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NEEDS ASSESSMENT REPORT

North & East of Sudbury

Date: May 14, 2021

Prepared by: North & East of Sudbury Region Study Team

Transmission & Distribution

Disclaimer

This Needs Assessment Report was prepared for the purpose of identifying potential needs in the North & East of Sudbury Region and to recommend which need may be a) directly addressed by developing a preferred plan as part of NA phase and b) identify needs requiring further assessment and/or regional coordination. The results reported in this Needs Assessment are based on the input and information provided by the Study Team for this region.

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Executive Summary

REGION North & East of Sudbury (the "Region")

LEAD Hydro One Networks Inc. ("HONI")

START DATE: March 15, 2021 **END DATE:** May 14, 2021

1. INTRODUCTION

The first cycle of the Regional Planning process for the North & East of Sudbury (NES) Region was completed in April 2017 with the publication of the Regional Infrastructure Plan ("RIP") which provided a description of needs and recommendations of preferred wires plans to address near-term needs.

This is the second cycle of regional planning starting with a Needs Assessment ("NA"). The purpose of this NA is to identify any new needs and/or to reaffirm needs identified in the previous Regional Planning cycle and recommend which needs may a) be met more directly by distributors or other customers and their respective transmitter, or b) require further assessment and/or regional coordination.

2. REGIONAL ISSUE/TRIGGER

In accordance with the Regional Planning process, the regional planning cycle should be triggered at least every five years. In light of these timelines, the 2nd Regional Planning cycle was triggered for North & East of Sudbury Region in March 2021.

3. SCOPE OF NEEDS ASSESSMENT

This assessment's primary objective is to identify the electrical infrastructure needs over the study period, develop options and recommend which needs require further regional coordination.

The scope of this NA includes:

- Review and reaffirm needs/plans identified in the previous RIP; and
- Identification and assessment of system capacity, reliability, operation, and aging infrastructure needs in the region: and
- Identify needs that should be further considered to determine whether coordination at the regional level is required and those which can be met more directly by distributors and other customers as their respective transmitter.

The Study Team may also identify additional needs during the next phases of the regional planning process, namely Scoping Assessment ("SA"), IRRP and RIP, based on updated information available at that time.

As per the PPWG Regional Planning Report to the Board (May 2013), the planning horizons of regional facilities are typically considered over 1-20 years; however, in most situations focus is over the 1 – 10-year timeframe.

4. INPUTS/DATA

The Study Team's representatives from Local Distribution Companies ("LDC"), the Independent Electricity System Operator ("IESO"), and Hydro One provided input and relevant information for this Region regarding capacity needs, reliability needs, operational issues, and major assets/facilities approaching end-of-life ("EOL").

5. ASSESSMENT METHODOLOGY

The assessment methodology includes review of planning information such as load forecast, conservation and demand management ("CDM") forecast and available distributed generation ("DG") information, any system reliability and operation issues, and major high voltage equipment identified to be at or near the end of their life.

A technical assessment of needs was undertaken based on:

- Application of Ontario Resource Transmision Assessment Criteria (ORTAC)
- Current and future station capacity, transmission adequacy and security.
- Reliability needs and operational concerns;
- Any major high voltage equipment reaching the end of its life.
- Demand forecast from LDCs and committed loads from directly connect Transmission customers.

6. NEEDS

I. Needs Identified from Previous Cycle – Implementation Plan Update

i. Needs identified from the previous cycle were addressed as part of a local plan (LP) with area LDCs. Additional system investments were not required as an outcome of the LP and all parties agreed to continue to monitor the identified performance issues and take corrective action when required.

II. Newly Identified Needs in the region

i. Area Voltage Control

Both Hydro One and IESO continue to experience operating challenges in maintaining acceptable voltages at high voltage station buses in the region. Of specific concern is the management of high voltages for buses at Hunta, Porcupine, Pinard and Kapuskasing during planned maintenance and outage conditions. Existing operating procedures employ the use of various shunt voltage controlling devices in the system and shall be reviewed to ensure continued effectiveness.

ii. Thermal Limits

This region has received significant interest in customer connections in the Kirkland Lake/Dymond and Timmins/Porcupine area. Post contingency load rejection will allow customers to connect in this region; however, increasing loads beyond the applications that presently exist will further stress system capability and thermal limits in the region. System operations also experience increasing challenges in maintaining

area circuits within thermal limits during planned outages to the 500kV circuits P502X and D501P. These outages require daily switching of the 500kV circuits impacting customers, and exposes transmission equipment to stresses which can cause premature failure.

iii. End-of-Life Assets

The following stations have transformer and/or high voltage breakers that have reached end-of-life and in need of replacement within the study period.

- Porcupine TS
- Kapuskasing TS
- Otto Holden TS
- Timmins TS
- Crystal Falls TS
- Trout Lake TS

Sections of the following circuits are at end-of-life and in need of replacement within the study period:

- K4 – Kirkland Lake TS x Macassa JCT (10km) - 2023
- A8K/A9K – Ansonville TS x Kirkland Lake TS (90km/cct) -2023
- T61S – Timmins TS x Shiningtree JCT (115km) -2023
- K2 – Kirkland Lake TS x American Barrick JCT (14km) -2024
- D2H/D3H – Pinard TS x Hunta SS (90km/cct) - 2026
- A5H/A5H – Tunis JCT x Fournier JCT (25km/cct) -2027

7. RECOMMENDATIONS

i. Area Voltage Control – Voltage limits of area buses, and existing operating procedures should be reviewed to ensure continued effectiveness over the study period. Further regional coordination is required.

ii. Thermal Limits – Existing operating procedures should be reviewed in conjunction with the available equipment to ensure system operations can continue to maintain thermal limits during outage conditions, accommodate load growth in the Kirkland Lake/Dymond and Timmins/Porcupine area. Further regional coordination is required.

iii. Replacement of end-of-life assets identified in section 7.1 xi) D2H/D3H refurbishment, and xii) A4H/A5H refurbishment will require further regional coordination.

TABLE OF CONTENTS

LIST OF TABLES AND FIGURES

1 INTRODUCTION

The first cycle of the Regional Planning process for the North & East of Sudbury Region was completed in April 2017 with the publication of the Regional Infrastructure Plan ("RIP"). The RIP provided a description of needs and recommendations of preferred wires plans to address near- and medium-term needs.

The purpose of this Needs Assessment ("NA") is to identify new needs and to reconfirm needs identified in the previous regional planning cycle. Since the previous regional planning cycle, some new needs in the region have been identified.

This report was prepared by the North & East of Sudbury Region Study Team ("Study Team"), led by Hydro One Networks Inc. Participants of the Study Team are listed below in Table 1. The report presents the results of the assessment based on information provided by Hydro One, the Local Distribution Companies ("LDC") and the Independent Electricity System Operator ("IESO").

Table 1: North & East of Sudbury Region Study Team Participants

Company
Hydro One Networks Inc. (Lead Transmitter)
Independent Electricity System Operator ("IESO")
Hydro One Networks Inc. (Distribution)
North Bay Hydro
Northern Ontario Wires Inc.
Hearst Power Distribution Co.

2 REGIONAL ISSUE/TRIGGER

In accordance with the Regional Planning process, the Regional Planning cycle should be triggered at least every five years. In light of Regional Planning cycle timelines and new needs in the region, the 2nd Regional Planning cycle was triggered for the North & East of Sudbury region.

3 SCOPE OF NEEDS ASSESSMENT

The scope of this NA covers the North & East of Sudbury region and includes:

- Review the status of needs/plans identified in the previous RIP; and

- Identification and assessment of any new needs (e.g. system capacity, reliability, operation, and aging infrastructure)

The Study Team may identify additional needs during the next phases of the regional planning process, namely Scoping Assessment ("SA"), Local Planning ("LP"), IRRP, and/or RIP.

4 REGIONAL DESCRIPTION AND CONNECTION CONFIGURATION

The North & East of Sudbury Region are bounded by regions of North Bay, Timmins, Hearst, Moosonee, Kirkland Lake and Dymond. A map of the region is shown below in Figure 1.

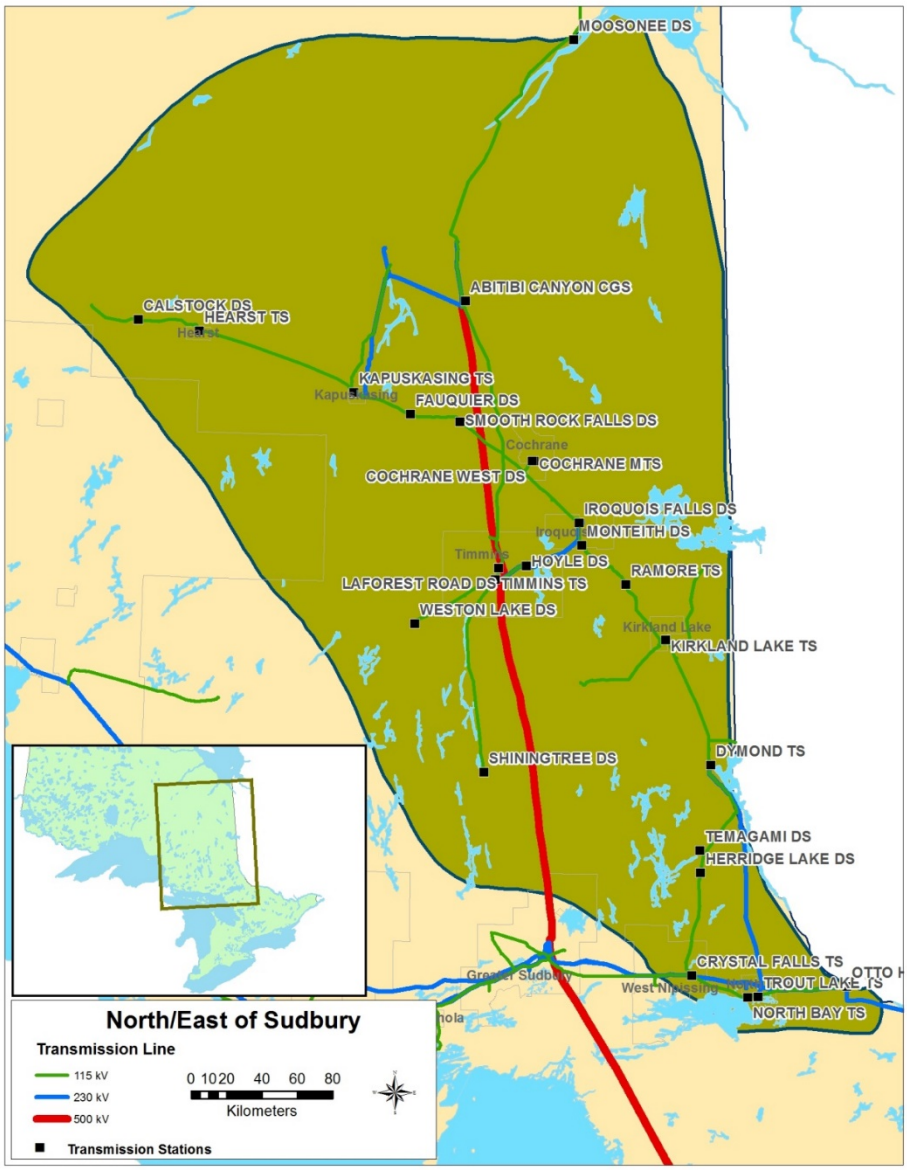

Figure 1: North & East of Sudbury Region Map

Electrical supply for this region is provided through a network of 230kV and 115kV transmission circuits. This area is further reinforced through the 500kV circuits P502X and D501P connecting Hanmer TS to Pinard TS.

This region has the following four local distribution companies (LDC):

- Hydro One Networks (distribution)
- Northern Ontario Wires Inc
- Hearst Power Ltd
- North Bay Hydro Distribution Ltd.

115kV circuits	230kV circuits	500kV circuits	Hydro One Transformer Stations
L5H, L1S D2L, D3K A8K, A9K K2, K4 A4H, A5H D2H, D3H P7G, H9K P13T, P15T T61S, F1E L8L, T7M T8M, H6T H7T, D6T T2R[1]	H23S, H24S W71D, P91G D23G, K38S R21D, L20D L21S, H22D	P502X, D501P	Ansonville TS Crystal Falls TS Dymond TS Hearst TS Hunta SS Kapuskasing TS Kirkland Lake TS Little Long SS Moosonee SS North Bay TS Otter Rapids SS Otto Holden TS Pinard TS Porcupine TS Ramore TS Spruce Falls TS Timmins TS Trout Lake TS Widdifield SS

Table 2: Transmission Lines and Stations in North & East of Sudbury

[1] T2R is presently idle and will be re-energized in 2022 for a new transmission connected load. (Cote Lake Mine CTS)

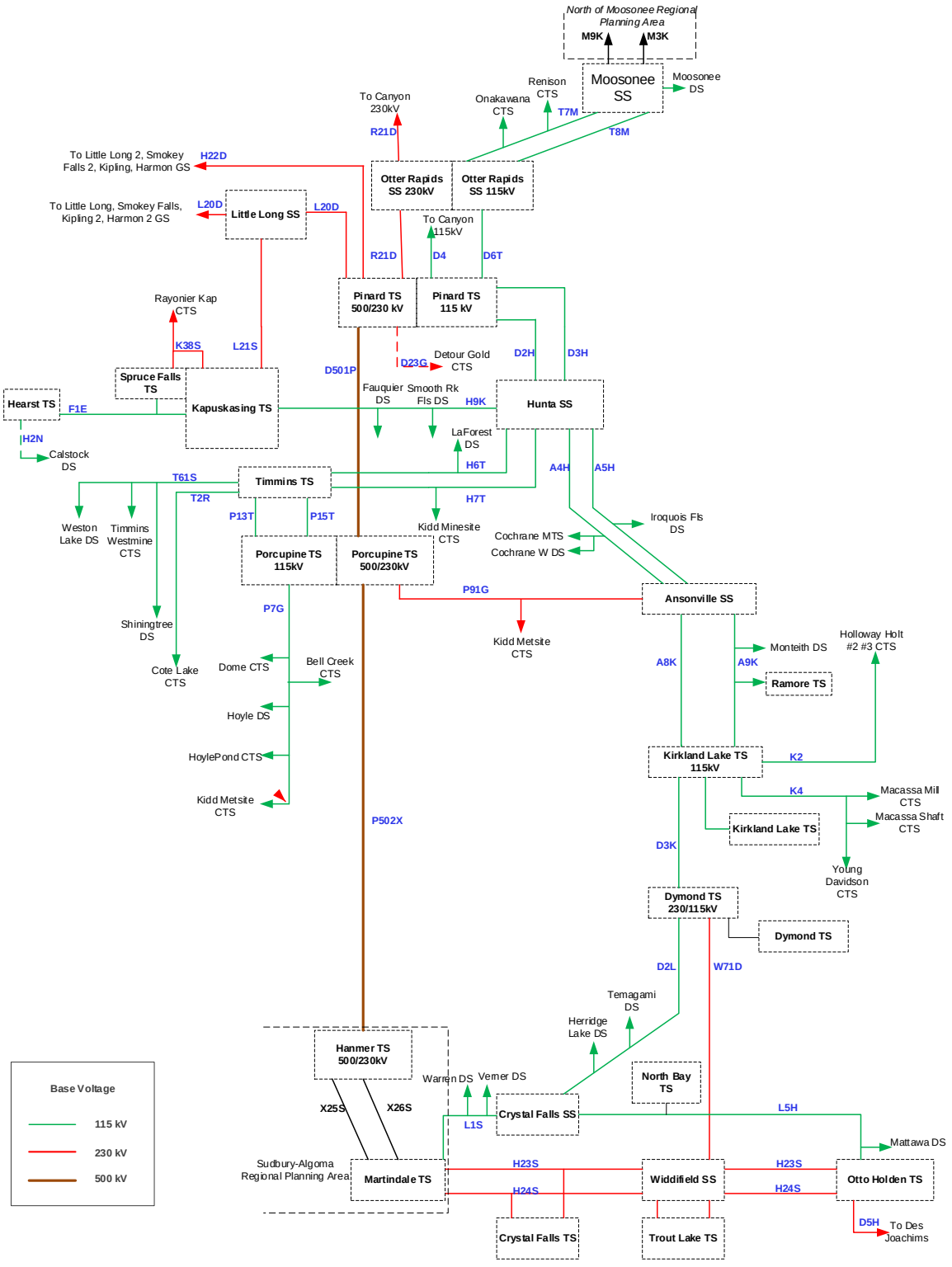

Figure 2 – North and East of Sudbury Regional Planning Electrical Diagram

5 INPUTS AND DATA

Study Team participants, including representatives from LDCs, IESO, and Hydro One provided information and input for the North & East of Sudbury Region NA. The information provided includes the following:

- North & East of Sudbury Load Forecast for all supply stations;
- Known capacity and reliability needs, operating issues, and/or major assets approaching the end-of-life ("EOL"); and
- Planned/foreseen transmission and distribution investments that are relevant to regional planning for the North & East of Sudbury Region.

6 ASSESSMENT METHODOLOGY

The following methodology and assumptions are made in this Needs Assessment:

Information gathering included:

i. Load forecast: Transmission connected customers (existing and committed) including LDCs provided load forecasts for all the stations supplying their loads in the North & East of Sudbury region for the 10-year study period. The IESO provided a Conservation and Demand Management ("CDM") and Distributed Generation ("DG") forecast for the North & East of Sudbury region. The region's extreme summer and winter non-coincident peak gross load forecast for each station were prepared by applying the LDC load forecast growth rates to the actual 2020 summer and winter peak weather corrected loads. The summer / winter weather correction factors of 0.992, and 1.062 respectivly were provided by Hydro One. The net, extreme weather, summer load forecasts were produced by reducing the gross load forecasts for each station by the % age CDM and then by the amount of effective DG capacity provided by the IESO for that station. It is to be noted that in the mid-term (5 to 10 years) time frame, contracts for existing DG resources in the region begin to expire, at which point the load forecast indicates a decreasing contribution from local DG resources, and an increase in net demand. These load forecasts for the individual stations in the North & East of Sudbury region is given in Appendix A;

ii. Relevant information regarding system reliability and operational issues in the region; and

iii. List of major HV transmission equipment planned and/or identified to be refurbished and/or replaced due to the end-of-life, which is relevant for regional planning purposes. This includes HV transformers, autotransformers, HV Breakers, HV underground cables and overhead lines.

A technical assessment of needs was undertaken based on:

- Current and future station capacity and transmission adequacy;
- System reliability and operational concerns; and
- Any major high voltage equipment reaching the end-of-life.

7 NEEDS

This section describes emerging needs identified in the North & East of Sudbury Region, and also reaffirms the near, mid, and long-term needs already identified in the previous regional planning cycle.

The status of the previously identified needs is summarized in Table 3 below.

Table 3: Needs Identified in the Previous Regional Planning Cycle

Needs identified in the previous RP cycle (Local Plan)	Needs Details	Local Plan Recommendation
Voltage Regulation	Timmins TS – The loss of Porcupine TS 115kV breakers K1K4 / K1K2 may result in voltage declines at Timmins TS 115kV bus in excess of 10%.	Voltage declines in the area are addressed with existing operating measures, and continued use of these measures can avoid the use of load rejection to area customers. HONI, LDCs and IESO will continue to monitor growth in the area, and assess as system or customer projects arise.
	Kirkland Lake TS – The loss of Ansonville T2 and D3K may result in voltage declines at Kirkland Lake TS 115kV bus in excess of 10%	New loads in the area will be subject to inclusion in a load rejection scheme to help control post contingency voltages.

7.1 End-Of-Life Equipment Needs

Hydro One and LDCs have provided high voltage asset information under the following categories that have been identified at this time and are likely to be replaced over the next 10 years:

- Autotransformers
- Power transformers
- HV breakers
- Transmission line requiring refurbishment where an uprating is being considered for planning needs and require Leave to Construct (i.e., Section 92) application and approval
- HV underground cables where an uprating is being considered for planning needs and require EA and Leave to Construct (i.e., Section 92) application and approval

The end-of-life assessment for the above high voltage equipment typically included consideration of the following options:

- Replacing equipment with similar equipment and built to current standards (i.e., "like-for-like" replacement);
- Replacing equipment with similar equipment of higher / lower ratings i.e. right sizing opportunity and built to current standards;
- Replacing equipment with lower ratings and built to current standards by transferring some load to other existing facilities;
- Eliminating equipment by transferring all of the load to other existing facilities;

In addition, from Hydro One's perspective as a facility owner and operator of its transmission equipment, doing nothing is generally not an option for major HV equipment due to safety and reliability risk of equipment failure. This also results in increased maintenance cost and longer duration of customer outages.

Accordingly, the following major high voltage equipment has been identified as approaching its end-of-life over the next 10 years and assessed for right sizing opportunity.

Table 4 – Upcoming End-of-Life Station Projects

Station		Description	In-Service
i.	Porcupine TS	Replace 1- 360MVA 500kV/230kV autotransformer (T8), and 2- 225MVA 500kV/115kV autotransformers (T3/T4) with units of similar size and voltage ratings.[2]	2025
ii.	Kapuskasing TS	Replace high and low voltage circuit breakers.	2026
iii.	Otto Holden TS	Replace 2 – 60MVA 230 kV/115 kV autotransformers (T3/T4) with a new 125MVA 230kV/115kV unit, high voltage breakers.	2026
iv.	Timmins TS	Replace 1-83MVA 115/27.6kV transformer (T2) with a unit of similar size and voltage rating.	2027
v.	Crystal Falls TS	Replace 2- 42MVA 230/44kV transformers (T5/T6) with units of similar size and voltage ratings.	2028
vi.	Trout Lake TS	Replace 2 – 125MVA 230/44 kV transformers (T3/T4) with units of similar size and voltage ratings.	2028

Both summer and winter load forecasts were assessed in reaffirming capacity requirements for the above investments, and shall continue as planned without further regional coordination.

[2] Porcupine TS investment is presently underway and autotransformers have been ordered to meet the desired In-Service date

Table 5 – Upcoming End-of-Life Transmission Line Refurbishment Projects

Transmission Line Refurbishments		Description	In-Service
vii.	K4	Kirkland Lake TS X Matachewan JCT (10km) This line section has reached end-of-life and in need of replacement. The new conductor will be larger than the existing obsolete conductor and will naturally yield a higher ampacity rating. HONI is working with existing and future transmission connected customers to ensure this radial line is adequately sized for their intended load. Further coordination is not required.	2023
viii.	A8K/A9K	Ansonville TS x Kirkland Lake TS (90km/cct) A8K/A9K are network circuits that have reached end-of-life and in need of replacement. These circuits will be replaced, and upgraded with increased thermal capacity to satisfy system needs which were identified and supported by the IESO. This investment is in progress and a S.92 application will be filed with the OEB in Q2 2021.	2023
ix.	T61S	Timmins TS x Shiningtree JCT (115km) T61S is a radial line and its conductor has reached end-of-life. This will be replaced with a new conductor naturally yielding a higher ampacity than what the existing conductor can provide. This investment is being completed in conjunction with the re-energization of the idle T2R circuit which will be used to supply load to the new Iamgold substation (Cote Lake CTS). This investment has received a S.92 approval and presently in construction. Further coordination is not required.	2023
x.	K2	Kirkland Lake TS x American Barrick JCT (14km) This line section has reached end-of-life and in need of replacement. The new conductor will be larger than the existing obsolete conductor and will naturally yield a higher ampacity rating. HONI is working with existing and future customers to ensure this radial line is adequately sized for their intended load. Further coordination is not required.	2024
xi.	D2H/D3H	Pinard TS x Hunta SS (90km/cct) D2H/D3H are network circuits and their conductors have reached end-of -life. The new conductor will be larger than the existing obsolete conductor and will naturally yield a higher ampacity rating than presently available. The investment is presently being estimated and expected to proceed to construction in Q1 2022. Further coordination is required to see if right sizing opportunity exists and an upgrade beyond a base refurbishment plan is required to support a system need.	2025
xii.	A4H/A5H	Tunis JCT x Fournier JCT (25km/cct) A4H/A5H are network circuits and their conductors have reached end-of-life and in need of replacement. This investment and will aim to replace these conductors with a like for standard design, with no intentional ampacity increase. Further coordination is required to see if right sizing opportunity exists and an upgrade beyond a base refurbishment plan is required to support a system need.	2027

7.2 Station and Transmission Capacity Needs

The following Station and Transmission supply capacities needs have been identified in the North & East of Sudbury region during the study period.

7.2.1 230/115 kV, & 500/230kV Autotransformers

Autotransformers in the region remain within limits for the study period based on both summer/winter demand forecast. The following list illustrates the autotransformers in the region and their electrical ratings;

Station	ID	Voltage (kV)	Size (MVA)
Ansonville TS	T2	(230/115)	75/125
Dymond TS	T1/T2	(230/115)	75/125
Otto Holden TS	T3/T4	(230/115)	36/60
Pinard TS	T1/T2	(500/230)	450/750
Porcupine TS	T3/T4	(500/115)	135/225
	T7/T8	(500/230)	216/360
Spruce Falls TS	T7	(230/115)	75/125

The investment at Porcupine TS identified in section 7.1 i) will replace one 360MVA 500kV/230kV autotransformer (T8), and two 225MVA 500kV/115kV autotransformers (T3/T4) with units of similar size and voltage ratings. This investment meets the needs of both summer/winter forecasts and the system remains within limits for the loss of a single unit.

The investment at Otto Holden TS identified in section 7.1 iii) will replace the two 60MVA 230 kV/115 kV autotransformers (T3/T4) with a new standard 125MVA 230kV/115kV unit.
The installation of a single autotransformer meets the needs of both summer/winter forecasts and the system remains within limits for the loss of the single autotransformer. One standard size autotransformer is sufficient for planned and unplanned outages during the study period. The need for additional voltage support will be monitored in subsequent cycles of regional planning.

7.2.2 500 kV Transmission Lines

500kV transmission lines in the area remain within limits for the study period based on both summer/winter demand forecast.

7.2.3 230kV Transmission Lines

230kV transmission lines in the area remain within limits for the study period based on both summer/winter demand forecast.

7.2.4 115kV Transmission Lines

115kV transmission lines in the area remain within limits for the study period based on both summer/winter demand forecast.

7.2.5 230 kV and 115 kV Connection Facilities

Transformer station capacity at remains within limits for the study period based on both summer/winter demand forecast.

7.3 System Reliability, Operation and Restoration Review

7.3.1 System Reliability

Significant system reliability issues have not been identified for this region. Based on the net coincident load forecast, the loss of one element will not result in load interruption greater than 150MW. The maximum load interrupted by configuration due to the loss of two elements is below the load loss limit of 600MW by the end of the 10-year study period.

7.3.2 Operation - Area Voltage Control

Hydro One and IESO operating groups have experienced increasing difficulties in maintaining acceptable voltages at major station buses in the region. Of specific concern is the management of high voltages for buses at Hunta TS, Porcupine TS and Pinard TS, Kapuskasing TS during planned maintenance and outage conditions.

Existing operating procedures employ the use of various shunt voltage controlling devices in the system. However, these buses are still subject to voltages that could stress station equipment over its life leading to premature failure. Existing operating procedures and operating limits shall be reviewed to ensure continued effectiveness, and voltage thresholds should align with recommendations in area high voltage reports that are presently being finalized. The following system conditions shall be reviewed;

- Post contingency voltages control in the Ansonville, Hunta area for loss Ansonville T2 and Canyon GS units
- Existing practices to control voltages on both 500kV and 230kV buses at Hanmer/Porcupine/Pinard during shunt reactor and SVC outages in the region
- The 115 kV side of Porcupine TS is currently being operated continuously at voltages up to 135kV, which is above the criteria specified in ORTAC. The replacement equipment will be able to operate continuously at voltages as high as 135 kV till a permanent solution is implemented to bring the maximum continuous voltage at the 115 kV side of Porcupine TS to 127 kV as per the ORTAC criteria.

Further review and coordination is required to help improve area performance and provide operating flexibility.

7.3.3 Operation - Thermal Limits

The North & East of Sudbury planning region has received significant interest in transmission connection load increases in the Kirkland Lake/Dymond and Timmins/Porcupine area. IESO and Hydro One are aware of the active applications which could see a significant load increase in the area and stress thermal capabilities of the circuits in the area.

Connecting customers in this region are subject to post contingency load rejection with a new SPS (Special Protection System) which will be installed at Kirkland Lake TS in 2021. Future connections in

this area will also be included into the SPS as required, however increasing loads beyond the applications that presently exist will further stress the system capability.

Hydro One and IESO operating groups have also expressed difficulties in maintaining thermal limits of area circuits, and ensuring customer supply availability during planned outages to the 500kV circuits P502X and D501P. These outages have required daily switching of the 500kV circuits impacting customers and exposing transmission equipment to stresses which can cause premature failure.

System changes, resource availability, and increasing demands on maintaining customer supply are all attributing factors to reducing the effectiveness of existing operating procedures, and the need for system enhancements shall be reviewed to ensure frequent switching on the 500kV lines can be avoided in the future. Further coordination is required.

8 CONCLUSION AND RECOMMENDATIONS

The Study Team recommends the following –

i. Area Voltage Control – Voltage limits at Hunta TS, Porcupine TS, Pinard TS and Kapuskasing TS shall be reviewed including existing operating procedures to control these voltages. Further regional coordination is required.

ii. Thermal Limits – Existing operating procedures should be reviewed to ensure system operations can continue to reliably supply critical loads during 500kV circuit outage conditions. (while avoiding frequent line switching) Further regional coordination is required.

iii. Replacement of end-of-life assets identified in section 7.1 xi) D2H/D3H refurbishment and xii) A4H/A5H refurbishment will require further regional coordination.

Appendix A: Weather Adjusted Non-Coincident Forecasts
Summer

Transformer Station Name	DESN ID	LTR (MVA)	LTR (MW)	Customer Data (MW)	Summer Peak Load											
					Historical Data (MW)			Near Term Forecast (MW)					Medium Term Forecast (MW)			
					2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Calstock DS				Gross Peak Load				5.0	5.1	5.1	5.2	5.2	5.3	5.3	5.4	5.4	5.5
				CDM (MW)				0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	4.5	5.0	5.0	4.9	5.0	5.0	5.0	5.0	5.1	5.1	5.1	5.2	5.2
Cochrane West DS				Gross Peak Load				2.5	2.5	2.5	2.5	2.6	2.6	2.6	2.6	2.6	2.6
				CDM (MW)				0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	2.7	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Cochrane MTS				Gross Peak				10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7
				CDM (MW)				0.1	0.2	0.3	0.4	0.4	0.5	0.5	0.5	0.5	0.5
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	9.5	10.4	10.7	10.6	10.5	10.4	10.4	10.3	10.3	10.3	10.2	10.2	10.2
Crystal Falls TS	*T5/T6*	*48*	*43*	Gross Peak Load				9.3	9.4	9.5	9.6	9.7	9.8	9.9	10.0	10.1	10.2
				CDM (MW)				0.1	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4
				DG (MW)				0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
				Net Load Forecast	10.5	8.9	9.2	8.4	8.5	8.5	8.6	8.6	8.7	8.8	8.8	8.9	9.0
Dymond TS	*T3/T4*	*54*	*49*	Gross Peak Load				24.7	24.8	25.0	25.2	25.4	25.5	25.7	25.9	26.1	26.2
				CDM (MW)				0.3	0.5	0.7	0.8	0.9	1.0	1.1	1.1	1.1	1.1
				DG (MW)				1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
				Net Load Forecast	28.2	30.4	24.5	23.0	23.0	23.0	23.0	23.1	23.2	23.3	23.4	23.6	23.7

Transformer Station Name	DESN ID	LTR (MVA)	LTR (MW)	Customer Data (MW)	Summer Peak Load											
					Historical Data (MW)			Near Term Forecast (MW)					Medium Term Forecast (MW)			
					2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Fauquier DS				Gross Peak Load				2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.5	2.5
				CDM (MW)				0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	2.0	2.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4
Hearst TS	*T3/T4*	*41*	*39*	Gross Peak Load				13.0	13.2	13.4	13.6	13.9	14.1	14.3	14.5	14.8	15.0
				CDM (MW)				0.2	0.3	0.4	0.4	0.5	0.6	0.6	0.6	0.6	0.7
				DG (MW)				1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
				Net Load Forecast	14.7	15.1	12.8	11.4	11.5	11.6	11.8	11.9	12.1	12.3	12.5	12.7	12.9
Herridge Lake DS				Gross Peak Load				1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0
				CDM (MW)				0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	2.7	3.2	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
Hoyle DS				Gross Peak Load				7.6	7.7	7.7	7.8	7.9	7.9	8.0	8.0	8.1	8.2
				CDM (MW)				0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	7.6	8.1	7.5	7.5	7.5	7.5	7.5	7.6	7.6	7.7	7.7	7.8	7.8
Iroquois Falls DS				Gross Peak Load				5.0	5.0	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
				CDM (MW)				0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	4.7	4.9	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.1	5.1
Kapuskasing TS	*T5/T6*	*94*	*89*	Gross Peak Load				10.6	10.7	10.8	10.9	11.0	11.1	11.2	11.2	11.3	11.4
				CDM (MW)				0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.4
				DG (MW)				1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
				Net Load Forecast	10.9	10.7	10.6	9.4	9.4	9.4	9.4	9.5	9.5	9.6	9.7	9.8	9.8

Transformer Station Name	DESN ID	LTR (MVA)	LTR (MW)	Customer Data (MW)	Summer Peak Load											
					Historical Data (MW)			Near Term Forecast (MW)					Medium Term Forecast (MW)			
					2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Kirkland Lake TS	*T12/T13*	*47*	*42*	Gross Peak Load				21.9	22.0	22.2	22.3	22.4	22.5	22.7	22.8	22.9	23.1
				CDM (MW)				0.3	0.4	0.6	0.7	0.8	0.9	0.9	1.0	1.0	1.0
				DG (MW)				1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
				Net Load Forecast	20.3	21.7	21.8	20.5	20.5	20.4	20.4	20.4	20.5	20.6	20.7	20.8	20.9
Laforest DS				Gross Peak Load				10.1	10.1	10.2	10.3	10.3	10.4	10.5	10.5	10.6	10.7
				CDM (MW)				0.1	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	9.4	9.3	10.0	10.0	10.0	9.9	9.9	10.0	10.0	10.0	10.1	10.1	10.2
Mattawa DS				Gross Peak Load				4.3	4.3	4.4	4.4	4.4	4.4	4.5	4.5	4.5	4.6
				CDM (MW)				0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	4.4	4.0	4.3	4.2	4.2	4.2	4.2	4.3	4.3	4.3	4.3	4.3	4.4
Monteith DS				Gross Peak Load				2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2
				CDM (MW)				0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	2.1	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1
Moosonee DS				Gross Peak Load				6.2	6.3	6.3	6.4	6.4	6.5	6.6	6.6	6.7	6.8
				CDM (MW)				0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	6.7	6.3	6.2	6.1	6.1	6.2	6.2	6.2	6.2	6.3	6.3	6.4	6.5
North Bay TS	*T1/T2*	*61*	*58*	Gross Peak Load				20.2	20.7	21.3	21.9	22.4	23.0	23.6	24.2	24.9	25.5
				CDM (MW)				0.3	0.4	0.6	0.7	0.8	0.9	1.0	1.0	1.1	1.1
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	20.6	19.6	19.7	19.9	20.3	20.7	21.1	21.6	22.1	22.6	23.2	23.8	24.4

Transformer Station Name	DESN ID	LTR (MVA)	LTR (MW)	Customer Data (MW)	Summer Peak Load												
					Historical Data (MW)			Near Term Forecast (MW)					Medium Term Forecast (MW)				
					2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Ramore TS	*T1*	*16.7*	*15*	Gross Peak Load				9.1	9.2	9.4	9.5	9.6	9.7	9.8	9.9	10.1	10.2
				CDM (MW)				0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.4
				DG (MW)				1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
				Net Load Forecast	11.2	11.1	9.0	7.9	8.0	8.0	8.1	8.1	8.2	8.3	8.4	8.5	8.6
Shiningtree DS				Gross Peak Load				3.4	3.4	3.4	3.5	3.5	3.5	3.5	3.6	3.6	3.6
				CDM (MW)				0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	3.0	3.0	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Smooth Rock Fls DS				Gross Peak Load				1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.8
				CDM (MW)				0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8
Temagami DS				Gross Peak Load				1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1
				CDM (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	2.3	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Timmins TS	*T2/T4*	*104*	*94*	Gross Peak Load				40.0	40.4	40.7	41.1	41.5	41.8	42.2	42.6	42.9	43.3
				CDM (MW)				0.5	0.8	1.1	1.3	1.5	1.7	1.7	1.8	1.9	1.9
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	41.2	40.9	39.7	39.5	39.6	39.7	39.8	39.9	40.2	40.5	40.8	41.0	41.4
Trout Lake TS	*T3/T4*	*186*	*167*	Gross Peak Load				90.7	91.9	93.1	94.3	95.6	96.8	98.1	99.4	100.7	102.1
				CDM (MW)				1.2	1.8	2.5	3.0	3.5	3.8	4.0	4.2	4.4	4.5
				DG (MW)				1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
				Net Load Forecast	82.6	94.1	89.5	87.8	88.4	88.9	89.6	90.4	91.3	92.3	93.5	94.5	95.8

Transformer Station Name	DESN ID	LTR (MVA)	LTR (MW)	Customer Data (MW)	Summer Peak Load												
					Historical Data (MW)			Near Term Forecast (MW)					Medium Term Forecast (MW)				
					2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Verner DS				Gross Peak Load				3.8	3.8	3.8	3.9	3.9	3.9	3.9	4.0	4.0	4.0
				CDM (MW)				0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
				DG (MW)				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
				Net Load Forecast	4.0	4.0	3.8	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.8	3.8
Warren DS				Gross Peak Load				4.8	4.8	4.8	4.9	4.9	4.9	4.9	5.0	5.0	5.0
				CDM (MW)				0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
				DG (MW)				0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
				Net Load Forecast	5.2	4.9	4.8	4.6	4.6	4.6	4.6	4.6	4.6	4.7	4.7	4.7	4.7

Appendix A: Weather Adjusted Non-Coincident Forecasts
Winter

Transformer Station Name	DESN ID	LTR (MVA)	LTR (MW)	Customer Data (MW)	Winter Peak Load											
					Historical Data (MW)			Near Term Forecast (MW)					Medium Term Forecast (MW)			
					2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Calstock DS				Gross Peak Load				5.4	5.4	5.5	5.5	5.6	5.6	5.7	5.7	5.8	5.9
				CDM (MW)				0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	5.1	4.9	5.3	5.3	5.3	5.4	5.4	5.4	5.5	5.5	5.5	5.6	5.6
Cochrane West DS				Gross Peak Load				3.6	3.7	3.7	3.7	3.7	3.8	3.8	3.8	3.8	3.9
				CDM (MW)				0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	3.7	3.8	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.7	3.7	3.7	3.7
Cochrane MTS				Gross Peak (Alectra)				12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1
				CDM (MW)				0.1	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	12.2	11.7	12.1	12.0	12.0	11.9	11.8	11.8	11.7	11.7	11.7	11.7	11.7
Crystal Falls TS	*T5/T6*	*53*	*48*	Gross Peak Load				10.2	10.3	10.4	10.5	10.6	10.7	10.9	11.0	11.1	11.2
				CDM (MW)				0.1	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5
				DG (MW)				2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	0.0
				Net Load Forecast	11.4	19.0	10.1	7.6	7.6	7.7	7.7	7.8	7.9	7.9	8.0	8.1	10.7
Dymond TS	*T3/T4*	*62*	*56*	Gross Peak Load				30.4	30.6	30.8	31.0	31.2	31.4	31.6	31.8	32.1	32.3
				CDM (MW)				0.3	0.4	0.6	0.8	0.9	1.0	1.0	1.1	1.1	1.2
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	37.8	32.4	30.1	30.1	30.1	30.1	30.2	30.3	30.4	30.6	30.8	30.9	31.1

Transformer Station Name	DESN ID	LTR (MVA)	LTR (MW)	Customer Data (MW)	Winter Peak Load											
					Historical Data (MW)			Near Term Forecast (MW)					Medium Term Forecast (MW)			
					2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Fauquier DS				Gross Peak Load				2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.3
				CDM (MW)				0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2
Hearst TS	*T3/T4*	*41*	*39*	Gross Peak Load				18.3	18.6	18.9	19.2	19.5	19.9	20.2	20.5	20.8	21.2
				CDM (MW)				0.2	0.3	0.4	0.5	0.6	0.6	0.7	0.7	0.7	0.8
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	18.9	18.3	18.1	18.2	18.4	18.6	18.8	19.0	19.2	19.5	19.8	20.1	20.4
Herridge Lake DS				Gross Peak Load				3.1	3.1	3.1	3.2	3.2	3.2	3.2	3.3	3.3	3.3
				CDM (MW)				0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	2.6	2.5	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.2	3.2
Hoyle DS				Gross Peak Load				9.2	9.3	9.4	9.4	9.5	9.6	9.7	9.7	9.8	9.9
				CDM (MW)				0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	8.9	8.9	9.1	9.1	9.1	9.2	9.2	9.2	9.3	9.3	9.4	9.5	9.6
Iroquois Falls DS				Gross Peak Load				5.6	5.6	5.6	5.6	5.6	5.6	5.7	5.7	5.7	5.7
				CDM (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	5.9	5.8	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
Kapuskasing TS	*T5/T6*	*106*	*101*	Gross Peak Load				12.8	12.9	13.0	13.1	13.2	13.3	13.5	13.6	13.7	13.8
				CDM (MW)				0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.4
				DG (MW)				2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
				Net Load Forecast	10.6	11.0	12.7	9.9	10.0	10.0	10.1	10.1	10.2	10.3	10.4	10.5	10.6

Transformer Station Name	DESN ID	LTR (MVA)	LTR (MW)	Customer Data (MW)	Winter Peak Load											
					Historical Data (MW)			Near Term Forecast (MW)					Medium Term Forecast (MW)			
					2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Kirkland Lake TS	*T12/T13*	*57*	*51*	Gross Peak Load				30.9	31.1	31.3	31.4	31.6	31.8	32.0	32.2	32.3	32.5
				CDM (MW)				0.3	0.4	0.6	0.8	0.9	1.0	1.0	1.1	1.1	1.2
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	30.4	29.5	30.7	30.6	30.6	30.6	30.7	30.7	30.8	30.9	31.1	31.2	31.4
Laforest DS				Gross Peak Load				12.0	12.0	12.1	12.2	12.3	12.4	12.4	12.5	12.6	12.7
				CDM (MW)				0.1	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.5
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	11.1	9.5	11.9	11.9	11.9	11.9	11.9	11.9	12.0	12.0	12.1	12.1	12.2
Mattawa DS				Gross Peak Load				4.6	4.6	4.7	4.7	4.7	4.8	4.8	4.8	4.9	4.9
				CDM (MW)				0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	4.5	5.0	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.7	4.7	4.7
Monteith DS				Gross Peak Load				2.9	2.9	2.9	3.0	3.0	3.0	3.0	3.1	3.1	3.1
				CDM (MW)				0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	2.7	2.7	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3.0	3.0	3.0	3.0
Moosonee DS				Gross Peak Load				13.7	13.8	14.0	14.1	14.2	14.4	14.5	14.6	14.8	14.9
				CDM (MW)				0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.5
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	13.9	13.5	13.6	13.6	13.6	13.7	13.8	13.8	13.9	14.0	14.1	14.3	14.4
North Bay TS	*T1/T2*	*64*	*61*	Gross Peak Load				21.6	22.1	22.7	23.3	23.9	24.6	25.2	25.9	26.6	27.3
				CDM (MW)				0.2	0.3	0.5	0.6	0.7	0.8	0.8	0.9	0.9	1.0
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	21.4	19.7	21.0	21.4	21.8	22.3	22.7	23.3	23.8	24.4	25.0	25.6	26.3

Transformer Station Name	DESN ID	LTR (MVA)	LTR (MW)	Customer Data (MW)	Winter Peak Load											
					Historical Data (MW)			Near Term Forecast (MW)					Medium Term Forecast (MW)			
					2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Ramore TS	*T1*	*16.7*	*15*	Gross Peak Load				13.4	13.6	13.8	13.9	14.1	14.3	14.4	14.6	14.8	15.0
				CDM (MW)				0.1	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.5
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	13.4	12.7	13.3	13.3	13.4	13.5	13.6	13.7	13.8	14.0	14.1	14.3	14.4
Shiningtree DS				Gross Peak Load				3.6	3.7	3.7	3.7	3.7	3.8	3.8	3.8	3.8	3.9
				CDM (MW)				0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	3.6	3.5	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.7	3.7	3.7	3.7
Smooth Rock Fls DS				Gross Peak Load				1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1
				CDM (MW)				0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	2.3	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0
Temagami DS				Gross Peak Load				1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4
				CDM (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	2.9	3.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4
Timmins TS	*T2/T4*	*113*	*102*	Gross Peak Load				47.0	47.4	47.8	48.2	48.7	49.1	49.5	50.0	50.4	50.8
				CDM (MW)				0.4	0.7	1.0	1.2	1.4	1.5	1.6	1.7	1.8	1.8
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
				Net Load Forecast	45.6	44.1	46.6	46.5	46.7	46.8	47.0	47.3	47.6	47.9	48.3	48.6	49.0
Trout Lake TS	*T3/T4*	*209*	*188*	Gross Peak Load				113.2	114.7	116.2	117.7	119.3	120.9	122.4	124.1	125.7	127.4
				CDM (MW)				1.1	1.7	2.4	2.9	3.4	3.8	4.0	4.2	4.4	4.5
				DG (MW)				5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
				Net Load Forecast	109.5	92.4	111.7	107.1	108.1	108.9	109.8	110.9	112.1	113.5	114.9	116.3	117.8

Transformer Station Name	DESN ID	LTR (MVA)	LTR (MW)	Customer Data (MW)	Winter Peak Load													
					Historical Data (MW)			Near Term Forecast (MW)					Medium Term Forecast (MW)					
					2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
Verner DS				Gross Peak Load				5.6	5.6	5.6	5.7	5.7	5.7	5.8	5.8	5.8	5.9	
				CDM (MW)				0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				Net Load Forecast	6.2	6.0	5.5	5.5	5.5	5.5	5.5	5.5	5.6	5.6	5.6	5.6	5.7	
Warren DS				Gross Peak Load				6.7	6.8	6.8	6.8	6.9	6.9	6.9	7.0	7.0	7.1	
				CDM (MW)				0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	
				DG (MW)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				Net Load Forecast	7.3	7.4	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.8	6.8	6.8	

Appendix B: Lists of Hydro One Step-Down Transformer Stations

Sr. No.	Transformer Stations	Voltages (kV)
1.	Crystal Falls TS	230/44
2.	Dymond TS	115/44
3.	Hearst TS	115/27.6
4.	Kapuskasing TS	230/25
5.	Kirkland Lake TS	115/44
6.	North Bay TS	230/44
7.	Ramore TS	115/27.6
8.	Timmins TS	115/27.6
9.	Trout Lake TS	230/44

Appendix C: Lists of Transmission Circuits

No.	Circuit ID	From Station	To Station	Voltage (kV)
1	A4H/A5H	Ansonville TS	Hunta SS	115
2	A8K/A9K	Ansonville TS	Kirkland Lake TS	115
3	D2H/D3H	Pinard TS	Hunta SS	115
4	H6T/H7T	Hunta SS	Timmins TS	115
5	P13T/P15T	Porcupine TS	Timmins TS	115
6	T7M/T8M	Otter Rapids SS	Moosonee SS	115
7	D2L	Dymond TS	Crystal Falls TS	115
8	H9K	Hunta SS	Kapuskasing TS	115
9	K2	Kirkland Lake TS	Radial	115
10	K4	Kirkland Lake TS	Radial	115
11	L1S	Martindale TS	Crystal Falls TS	115
12	L5H	Crystal Falls SS	Otto Holden TS	115
13	D3K	Dymond TS	Kirkland Lake TS	115
14	P7G	Porcupine TS	Radial	115
15	T61S	Timmins TS	Radial	115
16	F1E	Kapuskasing TS	Hearst TS	115
17	T2R	Timmins TS	Radial	115
18	D23G	Pinard TS	Radial	230
19	H22D	Pinard TS	Radial	230
20	H23S/H24S	Martindale TS	Otto Holden TS	230
21	K38S	Kapuskasing TS	Spruce Falls TS	230

No.	Circuit ID	From Station	To Station	Voltage (kV)
22	L20D	Pinard TS	Little Long SS	230
23	L21S	Kapuskasing TS	Little Long SS	230
24	P91G	Porcupine TS	Ansonville TS	230
25	R21D	Otter Rapids SS	Radial	230
26	W71D	Dymond TS	Widdifield SS	230
27	P502X	Porcupine TS	Hanmer TS	500
28	D501P	Porcupine TS	Pinard TS	500

Appendix D: Lists of LDCs in the North & East of Sudbury Region

No.	Company	Connection Type (TX/DX)
1	Hydro One Distribution	TX/DX
2.	North Bay Hydro	DX
3.	Northern Ontario Wires Inc.	TX/DX
4.	Hearst Power Distribution Co.	DX

Appendix E: Acronyms

Acronym	Description
A	Ampere
BES	Bulk Electric System
BPS	Bulk Power System
CDM	Conservation and Demand Management
CIA	Customer Impact Assessment
CGS	Customer Generating Station
CSS	Customer Switching Station
CTS	Customer Transformer Station
DESN	Dual Element Spot Network
DG	Distributed Generation
DS	Distribution Station
GS	Generating Station
HV	High Voltage
IESO	Independent Electricity System Operator
IRRP	Integrated Regional Resource Plan
kV	Kilovolt
LDC	Local Distribution Company
LP	Local Plan
LTE	Long Term Emergency
LTR	Limited Time Rating
LV	Low Voltage
MTS	Municipal Transformer Station
MW	Megawatt
MVA	Mega Volt-Ampere
MVAR	Mega Volt-Ampere Reactive
NA	Needs Assessment
NERC	North American Electric Reliability Corporation
NGS	Nuclear Generating Station
NPCC	Northeast Power Coordinating Council Inc.
NUG	Non-Utility Generator
OEB	Ontario Energy Board
ORTAC	Ontario Resource and Transmission Assessment Criteria
PF	Power Factor
PPWG	Planning Process Working Group
RIP	Regional Infrastructure Plan
SA	Scoping Assessment
SIA	System Impact Assessment
SPS	Special Protection Scheme
SS	Switching Station
STG	Steam Turbine Generator
TS	Transformer Station