ	STN 'E' PWR EQ INSP-SVI Spr 2017
BR	2018	15900972	PR	61582491	NOCO ORAS	INIT	CR01	10/11/2018	N-TS-HAWTHORNTS-BR-BJ	BR-OIL-KSO-LV- BOA
BR	2015	13937310	PR	61065519	NOCO ORAS	INIT	CR01	06/25/2015	N-TS-HAWTHORNTS-BR-BJ	STN 'E' PWR EQ INSP-SVI SPRING 2015
BR	2017	15764420	PR	61324638	NOCO ORAS	INIT	CR01	06/06/2017	N-TS-HAWTHORNTS-BR-M2	STN 'E' PWR EQ INSP-SVI Spr 2017
BR	2017	16229331	PR	61324639	NOCO ORAS	INIT	CR01	11/27/2017	N-TS-HAWTHORNTS-BR-M2	STN 'E' PWR EQ INSP-SVI Fall 2017
BR	2016	14055666	PR	61195518	NOCO ORAS	INIT	CR01	06/20/2016	N-TS-HAWTHORNTS-BR-M2	BR-OIL-KSO-LV- BOA
BR	2015	13937314	PR	61065519	NOCO ORAS	INIT	CR01	06/25/2015	N-TS-HAWTHORNTS-BR-M2	STN 'E' PWR EQ INSP-SVI SPRING 2015
BR	2018	17100289	PR	61582073	NOCO ORAS	INIT	CR01	11/02/2018	N-TS-HAWTHORNTS-BR-M2	STN 'E' PWR EQ INSP-SVI Fall 2018
BR	2016	14753061	PR	61170527	NOCO ORAS	INIT	CR01	06/09/2016	N-TS-HAWTHORNTS-BR-M2	STN 'E' PWR EQ INSP-SVI SPRING 2016
BR	2015	14362974	PR	61065520	NOCO ORAS	INIT	CR01	11/05/2015	N-TS-HAWTHORNTS-BR-M2	STN 'E' PWR EQ INSP-SVI FALL 2015
BR	2019	17648085	PR	61927391	NOCO ORAS	INIT	CR01	05/27/2019	N-TS-HAWTHORNTS-BR-M2	STN 'E' PWR EQ INSP-SVI Spr 2019
BR	2019	16913942	PR	61945628	NOCO ORAS	INIT	CR02	06/04/2019	N-TS-HAWTHORNTS-BR-M2	BR-OIL-KSO-LV- Strategy
BR	2019	16896266	PR	61927943	NOCO ORAS	INIT	CR01	05/07/2019	N-TS-HAWTHORNTS-BR-M2	BR-OIL-KSO-LV- BOA
BR	2019	18377875	PR	61927392	NOCO ORAS	INIT	CR02	12/05/2019	N-TS-HAWTHORNTS-BR-M2	STN 'E' PWR EQ INSP-SVI Fall 2019
BR	2016	15253774	PR	61170528	NOCO ORAS	INIT	CR01	11/16/2016	N-TS-HAWTHORNTS-BR-M2	STN 'E' PWR EQ INSP-SVI FALL 2016
BR	2020	18992996	PR	62283034	NOCO ORAS	INIT	CR01	05/27/2020	N-TS-HAWTHORNTS-BR-M2	STN 'E' PWR EQ INSP-SVI Spr 2020
BR	2018	16819434	PR	61582072	NOCO ORAS	INIT	CR02	06/11/2018	N-TS-HAWTHORNTS-BR-M2	STN 'E' PWR EQ INSP-SVI Spr 2018
BR	2018	17100201	PR	61582073	NOCO ORAS	INIT	CR01	11/02/2018	N-TS-HAWTHORNTS-BR-M4	STN 'E' PWR EQ INSP-SVI Fall 2018
BR	2019	17648087	PR	61927391	NOCO ORAS	INIT	CR01	05/27/2019	N-TS-HAWTHORNTS-BR-M4	STN 'E' PWR EQ INSP-SVI Spr 2019
BR	2019	18377970	PR	61927392	NOCO ORAS	INIT	CR02	12/05/2019	N-TS-HAWTHORNTS-BR-M4	STN 'E' PWR EQ INSP-SVI Fall 2019
BR	2015	14156315	PR	61214383	NOCO ORAS	INIT	CR01	09/29/2015	N-TS-HAWTHORNTS-BR-M4	BR-OIL-KSO-LV- Strategy
BR	2016	14753023	PR	61170527	NOCO ORAS	INIT	CR01	06/09/2016	N-TS-HAWTHORNTS-BR-M4	STN 'E' PWR EQ INSP-SVI SPRING 2016
BR	2020	18992983	PR	62283034	NOCO ORAS	INIT	CR01	05/27/2020	N-TS-HAWTHORNTS-BR-M4	STN 'E' PWR EQ INSP-SVI Spr 2020
BR	2016	14055668	PR	61195520	NOCO ORAS	INIT	CR01	06/20/2016	N-TS-HAWTHORNTS-BR-M4	BR-OIL-KSO-LV- BOA
BR	2015	13937318	PR	61065519	NOCO ORAS	INIT	CR01	06/25/2015	N-TS-HAWTHORNTS-BR-M4	STN 'E' PWR EQ INSP-SVI SPRING 2015
BR	2015	14362994	PR	61065520	NOCO ORAS	INIT	CR01	11/05/2015	N-TS-HAWTHORNTS-BR-M4	STN 'E' PWR EQ INSP-SVI FALL 2015
BR	2016	15254054	PR	61170528	NOCO ORAS	INIT	CR01	11/16/2016	N-TS-HAWTHORNTS-BR-M4	STN 'E' PWR EQ INSP-SVI FALL 2016
BR	2017	15764645	PR	61324638	NOCO ORAS	INIT	CR01	06/06/2017	N-TS-HAWTHORNTS-BR-M4	STN 'E' PWR EQ INSP-SVI Spr 2017
BR	2017	16229332	PR	61324639	NOCO ORAS	INIT	CR01	11/27/2017	N-TS-HAWTHORNTS-BR-M4	STN 'E' PWR EQ INSP-SVI Fall 2017
BR	2018	16819413	PR	61582072	NOCO ORAS	INIT	CR02	06/11/2018	N-TS-HAWTHORNTS-BR-M4	STN 'E' PWR EQ INSP-SVI Spr 2018
BR	2019	16896270	PR	61927947	NOCO ORAS	INIT	CR01	05/07/2019	N-TS-HAWTHORNTS-BR-M4	BR-OIL-KSO-LV- BOA
BR	2020	17883372	PR	62322030	NOCO ORAS	INIT	CR01	09/18/2020	N-TS-HAWTHORNTS-BR-M4	BR-OIL-KSO-LV- Strategy
BR	2021	19171320	PR	62660431	NOCO ORAS	INIT	CR01	05/31/2021	N-TS-HAWTHORNTS-BR-M5	AR21060 NKL48 M5 PCB RE & RE NEW (1) EMD
BR	2015	14147490	PR	60977764	NOCO ORAS	INIT	CR01	09/01/2015	N-TS-HAWTHORNTS-BR-M5	Tx PCB Reduction Oil Sample
BR	2015	14137160	PR	60978657	NOCO ORAS	INIT	CR01	08/27/2015	N-TS-HAWTHORNTS-BR-T7B	Tx PCB Reduction Oil Sample

BR	2021	19171327	PR	62660439	NOCO ORAS	INIT	CR01	06/30/2021	N-TS-HAWTHORNTS-BR-T7B	AR21060 NKL48 T7B PCB RE & RE NEW (1)
BR	2015	14137159	PR	60978214	NOCO ORAS	INIT	CR01	08/27/2015	N-TS-HAWTHORNTS-BR-BJ	Tx PCB Reduction Oil Sample
BR	2020	17743272	PR	62242939	NOCO ORAS	INIT	CR01	09/09/2020	N-TS-HAWTHORNTS-BR-BJ	AR21060 NKL48 BJ REM & REP BUSHING 1 EMD
BR	2019	16938629	PR	61959257	NOCO ORAS	INIT	CR02	06/03/2019	N-TS-HAWTHORNTS-BR-M2	AR21060 NKL48 LV Bush 1 PCB Replace EMD
BR	2020	17743278	PR	62242945	NOCO ORAS	INIT	CR01	07/31/2020	N-TS-HAWTHORNTS-BR-M4	AR21060 NKL48 M4 REM & REP BUSHING 1 EMD
BR	2015	14137142	PR	60979292	NOCO ORAS	INIT	CR01	08/27/2015	N-TS-HAWTHORNTS-BR-M4	Tx PCB Reduction Oil Sample
BR	2021	19171321	PR	62660432	NOCO ORAS	INIT	CR01	05/31/2021	N-TS-HAWTHORNTS-BR-M5	AR21060 NKL48 M5 PCB RE & RE NEW (2) EMD
BR	2015	14147491	PR	60977764	NOCO ORAS	INIT	CR01	09/01/2015	N-TS-HAWTHORNTS-BR-M5	Tx PCB Reduction Oil Sample
BR	2021	19171328	PR	62660500	NOCO ORAS	INIT	CR01	06/30/2021	N-TS-HAWTHORNTS-BR-T7B	AR21060 NKL48 T7B PCB RE & RE NEW (2)
BR	2015	14137163	PR	60978657	NOCO ORAS	INIT	CR01	08/27/2015	N-TS-HAWTHORNTS-BR-T7B	Tx PCB Reduction Oil Sample
BR	2015	14137162	PR	60978214	NOCO ORAS	INIT	CR01	08/27/2015	N-TS-HAWTHORNTS-BR-BJ	Tx PCB Reduction Oil Sample
BR	2020	17743273	PR	62242940	NOCO ORAS	INIT	CR01	09/09/2020	N-TS-HAWTHORNTS-BR-BJ	AR21060 NKL48 BJ REM & REP BUSHING 2 EMD
BR	2019	16938630	PR	61959258	NOCO ORAS	INIT	CR02	06/03/2019	N-TS-HAWTHORNTS-BR-M2	AR21060 NKL48 LV Bush 2 PCB Replace EMD
BR	2015	14137143	PR	60979292	NOCO ORAS	INIT	CR01	08/27/2015	N-TS-HAWTHORNTS-BR-M4	Tx PCB Reduction Oil Sample
BR	2020	17743279	PR	62242946	NOCO ORAS	INIT	CR01	07/31/2020	N-TS-HAWTHORNTS-BR-M4	AR21060 NKL48 M4 REM & REP BUSHING 2 EMD
BR	2021	19171322	PR	62660433	NOCO ORAS	INIT	CR01	05/31/2021	N-TS-HAWTHORNTS-BR-M5	AR21060 NKL48 M5 PCB RE & RE NEW (3) EMD
BR	2015	14147492	PR	60977764	NOCO ORAS	INIT	CR01	09/01/2015	N-TS-HAWTHORNTS-BR-M5	Tx PCB Reduction Oil Sample
BR	2021	19171329	PR	62660501	NOCO ORAS	INIT	CR01	06/30/2021	N-TS-HAWTHORNTS-BR-T7B	AR21060 NKL48 T7B PCB RE & RE NEW (3)
BR	2015	14137166	PR	60978657	NOCO ORAS	INIT	CR01	08/27/2015	N-TS-HAWTHORNTS-BR-T7B	Tx PCB Reduction Oil Sample
BR	2015	14137165	PR	60978214	NOCO ORAS	INIT	CR01	08/27/2015	N-TS-HAWTHORNTS-BR-BJ	Tx PCB Reduction Oil Sample
BR	2020	17743271	PR	62242938	NOCO ORAS	INIT	CR01	09/09/2020	N-TS-HAWTHORNTS-BR-BJ	AR21060 NKL48 BJ REM & REP BUSHING 3 EMD
BR	2019	16938631	PR	61959259	NOCO ORAS	INIT	CR02	06/03/2019	N-TS-HAWTHORNTS-BR-M2	AR21060 NKL48 LV Bush 3 PCB Replace EMD
BR	2015	14137144	PR	60979292	NOCO ORAS	INIT	CR01	08/27/2015	N-TS-HAWTHORNTS-BR-M4	Tx PCB Reduction Oil Sample
BR	2020	17743282	PR	62242949	NOCO ORAS	INIT	CR01	07/31/2020	N-TS-HAWTHORNTS-BR-M4	AR21060 NKL48 M4 REM & REP BUSHING 3 EMD
BR	2015	14147409	PR	60977764	NOCO ORAS	INIT	CR01	09/01/2015	N-TS-HAWTHORNTS-BR-M5	Tx PCB Reduction Oil Sample
BR	2021	19171323	PR	62660434	NOCO ORAS	INIT	CR01	05/31/2021	N-TS-HAWTHORNTS-BR-M5	AR21060 NKL48 M5 PCB RE & RE NEW (4) EMD
BR	2021	19171360	PR	62660502	NOCO ORAS	INIT	CR01	06/30/2021	N-TS-HAWTHORNTS-BR-T7B	AR21060 NKL48 T7B PCB RE & RE NEW (4)
BR	2015	14137169	PR	60978657	NOCO ORAS	INIT	CR01	08/27/2015	N-TS-HAWTHORNTS-BR-T7B	Tx PCB Reduction Oil Sample
BR	2015	14137168	PR	60978214	NOCO ORAS	INIT	CR01	08/27/2015	N-TS-HAWTHORNTS-BR-BJ	Tx PCB Reduction Oil Sample
BR	2020	17743274	PR	62242941	NOCO ORAS	INIT	CR01	09/09/2020	N-TS-HAWTHORNTS-BR-BJ	AR21060 NKL48 BJ REM & REP BUSHING 4 EMD
BR	2019	16938632	PR	61959260	NOCO ORAS	INIT	CR02	06/03/2019	N-TS-HAWTHORNTS-BR-M2	AR21060 NKL48 LV Bush 4 PCB Replace EMD
BR	2015	14137145	PR	60979292	NOCO ORAS	INIT	CR01	08/27/2015	N-TS-HAWTHORNTS-BR-M4	Tx PCB Reduction Oil Sample
BR	2020	17743284	PR	62242951	NOCO ORAS	INIT	CR01	07/31/2020	N-TS-HAWTHORNTS-BR-M4	AR21060 NKL48 M4 REM & REP BUSHING 4 EMD
BR	2015	14147493	PR	60977764	NOCO ORAS	INIT	CR01	09/01/2015	N-TS-HAWTHORNTS-BR-M5	Tx PCB Reduction Oil Sample
BR	2021	19171324	PR	62660436	NOCO ORAS	INIT	CR01	05/31/2021	N-TS-HAWTHORNTS-BR-M5	AR21060 NKL48 M5 PCB RE & RE NEW (5) EMD
BR	2015	14137172	PR	60978657	NOCO ORAS	INIT	CR01	08/27/2015	N-TS-HAWTHORNTS-BR-T7B	Tx PCB Reduction Oil Sample
BR	2021	19171361	PR	62660503	NOCO ORAS	INIT	CR01	06/30/2021	N-TS-HAWTHORNTS-BR-T7B	AR21060 NKL48 T7B PCB RE & RE NEW (5)
BR	2015	14137171	PR	60978214	NOCO ORAS	INIT	CR01	08/27/2015	N-TS-HAWTHORNTS-BR-BJ	Tx PCB Reduction Oil Sample
BR	2020	17743276	PR	62242943	NOCO ORAS	INIT	CR01	09/09/2020	N-TS-HAWTHORNTS-BR-BJ	AR21060 NKL48 BJ REM & REP BUSHING 5 EMD
BR	2019	16938633	PR	61959261	NOCO ORAS	INIT	CR02	06/03/2019	N-TS-HAWTHORNTS-BR-M2	AR21060 NKL48 LV Bush 5 PCB Replace EMD
BR	2020	17743280	PR	62242947	NOCO ORAS	INIT	CR01	07/31/2020	N-TS-HAWTHORNTS-BR-M4	AR21060 NKL48 M4 REM & REP BUSHING 5 EMD
BR	2015	14137146	PR	60979292	NOCO ORAS	INIT	CR01	08/27/2015	N-TS-HAWTHORNTS-BR-M4	Tx PCB Reduction Oil Sample
BR	2021	19171325	PR	62660437	NOCO ORAS	INIT	CR01	05/31/2021	N-TS-HAWTHORNTS-BR-M5	AR21060 NKL48 M5 PCB RE & RE NEW (6) EMD
BR	2015	14147494	PR	60977764	NOCO ORAS	INIT	CR01	09/01/2015	N-TS-HAWTHORNTS-BR-M5	Tx PCB Reduction Oil Sample
BR	2021	19171362	PR	62660504	NOCO ORAS	INIT	CR01	06/30/2021	N-TS-HAWTHORNTS-BR-T7B	AR21060 NKL48 T7B PCB RE & RE NEW (6)
BR	2015	14137175	PR	60978657	NOCO ORAS	INIT	CR01	08/27/2015	N-TS-HAWTHORNTS-BR-T7B	Tx PCB Reduction Oil Sample
BR	2020	17743275	PR	62242942	NOCO ORAS	INIT	CR01	09/09/2020	N-TS-HAWTHORNTS-BR-BJ	AR21060 NKL48 BJ REM & REP BUSHING 6 EMD
BR	2015	14137174	PR	60978214	NOCO ORAS	INIT	CR01	08/27/2015	N-TS-HAWTHORNTS-BR-BJ	Tx PCB Reduction Oil Sample
BR	2019	16938634	PR	61959262	NOCO ORAS	INIT	CR02	06/03/2019	N-TS-HAWTHORNTS-BR-M2	AR21060 NKL48 LV Bush 6 PCB Replace EMD
BR	2015	14137147	PR	60979292	NOCO ORAS	INIT	CR01	08/27/2015	N-TS-HAWTHORNTS-BR-M4	Tx PCB Reduction Oil Sample
BR	2020	17743283	PR	62242950	NOCO ORAS	INIT	CR01	07/31/2020	N-TS-HAWTHORNTS-BR-M4	AR21060 NKL48 M4 REM & REP BUSHING 6 EMD
BR	2019	17642309	PR	62117766	NOCO ORAS	INIT	CR01	05/23/2019	N-TS-HAWTHORNTS-BR-M3	Tx PCB Reduction Oil Sample
BR	2019	17642380	PR	62117766	NOCO ORAS	INIT	CR01	05/23/2019	N-TS-HAWTHORNTS-BR-M3	Tx PCB Reduction Oil Sample
BR	2019	17642381	PR	62117766	NOCO ORAS	INIT	CR01	05/23/2019	N-TS-HAWTHORNTS-BR-M3	Tx PCB Reduction Oil Sample
BR	2019	17642382	PR	62117766	NOCO ORAS	INIT	CR01	05/23/2019	N-TS-HAWTHORNTS-BR-M3	Tx PCB Reduction Oil Sample
BR	2019	17642383	PR	62117766	NOCO ORAS	INIT	CR01	05/23/2019	N-TS-HAWTHORNTS-BR-M3	Tx PCB Reduction Oil Sample
BR	2019	17642384	PR	62117766	NOCO ORAS	INIT	CR01	05/23/2019	N-TS-HAWTHORNTS-BR-M3	Tx PCB Reduction Oil Sample

UNDERTAKING JT-1.21

Reference:

I-03-B1-AMPCO-008, Part b, c

Undertaking:

With reference to AMPCO-8C, to make best efforts to provide the risk mitigation achieved per dollar for each of those investments, for transmission and distribution.

Response:

The tables below includes the final mitigated risk that was scored for proposed transmission and distribution system investments. As noted in Interrogatory B1-AMPCO-008 part b), where no risk mitigation is identified (denoted by "-"), non-risk assessment (e.g., application of "flags") provided the main basis for the assessment of investments, based on the criteria identified in SPF Section 1.7.

1 **Transmission**

ISD	Investment Title	Risk Mitigated	Risk Mitigated per $M
T-SA-01	New Customer Connection Station	-	-
T-SA-02	IAMGOLD - 115 kV Mine Connection	-	-
T-SA-03	Halton TS: Build a Second 230/27.6kV Station	-	-
T-SA-04	Connect Metrolinx Traction Substations	-	-
T-SA-05	Future Transmission Load Connection Plans	-	-
T-SA-06	Protection and Control Modifications for Distributed Energy Resources	556,691	*
T-SA-07	Secondary Land Use Projects	-	-
T-SA-08	H29/H30: Reconductor 230kV Circuits	-	-
T-SA-09	New Transformer Station in Northern York Region	-	-
T-SA-10	Build Leamington Area Transformer Stations	-	-
T-SR-01	Transmission Station Renewal - Network Stations	123,231,570	99,009
T-SR-02	Transmission Station Renewal - Air Blast Circuit Breakers	279,413,576	220,992
T-SR-03	Transmission Station Renewal - Connection Stations	67,542,070	26,649
T-SR-04	Wood Pole Structure Replacements	59,346,675	150,045
T-SR-05	Steel Structure Coating Program	-	-
T-SR-06	Tower Foundation Assess/Clean/Coat & LIfe Extension Program	8,343,804	68,317
T-SR-07	Transmission Line Shieldwire Replacement	1,428,667	16,264
T-SR-08	Transmission Line Insulator Replacement	35,079,595	65,497
T-SR-09	Transmission Station Demand and Spares and Targeted Assets	8,834,756	28,682
T-SR-10	Protection Relay Replacement Program	4,326,251	79,942
T-SR-11	Legacy SONET System Replacement	1,151,177	9,165
T-SR-12	Telecom Performance Improvements	761,462	41,062
T-SR-13	Transmission Line Complete Refurbishment	6,802,233	6,801
T-SR-14	Mobile Radio System Replacement	201,590	8,745
T-SR-15	Transmission Line Emergency Restoration	2,191,421	30,176
T-SR-16	HV UG Cable – Replace/Refurbish Pumping Plants	414,071	36,486
T-SR-17	OPGW Infrastructure Projects	4,346,999	28,434
T-SR-18	C5E/C7E Underground Cable Replacement	222,098	2,052
T-SS-01	Nanticoke TS: Connect HVDC Lake Erie Circuits	-	-
T-SS-02	St. Lawrence TS: Phase Shifters Replacement	-	-
T-SS-03	Merivale TS to Hawthorne TS: 230kV Conductor Upgrade	-	-
T-SS-04	Richview x Trafalgar 230kV Conductor Upgrade	-	-
T-SS-05	Merivale TS Add 230/115kV Autotransformers	-	-
T-SS-06	Southwest GTA Transmission Reinforcement	-	-
T-SS-07	West of Chatham Reinforcement	-	-
T-SS-08	Future Transmission Regional Plans	-	-
T-SS-09	West of London Reinforcement	-	-

**T-SA-06 is a fully recoverable investment; as a result the risk mitigated per $M has not been provided.*

1 **Distribution**

ISD	Investment Title	Risk Mitigated	Risk Mitigated per $M
D-SA-01	Joint Use and Relocations	-	-
D-SA-02	New Load Connections, Upgrades, Cancellations	-	-
D-SA-03	Connecting Distributed Energy Resources	-	-
D-SA-04	Metering Sustainment	411,915	1,854
D-SR-01	Distribution Stations Demand Capital Program	1,001,731	25,593
D-SR-02	Mobile Unit Substation Program	1,556,237	57,817
D-SR-03	Distribution Station Planned Component Replacement Program	2,795,669	111,886
D-SR-04	Distribution Station Refurbishment	5,109,572	26,565
D-SR-05	Distribution Lines Trouble Call and Storm Damage Response Program	18,171,767,592	25,151,364
D-SR-06	Distribution Lines PCB Equipment Replacement Program	79,923	1,688
D-SR-07	Pole Sustainment Program	93,174,340	134,788
D-SR-08	Distribution Lines Minor Component Replacement Program	46,140,512	626,523
D-SR-09	Submarine Cable Replacement Program	497,634	5,822
D-SR-10	Distribution Lines Sustainment Initiatives	12,168,348	50,014
D-SR-11	Life Cycle Optimization & Operational Efficiency Projects	745,805	27,919
D-SR-12	Advanced Meter Infrastructure 2.0 (AMI 2.0)	-	-
D-SS-01	System Upgrades Driven by Load Growth	31,783,551	39,502
D-SS-02	Reliability Improvements	9,679,390	181,577
D-SS-03	Demand Investments	4,181,875	50,803
D-SS-04	Energy Storage Solutions	6,835,247	36,805
D-SS-05	Worst Performing Feeders	8,164,461	59,405
D-SS-06	Stray Voltage	410,171	15,464

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UNDERTAKING JT-1.22

Reference:

I-03-B1-AMPCO-009, Part a

Undertaking:

To supplement the risk assessment in AMPCO 9A to include a final mitigated risk score.

Response:

The final mitigated risk for Example Project: D-SR-04 –Vanastra DS End of Life Refurbishment is 95,356.

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UNDERTAKING JT-1.23

Reference:

I-03-B1-AMPCO-013

Undertaking:

To provide a version of the table in AMPCO 13 showing only 2023 to 2027.

Response:

For the period of 2023 to 2027, the investment amounts and number of investments for each of the three scenarios are summarized below:

	Transmission Capital (2023-27)		Distribution Capital (2023-27)	
Scenario	Number of Investments	Investment Net $M	Number of Investments	Investment Net $M
Slower	534	7,241	563	4,067
Draft Plan	556	7,807	672	4,866
Accelerated	563	8,410	761	5,683

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UNDERTAKING JT-1.24

Reference:

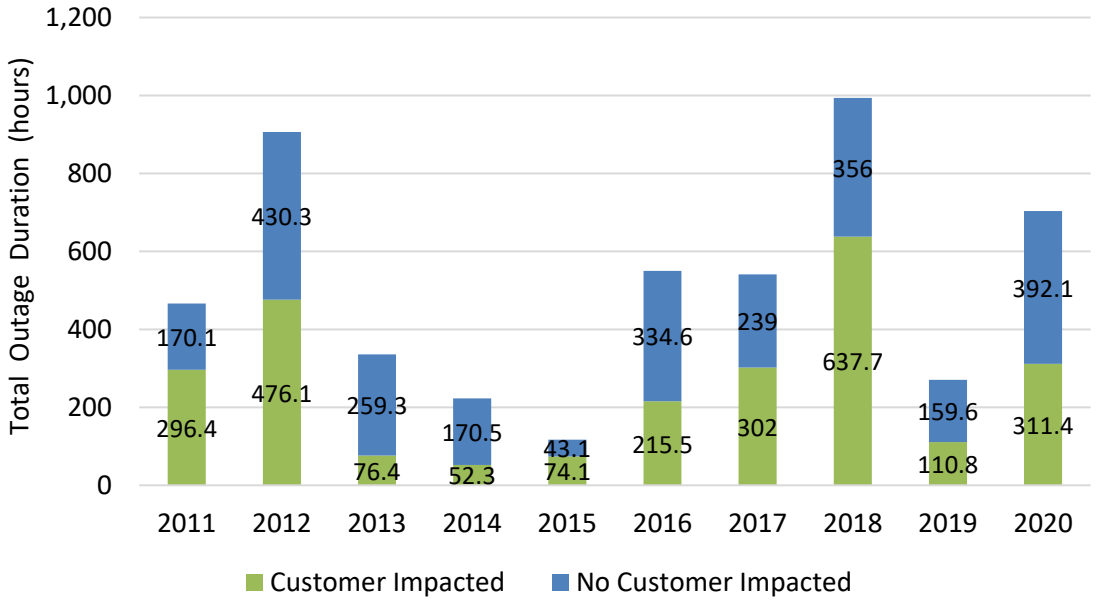
I-03-B2-AMPCO-037, Part a

Undertaking:

To provide figure 3 on the basis of the wood poles that resulted in a customer interruption.

Response:

T-SR-03 Figure (forced outage duration due to wood pole failures) is split into two parts: "Customer Impacted" and "No Customer Impacted".



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UNDERTAKING JT-1.25

Reference:

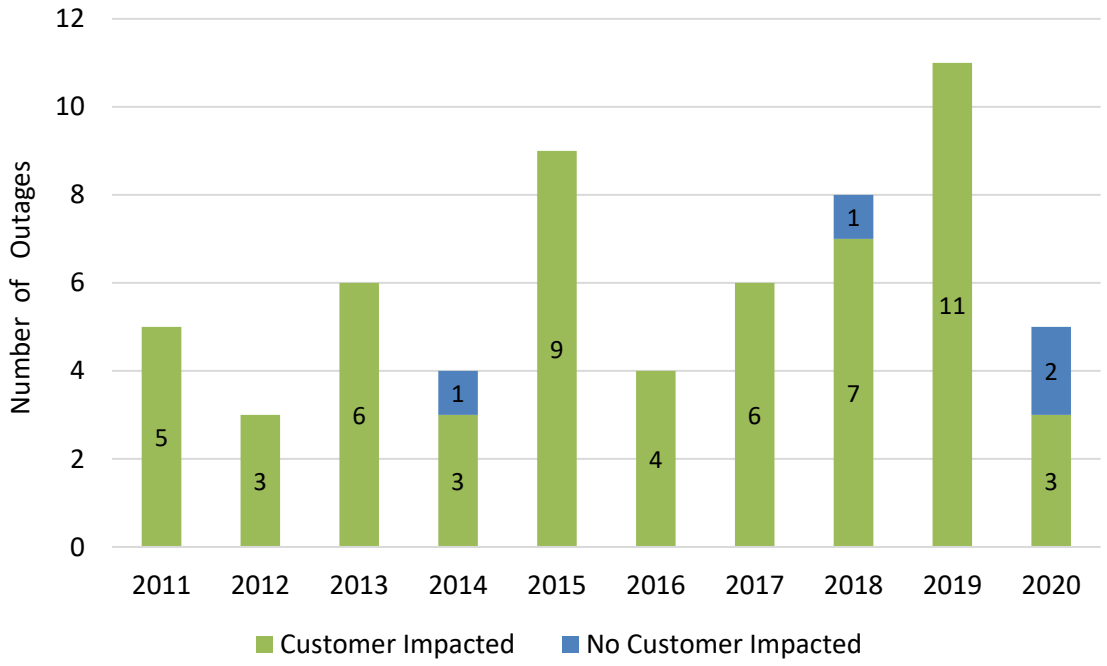
I-03-B2-AMPCO-042

Undertaking:

To provide figure 8 on the basis of insulator failures that resulted in a customer interruption.

Response:

T-SR-09 Figure 8 (number of COB and CP insulator failures) is split into two parts: "Customer Impacted" and "No Customer Impacted".



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UNDERTAKING JT-1.26

Reference:

I-03-B2-AMPCO-046, Part c)

Undertaking:

To provide the circuit kilometres replaced.

Response:

The response to interrogatory B2-AMPCO-046 part c) is correct: the 16 investments included in T-SR-13 are expected to be in-serviced throughout the 2023-2028 period as shown in T-SR-13 Appendix B. Therefore, no circuit-kms will be in-serviced during the 2018 to 2022 period.

For the actual and forecasted circuit kilometres replaced for the 2018 to 2022 period, refer to Interrogatory B2-Staff-059-01 and Undertaking JT-2.01.

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UNDERTAKING JT-1.27

Reference:

I-09-A-ED-001

Undertaking:

To give a value for all conductors to be replaced for the '23 to '27 period for transmission.

Response:

Hydro One plans to replace 1,659 circuit-km of transmission conductor over the 2023 to 2027 period: 1,571 circuit-km under System Renewal investments and 88 circuit-km under System Access and System Service investments (see Undertaking JT2.01).

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