NEEDS ASSESSMENT REPORT

South Georgian Bay - Muskoka

Date: August 27, 2025

Needs Assessment Report

South Georgian Bay - Muskoka

August 27, 2025

Lead Transmitter:

Hydro One Networks Inc.

Prepared by:

Prepared by: South Georgian Bay-Muskoka Technical Working Group

Page intentionally left blank

Disclaimer

This Needs Assessment (NA) Report was prepared for the purpose of identifying potential needs in the South Georgian Bay - Muskoka and to recommend which needs a) do not require further regional coordination and can be directly addressed by developing a preferred plan as part of the NA phase and b) require further assessment and regional coordination. The results reported in this NA are based on the input and information provided by the Technical Working Group (TWG) for this region. Updates may be made based on the best available information throughout the planning process.

The TWG participants, their respective affiliated organizations, and Hydro One Networks Inc. (collectively, "the Authors") shall not, under any circumstances whatsoever, be liable to each other, to any third party for whom the Needs Assessment Report was prepared ("the Intended Third Parties") or to any other third party reading or receiving the Needs Assessment Report ("the Other Third Parties"). The Authors, Intended Third Parties and Other Third Parties acknowledge and agree that: (a) the Authors make no representations or warranties (express, implied, statutory or otherwise) as to this document or its contents, including, without limitation, the accuracy or completeness of the information therein; (b) the Authors, Intended Third Parties and Other Third Parties and their respective employees, directors and agents (the "Representatives") shall be responsible for their respective use of the document and any conclusions derived from its contents; (c) and the Authors will not be liable for any damages resulting from or in any way related to the reliance on, acceptance or use of the document or its contents by the Authors, Intended Third Parties or Other Third Parties or their respective Representatives.

Executive Summary

REGION **South Georgian Bay - Muskoka** Region (the "Region")

LEAD Hydro One Networks Inc. ("HONI")

START DATE: April 29, 2025 **END DATE:** August 27, 2025

The second Regional Planning cycle for the **South Georgian Bay - Muskoka** Region was completed December 6, 2022 with the publication of the Regional Infrastructure Plan ("RIP") report - South Georgian Bay-Muskoka Regional Infrastructure Plan (RIP).

In accordance with the Regional Planning process, the Regional Planning cycle should be triggered at least once every five years. Considering these timelines, the 3rd Regional Planning cycle was triggered in **April 2025** for this Region. The planning horizon for this Needs Assessment ("NA") is ten years. A 20-year planning assessment is undertaken in the next phase of regional planning, i.e., IRRP and RIP phases.

The purpose and scope of the NA is to:

a) Identify any new needs and reaffirm needs identified in the previous regional planning cycle; and,
b) Recommend which needs:
   i) require further assessment and regional coordination to develop a preferred plan (and hence, proceed to the next phases of regional planning); and,
   ii) do not require further regional coordination (i.e., can be addressed directly between Hydro One and the impacted LDC(s) to develop a preferred plan and/or no regional investment is required at this time and the need may be reviewed during the next regional planning cycle).

The Technical Working Group (TWG) comprises of representatives from Local Distribution Companies ("LDC"), the Independent Electricity System Operator ("IESO"), and Hydro One Transmission. They provide input and relevant information for the region and undertake a technical assessment to identify the electrical infrastructure needs in the region. They collaborate to develop both summer and winter gross and net peak electricity demand forecasts (including input from municipalities), which form the basis for the technical assessment. The following are key considerations of the technical assessment:

a) Current and future station capacity and transmission adequacy.
b) System reliability needs and operational concerns.
c) Major HV transmission equipment requiring replacement with consideration to "right-sizing"; and,
d) Sensitivity analysis to capture uncertainty in the load forecast as well as variability of demand drivers such as electrification.

In this Needs Assessment, TWG has identified the following regional needs and recommendations:

Needs that require further regional coordination.

#	Need Location	Need Description
1	M6E/M7E (Supply Capacity)	Supply Capacity need identified on (Essa x Midhurst, Minden x Coopers Fls JCT). Further coordination is required to reaffirm need, solution and timing.
2	Alliston T3/T4 (Supply Capacity)	Alliston TS (T3/T4) is a 230-44kV 83MVA transformer station and will exceed its normal supply capacity within the study period. Further coordination is required to reaffirm need, solution and timing.
3	Everett T1/T2 (Supply Capacity)	Everett TS (T3/T4) is a 230-44kV 83MVA transformer station and will exceed its normal supply capacity within the study period. Further coordination is required to reaffirm need, solution and timing.
4	Midhurst T1/T2, T3/T4 (Supply Capacity)	Midhurst TS (T1/T2) and (T3/T4) are 230-44kV 125MVA transformer stations and will both exceed their normal supply capacity within the study period. Further coordination is required to reaffirm need, solution and timing.
5	Claireville Area North and Flow North	Operational issues identified, will be studied in Bulk System Plan

Needs that do not require further regional coordination.

#	Need Location	Need Description
6	E8V/E9V (Asset Renewal + Supply Capacity)	Essa TS x Orangeville TS line section will be upgraded as per Ministry of Energy's – Energy for Generations report. This upgrade planned for 2029 will resolve supply capacity needs identified on section (Essa x Alliston JCT) and asset renewal needs. Further coordination is not required.

List of LDC(s) to be involved in further regional planning phases:

- Alectra Utilities Corporation (Alectra)
- Hydro One Distribution
- InnPower
- Orangeville Hydro
- Elexicon Energy
- Lakeland Power
- EPCOR Electricity Distribution Ontario Inc
- NT Power Distribution
- Wasaga Distribution Inc.

List of LDC(s) which are not required to be involved in further regional planning phases:

- n/a

Table of Contents

List of Figures

List of Tables

1. INTRODUCTION

The second cycle of the Regional Planning process for the South Georgian Bay - Muskoka Region was completed in December 2022 with the publication of the South Georgian Bay-Muskoka Regional Infrastructure Plan (RIP). The RIP report included a common discussion of all the options and recommended plans for preferred wire infrastructure investments to address the near- and medium-term needs.

This Needs Assessment initiates the third regional planning cycle for the South Georgian Bay - Muskoka Region. The purpose of this Needs Assessment ("NA") is to:

a) Identify any new needs and reaffirm needs identified in the previous regional planning cycle; and,
b) Recommend which needs:
   i) require further assessment and regional coordination to develop a preferred plan (and hence, proceed to the next phases of regional planning); and,
   ii) do not require further regional coordination (i.e., can be addressed directly between Hydro One and the impacted LDC(s) to develop a preferred plan and/or no regional investment is required at this time and the need may be reviewed during the next regional planning cycle).

The planning horizon for this NA assessment is ten years. A flow chart of the Regional Planning Process is shown in Figure 1 below.

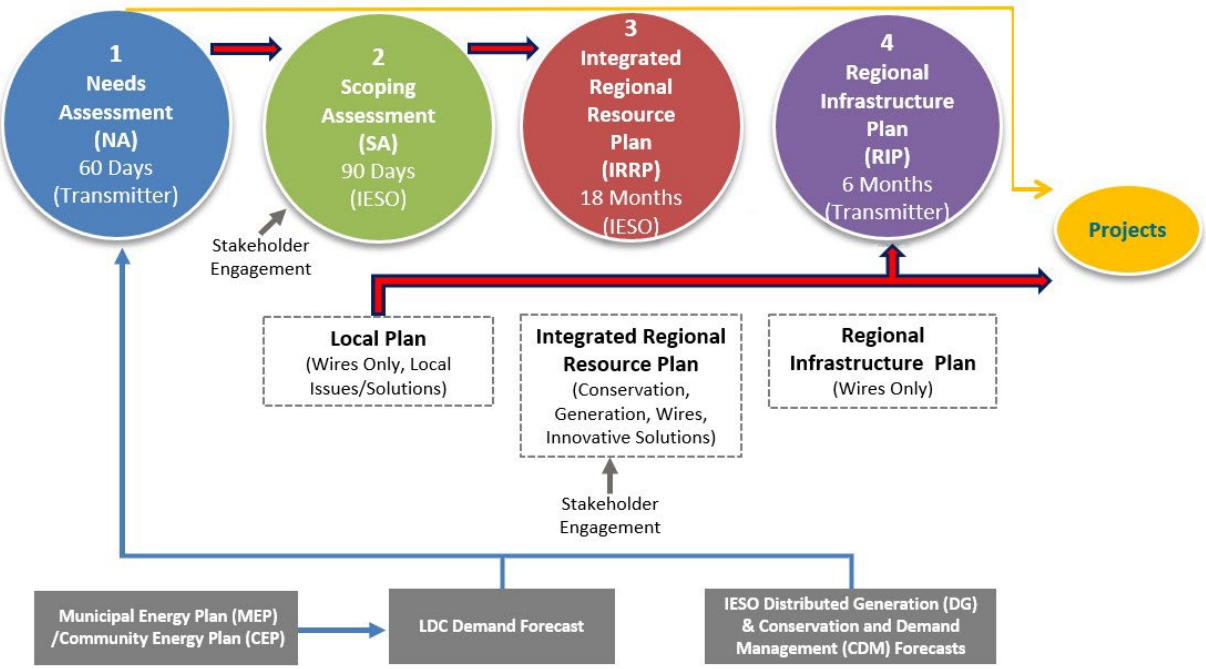

Figure 1: Regional Planning Process

This report was prepared by the South Georgian Bay - Muskoka Technical Working Group("TWG"), led by Hydro One Networks Inc. The report presents the results of the assessment based on information provided by the Hydro One, the Local Distribution Companies ("LDC") and the Independent Electricity System Operator ("IESO"). Participants of the TWG are listed below in Table 1.

Table 1: South Georgian Bay - Muskoka Region TWG Participants

Sr. no.	Name of TWG Participants
1	Independent Electricity System Operator (IESO)
2	Alectra Utilities Corporation (Alectra)
3	Hydro One Networks Inc. (Transmission & Distribution)
4	InnPower
5	Orangeville Hydro
6	Elexicon Energy
7	Lakeland Power
8	EPCOR Electricity Distribution Ontario Inc
9	NT Power Distribution
10	Wasaga Distribution Inc.

2. REGIONAL ISSUE/TRIGGER

In accordance with the Regional Planning process, the Regional Planning cycle should be triggered at least once every five years. As such, the 3rd Regional Planning cycle was triggered for the South Georgian Bay - Muskoka region.

3. SCOPE OF NEEDS ASSESSMENT

The scope of this NA covers the South Georgian Bay - Muskoka region and includes:

- Review and reaffirm needs/plans identified in the previous cycle RIP (as applicable),
- Identify any new needs resulting from this assessment,
- Recommend which need(s) require further assessment and regional coordination in the next phase of the regional planning cycle to develop a preferred plan; and,
- Recommend which needs do not require further regional coordination (i.e., can be addressed directly between Hydro One and the impacted LDC(s) to develop a preferred plan and/or no regional investment is required at this time and the need may be reviewed during the next regional planning cycle).

The Technical Working Group TWG may also identify additional needs during the next phases of the planning process, namely Scoping Assessment ("SA"), Integrated Regional Resource Plan ("IRRP"), Local plan (LP) and RIP, based on updated information available at that time.

The planning horizon for this NA assessment is 10 years.

4. REGIONAL DESCRIPTION AND CONNECTION CONFIGURATION

Electrical supply to the South Georgian Bay-Muskoka region is provided through two (2) 500/230kV auto-transformers at Essa TS, the 230kV transmission lines connecting Minden TS to Des Joachims TS, the 230kV circuits E8V and E9V coming from Orangeville TS, and the single 115kV circuit S2S connecting to Owen Sound TS. There are sixteen (16) Hydro One step-down transformer stations in the region, most of which are supplied by circuits radiating out from Essa TS, and the majority of the distribution system is at 44kV, except for Orangeville TS which has 27.6kV and 44kV feeders.

The geographical boundaries of the South Georgian Bay - Muskoka region is shown in Figure 2 below.

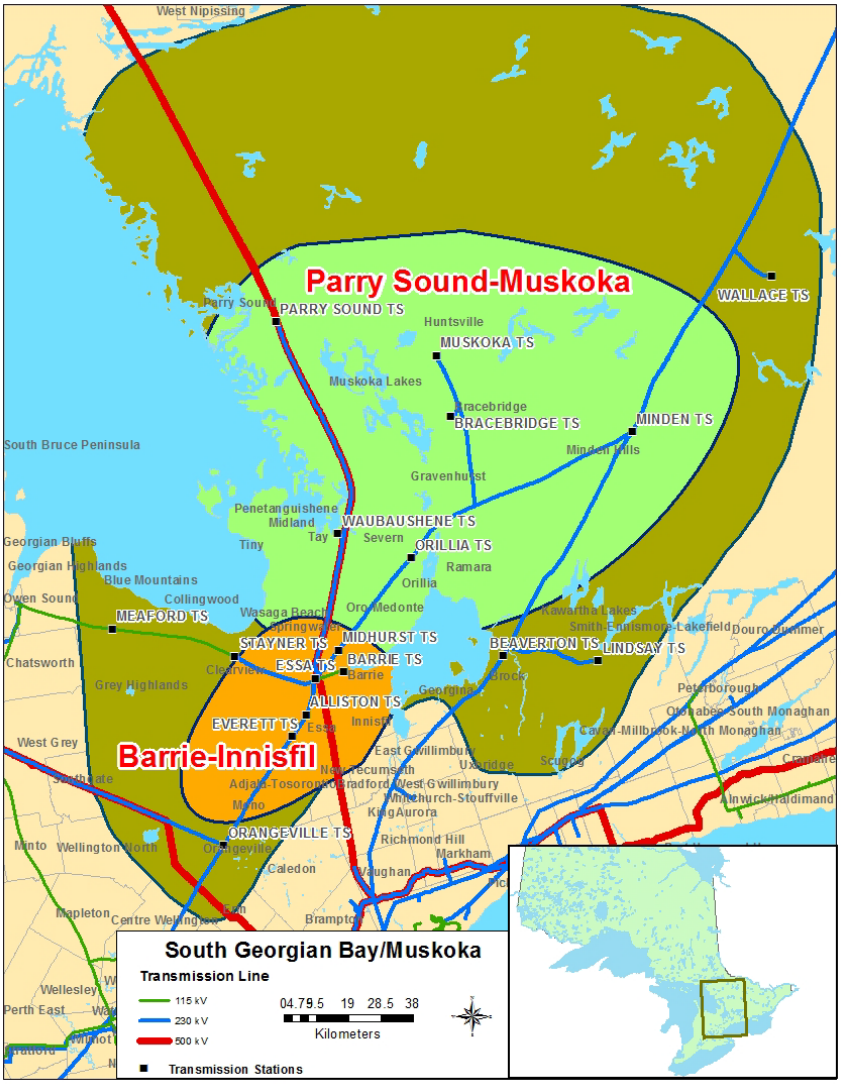

Figure 2: Map of South Georgian Bay - Muskoka Regional Planning Area

The circuits and stations of the area are summarized in the Table 2 below:

Table 2: Transmission Station and Circuits in the South Georgian Bay - Muskoka Region

115kV circuits	230kV circuits	Hydro One Transformer Stations		Generation Stations
S2S	D1M / D2M D3M / D4M E8V / E9V E20S / E21S E26 / E27 E28 / E29 M6E / M7E M80B / M81B	Alliston TS Barrie TS Beaverton TS Bracebridge TS Essa TS * Everett TS Lindsay TS Meaford TS Midhurst TS	Minden TS Muskoka TS Orangeville TS Orillia TS Parry Sound TS Stayner TS* Wallace TS Waubaushene TS	Henvey Inlet North /South) 700MW

*Stations with Autotransformers installed

The single line diagram of the Transmission Network of South Georgian Bay - Muskoka region is shown in Figure 3 below.

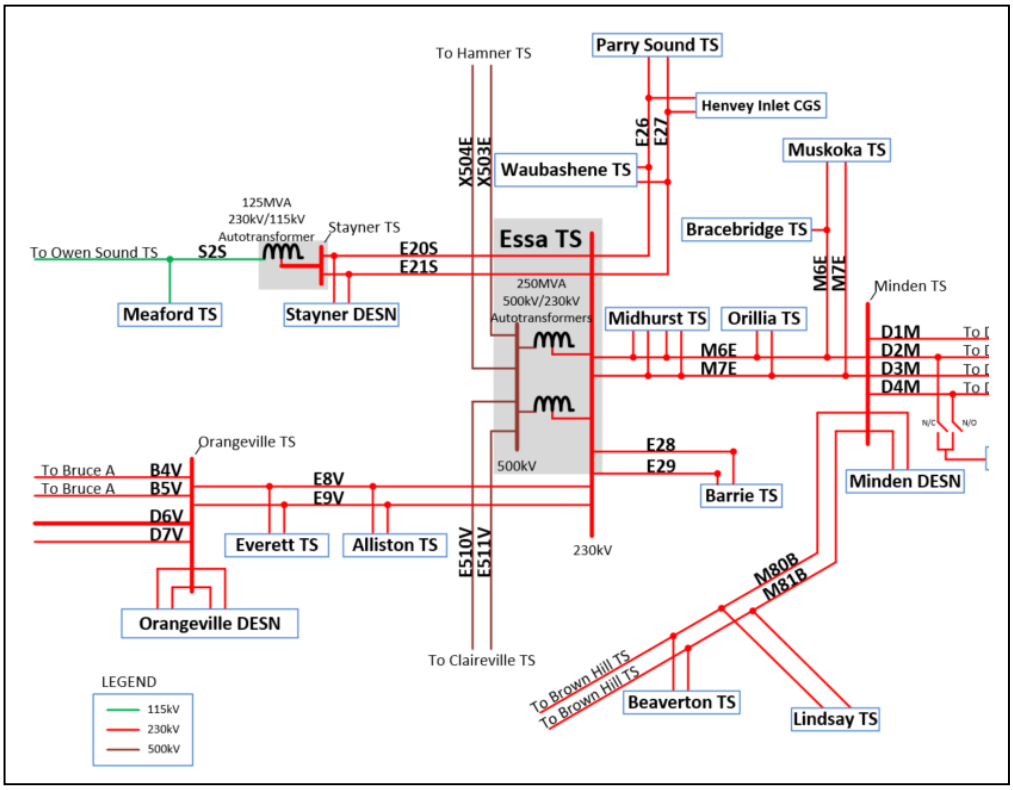

Figure 3: South Georgian Bay - Muskoka Transmission Single Line Diagram

5. INPUTS AND DATA

TWG participants, including representatives from LDCs, IESO, and Hydro One provided information and input for the **South Georgian Bay - Muskoka** NA. With respect to the load forecast information, the OEB Regional Planning Process Advisory Group (RPPAG) recently published a document called "Load Forecast Guideline for Ontario" in Oct. 2022. The objective of this document is to provide guidance to the TWG in the development of the load forecasts used in the various phases of the regional planning process with a focus on the NA and the IRRP. One of the inputs into the LDC's load forecast that is called for in this guideline is information from Municipal Energy Plans (MEP) and/or Community Energy Plans (CEP). The list of all the Municipalities falling under the geographical boundaries of the region are given in Appendix-E.

The information provided includes the following:

- **South Georgian Bay - Muskoka** 10-year summer and winter Load Forecasts for all supply stations inclusive of the inputs provided by the municipalities (e.g. through their MEPs & CEPs).
- Known capacity and reliability needs, operating issues, and/or major assets requiring replacement/ refurbishment; and
- Planned/foreseen transmission and distribution investments that are relevant to Regional Planning for the **South Georgian Bay - Muskoka**.
- Captured uncertainty in the load forecast as well as variability of electric demand drivers to identify any emerging needs and/or advancement or deferment of recommended investments

6. ASSESSMENT METHODOLOGY

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

6.1 Technical Assessments and Study Assumptions

The technical assessment of needs was undertaken based on:

- Current and future station capacity and transmission adequacy.
- System reliability and operational considerations.
- Asset renewal for major high voltage transmission equipment requiring replacement with consideration to "right-sizing"; and,
- Load forecast data was requested from industrial customers in the region, and
- This assessment is based on both summer and winter peak loads. Three load forecasts were developed i.e. Normal Growth scenario, High and Low Growth scenarios. The High and Low Growth scenario was developed to conduct a sensitivity analysis to cover unforeseen

developments such as fuel switching, Government policies, higher than expected EV charging trend during peak load conditions, etc.

- Consideration of existing or planned distributed energy resources

The following other assumptions are made in this report.

- The study period for this Needs Assessment is 2024-2034.
- The Region is marginally winter peaking; however, the assessment was done on both summer and winter peak loads due to summer equipment ratings being lower.
- Network line and auto-transformation capacity adequacy is assessed by using coincidence peak loads in the area.
- Load-serving station and radial line capacity adequacy is assessed by comparing the non-coincident peak load with the station's normal planning supply capacity, assuming a 90% lagging power factor for stations having no low-voltage capacitor banks and 95% lagging power factor for stations having low-voltage capacitor banks.
- Normal planning supply capacity for Hydro One transformer stations is determined by the seasonal 10-Day Limited Time Rating (LTR) of a single transformer at that station.
- Normal planning supply capacity for LDC transformer stations is in accordance with LDC methodology.
- Adequacy assessment is conducted as per Ontario Resource Transmission Assessment Criteria (ORTAC).
- Transmission-connected Resources (e.g. Generators) were set to historical generation output of 98% and 85% availability for the seasons under study, information provided by the IESO.

6.2 Information Gathering Process

6.2.1. Load forecast:

The LDCs provided their load forecasts for summer and winter for all the stations supplying their loads in the South Georgian Bay - Muskoka region for the 10-year study period including the inputs from the Municipalities such as MEPs and CEPs. The IESO provided a Conservation and Demand Management ("CDM") and Distributed Generation ("DG") forecast for the South Georgian Bay - Muskoka region. The region's extreme summer/winter non-coincident peak gross load forecasts for each station were prepared by applying the LDC load forecast growth rates to the actual 2024 summer peak extreme weather corrected loads. The extreme summer/winter weather correction factors were provided by Hydro One. The net extreme summer weather forecasts were produced by reducing the gross load forecasts for each station by the percentage CDM and then by the amount of effective DG capacity provided by the IESO for that station. It is to be noted that as contracts for existing DG resources in the region begin to expire, at which point the load forecast has a decreasing contribution from local DG resources, and an increase in net demand. This

extreme summer/winter weather corrected net load forecast for the individual stations in the South Georgian Bay - Muskoka region is given in Appendix A.

6.2.2. Sensitivity Analysis:

A sensitivity analysis was undertaken by the TWG to capture uncertainty in the load forecast as well as variability of drivers such as electrification. Hence, the NA recommendations are not necessarily linked to sensitivity scenarios; but rather these scenarios are used to identify any emerging needs for consideration in developing recommendations. The impact of sensitivity analysis for the high and low growth scenarios are provided in section 8 of this report.

6.2.3. Asset Renewal Needs for Major HV Equipment:

List of major HV transmission equipment planned and/or identified to be refurbished and/or replaced based on asset condition assessment, relevant for Regional Planning purposes. This includes HV transformers, autotransformers, HV Breakers, HV underground cables and overhead lines. The scope of equipment considered is given in section 7.1.

6.2.4. System Reliability and Operational Issues:

Relevant information regarding system reliability and operational issues in the region as feedback provided by the IESO and Hydro One operation teams during the NA phase.

7. NEEDS

This section describes emerging new needs identified in the South Georgian Bay - Muskoka Region and/or updates on previously identified needs since the completion of Previous Regional Planning (RP) cycle.

Needs that were identified in the previous regional planning cycle with associated projects that were recently completed and reaffirmed needs that are underway are briefly described below with relevant updates and will not be discussed further in this report.

1. **Everett TS Station Capacity** - CT ratio of the low voltage transformer breaker CTs were modified in 2024. However, additional capacity needs are identified and will be studied in this cycle.
2. **Barrie TS Station Capacity** - Construct new 230/27.6kV 83MVA Innpower MTS and extend 230kV E28B/E29B circuits to connect. The planned in-service year is 2029.
3. **Waubaushene TS Station Capacity** – Replacing and upgrading existing 230/44kV 83MVA T5/T6 transformers with 125MVA units. The planned in-service year is 2028.
4. **M6E/M7E (Orillia TS x Coopers FLS JCT) Asset Replacement** – Updated condition assessments have confirmed that the conductor and key components remain in acceptable asset condition, as a result, this need has been postponed beyond the study period of this RP cycle. A new capacity need, however, has been identified and will be studied in this RP cycle.
5. **E8V/E9V (Orangeville TS x Essa JCT) Asset Replacement** – Updated condition assessments have confirmed that the conductor and key components remain in acceptable asset condition, as a result, this need was postponed to 2035 i.e., beyond the study period of this RP cycle. However, IESO has identified a capacity need via the Central & South Bulk study and System Impact Assessments, which will be discussed in this RP cycle.
6. **D1M/D2M (Minden TS x Otter Creek JCT)** – Updated condition assessments have confirmed that the conductor and key components remain in acceptable asset condition, as a result, this need has been postponed beyond the study period of this RP cycle.
7. **Wallace TS Asset Replacement** – T3/T4 transformers will be replaced with like for like 230/44kV 42MVA standard step-down transformer. The planned in-service year is in 2034.
8. **Midhurst TS Asset Replacement** – T4 transformer will be replaced with like for like 230/44kV 125MVA standard step-down transformer. The planned in-service year is in 2034.
9. **Orillia TS Asset Replacement** – T2 transformer will be replaced with like for like 230/44kV 125MVA standard step-down transformer. The planned in-service year is in 2026.
10. **Bracebridge TS Asset Replacement** – T1 transformer will be replaced with like for like 230/44kV 83MVA standard step-down transformer. The planned in-service year is in 2026.
11. **Alliston TS Asset Replacement** – T3/T4 transformers will be replaced with like for like 230/44kV 83MVA standard step-down transformers. The planned in-service year is in 2040. However, a new capacity need has been identified and will be studied in this RP cycle.

Note: The planned in-service year for the above projects is tentative and is subject to change.

All near, and mid-term needs that are discussed as a part of this report are summarized in Table 3 below.

Table 3: Near/Mid-term Needs Identified in this NA and/or Updated from Previous RIP

Need Location	Need Description/Update	NA Report Section
Asset Renewal Needs		
No new Asset Renewal needs identified in this Regional Planning Cycle.		
Station Capacity Needs		
Alliston TS (T3/T4)	Projected to reach capacity in 2032	7.2.1
Everett TS (T1/T2)	Projected to reach capacity in 2030	7.2.2
Midhurst TS (T1/T2)	Projected to reach capacity in 2030	7.2.3
Midhurst TS (T3/T4)	Projected to reach capacity in 2029	7.2.4
Transmission Line Capacity Needs		
230kV M6E/M7E	Projected to reach capacity in mid-term	7.3.1
230kV E8V/E9V	Need identified by IESO in Central & South Bulk study and System Impact Assessments	7.3.2
System Reliability, Operation and Load restoration Needs		
Claireville Area North and Flow North	Operational issues identified, will be studied in the area Bulk System Plan	7.4

7.1 Asset Renewal Needs for Major HV Transmission Equipment

In addition to the previously identified asset renewal needs from the second regional planning cycle, Hydro One and the TWG identified new asset renewal needs for major HV transmission equipment over the next 10 years in the **South Georgian Bay - Muskoka** Region. They are listed in Table 4 below. Hydro One is the only Transmission Asset Owner (TAO) in the Region

Asset renewal needs are determined by asset condition assessment. Asset condition assessment is based on a range of considerations such as:

- Equipment deterioration due to aging infrastructure or other factors,
- Technical obsolescence due to outdated design,
- Lack of spare parts availability or manufacturer support, and/or
- Potential health and safety hazards, etc.

The major high voltage equipment information shared and discussed as part of this process is listed below:

- 230/115kV autotransformers
- 230 and 115kV load serving step down transformers
- 230 and 115kV breakers where:
  replacement of six breakers or more than 50% of station breakers, the lesser of the two
- 230 and 115kV transmission lines requiring refurbishment where:
  Leave to Construct (i.e., section 92) approval is required for any alternative to like-for-like
- 230 and 115kV underground cable requiring replacement where:
  Leave to Construct (i.e., section 92) approval is required for any alternative to like-for-like

The asset renewal assessment considers the following options for "right sizing" the equipment:

- Maintaining the status quo
- Replacing equipment with similar equipment with *lower* ratings and built to current standards
- Replacing equipment with similar equipment with *lower* ratings and built to current standards by transferring some load to other existing facilities
- Eliminating equipment by transferring all the load to other existing facilities
- Replacing equipment with similar equipment and built to current standards (i.e., "like-for-like" replacement)
- Replacing equipment with higher ratings and built to current standards

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 costs and longer duration of customer outages.

Table 4: Major HV Transmission Assets Requiring Replacement in the SGB Muskoka Region

Station/Circuit	Need Description	Planned ISD
Orillia TS	T2 transformer will be replaced with new like for like 230/44kV 125MVA standard step-down transformers	2026
Bracebridge TS	T1 transformer will be replaced with new like for like 230/44kV 83MVA standard step-down transformers	2026
Wallace TS	T3/T4 transformers will be replaced with new like for like 230/44kV 42MVA standard step-down transformers	2034
Midhurst TS	T4 transformer will be replaced with new like for like 230/44kV 125MVA standard step-down transformers	2034

7.1.1 E8V/E9V (Orangeville TS x Essa JCT)

This double circuit 230kV transmission line was in-serviced in 1950. Based on asset condition assessment, this line section requires conductor refurbishment at the end of the study period (2035) to ensure supply reliability and safety is maintained. In conjunction with the existing asset renewal need, these circuits were identified to have a capacity need via the Central & South Bulk study and System Impact Assessments by IESO and recently announced in the *Energy For Generations*[1] report issued by the Ministry of Energy and Mines (June 2025) as a key investment to facilitate growth in the province and strengthen the north-south electricity corridor (more information in section 7.3.2). The in-service date requested in the report precedes the asset renewal upgrade timeline and the upgrade will naturally replace existing components installed on the line. It is recommended this need requires further coordination. The expected in-service date is 2029.

7.2 Station Capacity Needs

A Station Capacity assessment was performed over the study period 2024-2034 for the 230kV and 115kV Transforming stations in the **South Georgian Bay - Muskoka** Region using the summer and winter peak load forecasts that were provided by the Technical Working Group. Based on the results, the following Station capacity needs have been identified during the study period:

7.2.1 Alliston TS (T3/T4)

Alliston TS (T3/T4) is a 230-44kV 50-83MVA Step Down transformer station supplied by the E8V/E9V circuits. This station presently has a summer 10-day LTR of 100MW and will exceed its normal supply capacity in 2032 based on the summer demand forecast.

Previous regional planning cycle identified these transformers would be replaced in 2030, however Hydro One has since revised its assessment on the condition of these units and delayed the replacement outside of the study period to 2040.

It is recommended the capacity need be assessed and reaffirmed in the next phase of this regional planning cycle.

7.2.2 Everett TS (T1/T2)

Everett TS (T1/T2) is a 230-44kV 50-83MVA Step Down transformer station supplied by the E8V/E9V circuits. This station presently has a 10-day LTR of 107MW (sum) and 115MW (win) and will exceed its normal supply capacity in 2030 and 2033 respectively.

As a result of the findings in the previous cycle RIP, Hydro One modified the CT ratio of the low voltage transformer breaker CTs to increase the station capacity. This was completed in 2024 and helped to defer

[1] https://www.ontario.ca/page/energy-generations

a capacity need identified in the previous cycle. Everett TS load forecast continues to grow and irrespective of the recent modifications, station capacity needs continue to exist within the study period.

It is recommended this need be assessed and reaffirmed in the next phase of this regional planning cycle.

7.2.3 Midhurst TS (T1/T2)

Midhurst TS (T1/T2) is a 230-44kV 75-125MVA Step Down transformer station supplied by the M6E/M7E circuits. This station presently has a 10-day LTR of 162MW (sum) and will exceed its normal supply capacity in 2030 based on the summer demand forecast.

It is recommended this need be assessed and reaffirmed in the next phase of this regional planning cycle.

7.2.4 Midhurst TS (T3/T4)

Midhurst TS (T3/T4) is a 230-44kV 75-125MVA Step Down transformer station supplied by the M6E/M7E circuits. This station presently has a 10-day LTR of 149MW (sum) and will exceed its normal supply capacity in 2029 based on the summer demand forecast.

It is recommended this need be assessed and reaffirmed in the next phase of this regional planning cycle.

7.3 Transmission Lines Capacity Needs

All line and equipment loads shall be within their continuous ratings with all elements in service and within their long-term emergency ratings with any one element out of service. Immediately following contingencies, lines may be loaded up to their short-term emergency ratings where control actions such as re-dispatch, switching, etc. are available to reduce the loading to the long-term emergency ratings. A Transmission Lines Capacity Assessment was performed over the study period 2025-2034 for the 230kV and 115kV Transmission line circuits in the South Georgian Bay - Muskoka Region by assessing thermal limits of the circuit and the voltage range as per ORTAC to cater this need. Based on the results, the following line capacity needs have been identified during the study period:

7.3.1 230kV - M6E/M7E

The M6E/M7E circuits are 230kV transmission lines forming a critical path between Essa TS and Minden TS. Two sections of this circuit (Essa x Midhurst) and (Coopers Fls JCT x Minden) both exceed their Long Term Emergency (LTE) supply capacity during the study period and will require mitigating solutions to allow for increased flow. These needs were also documented in the previous cycle of regional planning and the TWG recommended to continue to monitor loading. Flows on this path are heavily influenced by area load and generation both within and outside of the SGB-Muskoka region.

It is recommended this need to be further explored in the next phase of this regional planning cycle.

7.3.2 230 kV - E8V/E9V

E8V/E9V circuits are 230kV transmission lines forming a critical path between Essa TS and Orangeville TS. These circuits supply customer transformer stations, carry system flows, and are incorporated into the FETT (Flow East Toward Toronto) interface limits. Based on the coincident load forecast, the Essa TS x Alliston JCT line section will exceed its supply capacity during the study period and will require mitigating solutions to allow for increased flows. This finding incorporates a higher growth scenario with the prospect of large industrial connected loads to be connected on the circuits.

In conjunction with the identified capacity need, these circuits were recently announced in the *Energy For Generations*[2] report issued by the Ministry of Energy and Mines (June 2025) as a key investment to facilitate growth in the province and strengthen the north-south electricity corridor. Also based on asset condition assessment, this line section requires conductor refurbishment at the end of the study period (2035) to ensure supply reliability and safety is maintained.

This investment to upgrade these circuits is presently underway with an in-service date planned for 2029. This investment will address the supply capacity needs identified above, including asset replacement. No further regional coordination is required.

7.3.3 115kV Circuits

No Supply capacity needs on 115kV circuit were identified during the study period.

[2] https://www.ontario.ca/page/energy-generations

7.4 System Reliability, Operation and Restoration Needs

The transmission system must be planned to satisfy demand levels up to the extreme weather, median-economic forecast for an extended period with any one transmission element out of service.

Operational needs presented to the TWG consisted of two legacy concerns: Load restoration (M6E/M7E) and Long Term Emergency (LTE) overloading (M6E/M7E)

Load Restoration criteria continue to be respected in the region and were recently addressed by the installation of 230kV motorized in-line switches on the M6E/M7E circuits. Thermal overloading has also been reaffirmed in this Needs Assessment and will be further studied in future stages of regional planning.

Additional operational concerns on area interface limits on the CLAN (Claireville Area North) and FN (Flow North) limits were identified. The TWG acknowledges that increased flows in the overall area impact operational limits, however this will be further assessed in bulk area studies outside of regional planning.

Given the above needs have either already been identified or will be studied outside of this process, no other new significant system reliability, operating and restoring issues have been identified for this Region.

8. SENSITIVITY ANALYSIS

The objective of a sensitivity analysis is to capture uncertainty in the load forecast as well as variability of electric demand drivers to identify any emerging needs and/or advancement or deferment of recommended investments. The TWG determined that the key electric demand driver in the South Georgian Bay - Muskoka region to be considered in this sensitivity analysis is electric vehicle (EV) penetration and unforeseen electrification which would cause the load to increase at a faster rate than shown in the forecast; or the potential delay in some projects which could result in less demand than anticipated.

The TWG reviewed EV scenarios, and any unforeseen electrification needs to develop high demand growth forecasts by applying 50% additional growth to the growth rate on the extreme summer/winter corrected Normal Growth net load forecasts. The low growth scenario was obtained by reducing the growth rate by 50%.

Table 5: Impact of Sensitivity Analysis on Station/Line capacity Needs in the Region

		Summer Growth Scenario			Winter Growth Scenario		
Sr.no.	Need Identified	Low	Normal	High	Low	Normal	High
1	Alliston (T3/T4)	-	2032	2028	-	-	2033
2	Alliston (T2)	-	-	-	-	-	-
3	Barrie (T3/T4)	-	2031	2028	-	-	-
4	Beaverton (T3/T4)	-	-	-	-	-	-
5	Bracebridge (T1)	-	-	-	-	-	-
6	Everett (T1/T2)	-	2030	2027	-	2033	2029
7	Lindsay (T1/T2)	-	-	2034	-	-	2032
8	Meaford (T1/T2)	-	-	-	-	-	
9	Midhurst (T1/T2)	-	2030	2028	-	-	2032
10	Midhurst (T3/T4)	-	2029	2027	-	-	-
11	Minden (T1/T2)	-	-	-	-	-	-
12	Muskoka (T1/T2)	-	-	2030	-	-	2031
13	Orangeville (T1/T2)	-	-	2030	-	-	2034
14	Orangeville (T3/T4)	-	-	-	-	-	-
15	Orillia (T1/T2)	-	-	-	-	-	-
16	Parry Sound (T1/T2)	-	-	-	-	-	-
17	Stayner (T3/T4)	-	-	-	-	-	-
18	Wallace (T3/T4)	-	-	2029	-	-	2030
19	Waubashene (T5/T6)	2030	2028	2026	2034	2028	2028

The sensitivity analysis identified the additional capacity needs at the end of the study period. High growth scenario forecasts introduce additional supply capacity needs at Lindsay TS, Midhurst TS, Muskoka TS, and Wallace TS. These needs will be assessed again during the next phase of this Regional Planning cycle.

9. CONCLUSION AND RECOMMENDATION

The Technical Working Group's recommendations to address the needs identified are as follows:

Table 6: Needs that Require Further Regional Coordination

#	Need Location	Need Description
1	M6E/M7E (Supply Capacity)	Supply Capacity need identified on (Essa x Midhurst, Minden x Coopers Fls JCT). Further coordination is required to reaffirm need, solution and timing.
2	Alliston T3/T4 (Supply Capacity)	Alliston TS (T3/T4) is a 230-44kV 83MVA transformer station and will exceed its normal supply capacity within the study period. Further coordination is required to reaffirm need, solution and timing.
3	Everett T1/T2 (Supply Capacity)	Everett TS (T3/T4) is a 230-44kV 83MVA transformer station and will exceed its normal supply capacity within the study period. Further coordination is required to reaffirm need, solution and timing.
4	Midhurst T1/T2, T3/T4 (Supply Capacity)	Midhurst TS (T1/T2) and (T3/T4) are 230-44kV 125MVA transformer stations and will both exceed their normal supply capacity within the study period. Further coordination is required to reaffirm need, solution and timing.
5	Claireville Area North and Flow North	Operational issues identified, will be studied in Bulk System Plan

Table 7: Needs that Do Not Require Further Regional Coordination

#	Need Location	Need Description
6	E8V/E9V (Asset Renewal + Supply Capacity)	Essa TS x Orangeville TS line section will be upgraded as per Ministry of Energy's – Energy for Generations report. This upgrade planned for 2029 will resolve supply capacity need identified on section (Essa x Alliston JCT) and asset renewal needs. Further coordination is not required.

List of LDC(s) to be involved in further regional planning phases:

- Alectra Utilities Corporation (Alectra)
- Hydro One Distribution
- InnPower
- Orangeville Hydro
- Elexicon Energy
- Lakeland Power
- EPCOR Electricity Distribution Ontario Inc
- NT Power Distribution
- Wasaga Distribution Inc.

List of LDC(s) which are not required to be involved in further regional planning phases:

- n/a

10. REFERENCES

[1] Independent Electricity System Operator, Ontario Resource and Transmission Assessment Criteria (issue 5.0 August 22, 2007)

[2] Ontario Energy Board, Transmission System Code (issue July 14, 2000 rev. March 31, 2025)

[3] Ontario Energy Board, Distribution system Code (issue July 14, 2000 rev. August 14, 2025)

[4] Ontario Energy Board, Load Forecast Guideline for Ontario (issue October 13, 2022)

[5] Hydro One Networks Inc, South Georgian Bay-Muskoka Regional Infrastructure Plan (RIP) (issue December 22, 2022)

Appendix A: Extreme Summer/Winter Weather Adjusted Net Load Forecast

Table A.1:

South Georgian Bay - Muskoka Non-Coincident- Normal Growth Net Load Forecast (Sum) MW

Station	DESN ID	LTR (MVA)	LTR(MW)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Alliston TS	T2	83	75	40	38	39	51	61	60	59	59	58	58	57
Alliston TS	T3/T4	111	100	75	78	81	84	88	91	95	99	103	107	111
Barrie TS	T3/T4	179	170	87	110	120	131	138	146	162	177	189	200	210
Beaverton TS	T3/T4	203	193	72	59	60	61	63	64	68	70	71	73	75
Bracebridge TS	T1	83	75	35	38	39	39	39	40	40	41	41	42	42
Everett TS	T1/T2	119	107	82	85	90	95	100	106	113	120	127	134	142
Lindsay TS	T1/T2	169	161	76	68	71	74	77	80	89	93	97	101	106
Meaford TS	T1/T2	55	52	33	33	33	33	34	34	34	34	35	35	35
Midhurst TS	T1/T2	171	162	124	125	132	137	132	144	163	165	166	175	177
Midhurst TS	T3/T4	166	149	114	114	116	131	135	150	154	157	161	166	170
Minden TS	T1/T2	138	124	48	44	44	44	44	44	47	47	47	47	48
Muskoka TS	T1/T2	178	169	128	131	135	138	141	145	148	152	156	159	163
Orangeville TS	T1/T2	128	115	74	76	78	81	84	87	91	94	97	101	105
Orangeville TS	T3/T4	180	171	93	93	95	97	98	100	103	105	107	109	111
Orillia TS	T1/T2	162	154	102	87	88	90	91	93	109	111	112	114	116
Parry Sound TS	T1/T2	128	115	51	52	54	55	56	58	59	61	62	63	65
Stayner TS	T3/T4	191	181	128	126	126	126	126	127	128	128	129	129	130
Wallace TS	T3/T4	54	49	42	42	42	43	43	44	44	45	46	46	47
Waubaushene TS	T5/T6	99	94	97	89	92	94	96	98	105	108	110	113	116

Table A.2:

South Georgian Bay - Muskoka – Coincident – Normal Growth Net Load Forecast – (Sum) MW

Station	DESN ID	LTR (MVA)	LTR(MW)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Alliston TS	T2	83	75	22	38	39	51	61	60	59	59	58	58	57
Alliston TS	T3/T4	111	100	72	75	78	81	84	87	91	95	99	103	107
Barrie TS	T3/T4	179	170	65	67	70	73	77	80	84	88	92	96	101
Beaverton TS	T3/T4	203	193	70	57	58	59	61	62	66	67	69	71	73
Bracebridge TS	T1	83	75	29	29	29	29	30	30	30	31	31	31	32
Everett TS	T1/T2	119	107	77	80	85	89	94	100	106	112	119	126	134
Lindsay TS	T1/T2	169	161	66	57	60	63	66	69	77	80	84	87	91
Meaford TS	T1/T2	55	52	31	30	30	30	30	30	30	30	30	30	30
Midhurst TS	T1/T2	171	162	113	109	113	116	121	125	134	139	144	149	155
Midhurst TS	T3/T4	166	149	105	72	74	76	79	81	83	86	89	91	94
Minden TS	T1/T2	138	124	37	33	33	33	33	33	36	37	37	37	37
Muskoka TS	T1/T2	178	169	120	104	105	108	110	111	119	121	123	125	128
Orangeville TS	T1/T2	128	115	37	37	38	40	41	42	44	46	48	49	51
Orangeville TS	T3/T4	180	171	88	88	89	91	92	94	97	99	101	103	105
Orillia TS	T1/T2	162	154	95	79	81	82	84	85	101	103	104	106	108
Parry Sound TS	T1/T2	128	115	47	43	44	45	47	47	49	50	51	51	52
Stayner TS	T3/T4	191	181	125	123	123	123	123	123	125	125	125	126	127
Wallace TS	T3/T4	54	49	31	31	31	32	32	32	33	33	34	34	35
Waubaushene TS	T5/T6	99	94	96	88	90	92	94	97	104	106	109	112	114

Table A.3:

South Georgian Bay - Muskoka Region Non-Coincident–High Growth Net Load Forecast (Sum) MW

Station	DESN ID	LTR (MVA)	LTR(MW)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Alliston TS	T2	83	75	40	38	39	51	61	60	59	59	58	58	57
Alliston TS	T3/T4	111	100	75	81	87	94	102	110	118	128	138	149	161
Barrie TS	T3/T4	179	170	87	110	128	148	172	199	231	268	311	361	419
Beaverton TS	T3/T4	203	193	72	65	74	83	94	105	121	135	151	170	190
Bracebridge TS	T1	83	75	35	38	39	41	42	43	44	46	47	48	50
Everett TS	T1/T2	119	107	82	91	102	115	130	147	166	187	211	239	270
Lindsay TS	T1/T2	169	161	76	71	79	87	95	105	120	131	144	157	172
Meaford TS	T1/T2	55	52	33	33	34	35	35	36	37	37	38	39	40
Midhurst TS	T1/T2	171	162	124	134	145	156	169	182	197	212	229	248	268
Midhurst TS	T3/T4	166	149	114	125	138	151	167	183	202	222	244	268	295
Minden TS	T1/T2	138	124	48	44	45	45	45	46	50	50	51	51	52
Muskoka TS	T1/T2	178	169	128	135	141	148	155	162	170	178	187	196	205
Orangeville TS	T1/T2	128	115	74	79	85	92	99	107	115	125	134	145	157
Orangeville TS	T3/T4	180	171	93	96	101	105	110	116	122	128	135	141	148
Orillia TS	T1/T2	162	154	102	89	93	97	102	106	126	131	136	142	148
Parry Sound TS	T1/T2	128	115	51	54	57	59	62	65	69	72	76	80	83
Stayner TS	T3/T4	191	181	128	128	130	132	135	137	141	144	147	150	153
Wallace TS	T3/T4	54	49	42	43	44	46	47	49	51	52	54	56	58
Waubaushene TS	T5/T6	99	94	98	90	96	101	107	114	121	128	136	144	152

Table A.4:

South Georgian Bay – Muskoka Coincident High Growth Net Load Forecast (Sum) MW

Station	DESN ID	LTR (MVA)	LTR(MW)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Alliston TS	T2	83	75	22	38	39	51	61	60	59	59	58	58	57
Alliston TS	T3/T4	111	100	72	76	80	85	90	96	102	108	114	121	128
Barrie TS	T3/T4	179	170	65	69	75	81	87	94	101	109	118	128	138
Beaverton TS	T3/T4	203	193	70	58	61	64	67	70	76	79	83	87	91
Bracebridge TS	T1	83	75	29	29	30	30	31	31	32	33	33	34	35
Everett TS	T1/T2	119	107	77	82	90	97	106	115	126	137	149	162	177
Lindsay TS	T1/T2	169	161	66	59	63	67	72	77	87	92	98	105	112
Meaford TS	T1/T2	55	52	31	31	31	31	31	32	32	33	33	33	34
Midhurst TS	T1/T2	171	162	113	110	116	122	129	135	147	155	163	171	180
Midhurst TS	T3/T4	166	149	105	74	77	81	85	89	94	99	104	109	114
Minden TS	T1/T2	138	124	37	33	34	34	34	35	38	39	39	40	40
Muskoka TS	T1/T2	178	169	120	104	107	110	113	115	124	127	129	132	136
Orangeville TS	T1/T2	128	115	37	38	40	42	45	47	51	54	57	60	64
Orangeville TS	T3/T4	180	171	88	89	93	96	100	104	108	113	117	122	127
Orillia TS	T1/T2	162	154	95	81	84	86	89	92	110	113	117	121	125
Parry Sound TS	T1/T2	128	115	47	44	46	47	50	51	54	56	57	59	61
Stayner TS	T3/T4	191	181	125	125	127	129	131	134	137	140	143	146	149
Wallace TS	T3/T4	54	49	31	31	32	33	34	35	36	37	39	40	41
Waubaushene TS	T5/T6	99	94	96	90	94	97	102	106	115	120	125	131	136

Table A.5:

South Georgian Bay - Muskoka Non-Coincident- Normal Growth Net Load Forecast (Winter) MW

Station	DESN ID	LTR (MVA)	LTR(MW)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Alliston TS	T2	83	75	34	31	31	44	55	55	55	55	55	55	55
Alliston TS	T3/T4	128	115	59	61	64	66	69	71	74	77	80	84	87
Barrie TS	T3/T4	190	181	93	93	97	102	107	112	124	135	144	152	159
Beaverton TS	T3/T4	224	213	82	82	84	86	88	90	92	94	97	99	101
Bracebridge TS	T1	83	75	40	40	41	41	42	42	43	43	44	44	45
Everett TS	T1/T2	128	115	68	72	77	81	86	92	98	104	110	118	125
Lindsay TS	T1/T2	192	182	100	102	107	111	115	120	125	129	134	140	145
Meaford TS	T1/T2	61	58	42	44	44	43	44	44	47	47	46	46	46
Midhurst TS	T1/T2	193	183	126	125	131	136	130	141	153	153	153	160	161
Midhurst TS	T3/T4	191	172	94	90	92	93	95	97	99	100	102	104	106
Minden TS	T1/T2	146	131	57	53	53	53	53	54	58	58	58	58	59
Muskoka TS	T1/T2	209	199	157	147	150	154	157	159	164	167	170	173	176
Orangeville TS	T1/T2	145	131	60	59	62	66	69	73	77	81	84	88	92
Orangeville TS	T3/T4	198	188	104	102	104	108	110	113	118	121	123	126	129
Orillia TS	T1/T2	184	175	107	99	101	103	105	107	118	120	123	125	128
Parry Sound TS	T1/T2	135	122	64	62	64	65	68	68	71	72	73	74	75
Stayner TS	T3/T4	213	202	153	149	149	150	151	151	157	158	159	160	161
Wallace TS	T3/T4	60	54	44	45	45	46	47	48	49	49	50	51	52
Waubaushene TS	T5/T6	109	104	88	93	94	94	107	108	108	108	109	109	110

Table A.6:

South Georgian Bay - Muskoka – Coincident – Normal Growth Net Load Forecast – (Winter) MW

Station	DESN ID	LTR (MVA)	LTR(MW)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Alliston TS	T2	83	75	11	31	31	44	55	55	55	55	55	55	55
Alliston TS	T3/T4	128	115	51	53	55	57	59	61	64	66	69	72	75
Barrie TS	T3/T4	190	181	51	53	54	56	57	59	60	62	64	65	67
Beaverton TS	T3/T4	224	213	81	81	83	85	87	89	91	93	95	97	100
Bracebridge TS	T1	83	75	32	33	33	34	34	34	35	35	35	36	36
Everett TS	T1/T2	128	115	65	68	73	77	82	87	93	99	105	112	119
Lindsay TS	T1/T2	192	182	90	92	95	99	103	107	111	116	120	125	130
Meaford TS	T1/T2	61	58	38	35	35	35	35	35	38	37	37	37	37
Midhurst TS	T1/T2	193	183	114	118	121	125	129	132	135	139	143	147	152
Midhurst TS	T3/T4	191	172	94	96	98	99	101	103	105	106	108	110	113
Minden TS	T1/T2	146	131	56	52	52	53	53	53	57	57	58	58	58
Muskoka TS	T1/T2	209	199	136	126	128	132	135	137	141	144	146	149	152
Orangeville TS	T1/T2	145	131	34	32	34	37	39	41	44	46	48	50	52
Orangeville TS	T3/T4	198	188	99	96	99	102	104	107	112	115	117	120	123
Orillia TS	T1/T2	184	175	107	98	100	102	105	106	118	120	122	124	127
Parry Sound TS	T1/T2	135	122	58	56	57	58	61	62	63	64	65	67	68
Stayner TS	T3/T4	213	202	153	149	149	150	151	151	157	158	159	160	161
Wallace TS	T3/T4	60	54	38	38	39	40	40	41	42	42	43	44	45
Waubaushene TS	T5/T6	109	104	86	88	90	91	93	95	96	98	100	102	104

Table A.7:

South Georgian Bay - Muskoka Region Non-Coincident – High Growth Net Load Forecast (Winter) MW

Station	DESN ID	LTR (MVA)	LTR(MW)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Alliston TS	T2	83	75	34	31	31	44	55	55	55	55	55	55	55
Alliston TS	T3/T4	128	115	59	64	69	74	80	87	94	102	110	119	129
Barrie TS	T3/T4	190	181	93	99	104	111	117	124	132	140	148	157	167
Beaverton TS	T3/T4	224	213	82	85	89	94	99	104	109	115	121	128	135
Bracebridge TS	T1	83	75	40	41	43	44	45	47	48	50	51	53	55
Everett TS	T1/T2	128	115	68	77	87	98	111	125	141	160	181	205	232
Lindsay TS	T1/T2	192	182	100	107	116	125	136	147	159	172	186	202	219
Meaford TS	T1/T2	61	58	42	43	44	45	46	46	47	48	49	50	51
Midhurst TS	T1/T2	193	183	126	135	133	141	150	158	168	178	189	201	214
Midhurst TS	T3/T4	191	172	94	100	106	112	119	126	133	141	150	159	168
Minden TS	T1/T2	146	131	57	53	54	54	55	56	60	61	62	63	63
Muskoka TS	T1/T2	209	199	157	151	158	166	174	181	191	199	208	217	227
Orangeville TS	T1/T2	145	131	60	62	68	76	83	90	100	109	119	130	142
Orangeville TS	T3/T4	198	188	104	105	110	117	123	130	139	147	154	162	171
Orillia TS	T1/T2	184	175	107	101	106	111	116	121	136	142	148	154	161
Parry Sound TS	T1/T2	135	122	64	64	67	70	75	78	82	85	89	93	97
Stayner TS	T3/T4	213	202	153	151	154	157	161	165	173	177	180	185	189
Wallace TS	T3/T4	60	54	44	46	48	50	52	54	56	58	61	64	66
Waubaushene TS	T5/T6	109	104	88	92	97	101	106	112	117	123	129	136	143

Table A.8:

South Georgian Bay – Muskoka Coincident High Growth Net Load Forecast (Winter) MW

Station	DESN ID	LTR (MVA)	LTR(MW)	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Alliston TS	T2	83	75	11	31	31	44	55	55	55	55	55	55	55
Alliston TS	T3/T4	128	115	51	54	57	60	64	68	72	77	81	86	92
Barrie TS	T3/T4	190	181	51	54	57	60	63	66	69	73	77	81	85
Beaverton TS	T3/T4	224	213	81	82	86	90	94	97	101	106	110	115	120
Bracebridge TS	T1	83	75	32	33	34	35	35	36	37	38	38	39	40
Everett TS	T1/T2	128	115	65	70	77	83	91	99	108	118	129	141	154
Lindsay TS	T1/T2	192	182	90	94	100	106	113	120	127	135	144	153	163
Meaford TS	T1/T2	61	58	38	35	36	36	37	37	40	41	41	42	42
Midhurst TS	T1/T2	193	183	114	120	127	134	141	147	155	163	171	180	190
Midhurst TS	T3/T4	191	172	94	98	102	107	111	115	120	125	130	136	142
Minden TS	T1/T2	146	131	56	53	54	56	57	58	64	65	66	68	70
Muskoka TS	T1/T2	209	199	136	129	135	143	150	156	165	172	179	188	196
Orangeville TS	T1/T2	145	131	34	33	35	39	41	44	48	51	54	58	61
Orangeville TS	T3/T4	198	188	99	98	102	108	113	117	125	130	136	142	148
Orillia TS	T1/T2	184	175	107	100	103	107	111	115	128	132	136	140	145
Parry Sound TS	T1/T2	135	122	58	56	58	59	62	63	66	67	69	70	72
Stayner TS	T3/T4	213	202	153	151	154	157	161	165	173	177	180	185	189
Wallace TS	T3/T4	60	54	38	39	40	41	43	44	45	47	48	50	52
Waubaushene TS	T5/T6	109	104	86	89	92	95	98	101	104	107	111	115	118

Appendix B: Lists of Step-Down Transformer Stations

No.	Transformer Station	Voltage (kV)	Supply Circuits
1	Alliston TS	230/44	E8V/E9V
2	Barrie TS	230/44	E28/E29
3	Beaverton TS	230/44	M80B/M81B
4	Bracebridge TS	230/44	M6E
5	Everett TS	230/44	E8V/E9V
6	Lindsay TS	230/44	M80B/M81B
7	Meaford TS	230/44	S2S
8	Midhurst TS	230/44	M6E/M7E
9	Minden TS	230/44	Minden TS
10	Muskoka TS	230/44	M6E/M7E
11	Orangeville TS	230/44/27.6	Orangeville TS
12	Orillia TS	230/44	M6E/M7E
13	Parry Sound TS	230/44	E26/E27
14	Stayner TS	230/115/44	E20S/E21S
15	Wallace TS	230/44	D2M/D4M
16	Waubaushene TS	230/44	E26/E27

Appendix C: Lists of Transmission Circuits

No.	Connecting Stations		Circuit ID	Voltage (kV)
1.	Essa TS	Stayner TS	E20/E21S	230
2.	Essa TS	Parry Sound TS	E26/E27	230
3.	Essa TS	Minden TS	M6E/M7E	230
4.	Minden TS	Des Joachims TS	D1M/D2M	230
5.	Minden TS	Des Joachims TS	D3M/D4M	230
6.	Minden TS	Brown Hill TS	M80B/M81B	230
7.	Essa TS	Barrie TS	E28/E29	230
8.	Stayner TS	Owen Sound TS	S2S	115

Appendix D: List of LDC's

No.	Name of LDC
1	Hydro One Distribution
2	Alectra Utilities
3	InnPower
4	Orangeville Hydro
5	Elexicon Energy
6	Lakeland Power
7	EPCOR Electricity Dist. Ontario Inc.
8	NT Power Distribution Ltd.
9	Wasaga Distribution Inc.

Appendix E: List of Municipalities in the South Georgian Bay - Muskoka Region

	Name of Municipality				
1	City of Barrie	19	Town of Kearney	37	Township of McKellar
2	City of Kawartha Lakes	20	Town of Midland	38	Township of McMurich
3	City of Orillia	21	Town of Midland	39	Township of Mulmur
4	County of Haliburton	22	Town of Mono	40	Township of Muskoka Lakes
5	Grey Highlands	23	Town of New Tecumseth	41	Township of Nipissing
6	Municipality of Callander	24	Town of Orangeville	42	Township of Perry
7	Municipality of Magnetawan	25	Town of Parry Sound	43	Township of Ryerson
8	Municipality of Meaford	26	Town of Penetanguishene	44	Township of Seguin
9	Municipality of Powassan	27	Town of Shelburne	45	Township of Severn
10	Municipality of Whitestone	28	Town of Wasaga Beach	46	Township of Southgate
11	Owen Sound	29	Township of Armour	47	Township of Springwater
12	South Gate	30	Township of Carling	48	Township of Strong
13	Town of Bracebridge	31	Township of Clearwater	49	Township of The Archipelago
14	Town of Collingwood	32	Township of Essa	50	Township of Tiny
15	Town of Gravenhurst	33	Township of Georgian Bay	51	Village of Burk Falls
16	Town of Huntsville	34	Township of Georgian Bluffs	52	Village of South River
17	Town of Innisfil	35	Township of Lake of Bays	53	Village of Sundridge
18	Town of Joly	36	Township of McDougall		

Appendix D: Acronyms

Acronym	Description
A	Ampere
BES	Bulk Electric System
BPS	Bulk Power System
CDM	Conservation and Demand Management
CEP	Community Energy Plan
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

Acronym	Description
MEP	Municipal Energy Plan
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
RAS	Remedial Action Scheme
SS	Switching Station
TS	Transformer Station