

A tall, black metal lattice tower for a high-voltage power line stands in the center of the frame. The tower has several horizontal cross-arms with insulators and power lines extending from them. The background is a dense forest of green trees under a blue sky with scattered white clouds. The overall scene is captured from a low angle, looking up at the tower.

**REGIONAL INFRASTRUCTURE PLAN
REPORT
TORONTO**

Regional Infrastructure Plan Report

Toronto

May 27, 2026

Lead Transmitter:

Hydro One Networks Inc.

Prepared by:

Toronto Technical Working Group



Page intentionally left blank

Disclaimer

This Regional Infrastructure Plan (RIP) Report for Toronto region was prepared for the purpose of developing an electricity infrastructure plan to address electrical supply needs identified in previous planning phases and also any additional needs identified based on new and/or updated information provided by the RIP Technical Working Group (TWG).

The preferred solution(s) that have been recommended in this report may be reevaluated based on the findings of further analysis. The load forecast and results reported in this RIP report are based on the information provided and assumptions made by the participants of the RIP TWG at the time.

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 Regional Infrastructure Plan Report was prepared (“the Intended Third Parties”) or to any other third party reading or receiving the Regional Infrastructure Plan 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 Toronto (the “Region”)

LEAD Hydro One Networks Inc. (“HONI”)

START DATE: November 28, 2025

END DATE: May 27, 2026

The Regional Infrastructure Plan (RIP) is the final step of Regional Planning Process for the Toronto region, preceded by, the publication of Needs Assessment (NA) report in December 2022 by Hydro One followed by the Scoping Assessment (SA) & Integrated Regional Resource Plan (IRRP) which were published in March 2023 and in October 2025 respectively, by the Independent Electricity System Operator (IESO).

Hydro One as the lead transmitter undertakes the development of a RIP with input from the Technical Working Group (TWG) for the region (includes representatives from Hydro One Transmission, IESO and LDCs) and publishes a RIP report. The RIP report includes a discussion of all options and plans identified in earlier phases and recommends a preferred wires plan to address the near, medium, and long - term needs over a twenty-year study period.

The objectives and scope of the RIP are:

- A consolidated report of the needs and relevant wires plans to address near and medium-term needs (2026-2035) identified in previous planning phases (i.e., Needs Assessment, Scoping Assessment, Local Plan, or Integrated Regional Resource Plan).
- Identify any new need(s) over the 2026-2035 period that may have emerged since previous planning phases. Assess and develop wires plans to address these new needs.
- Identify investments in transmission and distribution facilities or both that should be developed and implemented on a coordinated basis to meet the electricity infrastructure needs within the region.
- Consideration of long-term needs identified in the Toronto IRRP, Bulk system studies or as identified by the TWG.

The TWG agreed to adopt the IRRP load forecast for the RIP study because no material changes were identified. For shared stations that also serve Alectra or Elexicon, additional load has been incorporated into the forecasts based on inputs provided by the LDCs. Municipal plans were considered in developing the LDC forecasts, and additional municipal input on future load growth was obtained through the IRRP stakeholder engagement process.

The list of major infrastructure investments recommended by the TWG in the region for the next 10 years is given below. The needs include those previously identified in the NA and IRRP, as well as any new needs identified during the RIP phase, if any.

Station/Circuit Name	Recommended Plan	Lead	Planned ISD
Asset Renewal Needs			
Basin TS	Transformers T3/T5 replacement*	Hydro One	2030
Manby TS	Autotransformers (T7, T9, T12) replacement, Step-down transformer (T13/T14) replacement*(NEW)	Hydro One	2030 2033
Leslie TS	Transformer T1, T4 replacement (T4 NEW)	Hydro One	2032
Dufferin TS	Transformer T2 replacement* (NEW)	Hydro One	2032
Cecil TS	115kV Switchgear replacement (NEW)	Hydro One	2032
Bermondsey TS	Transformers T3/T4 replacement	Hydro One	2033
Strachan TS	Transformers T13/T15 replacement*	Hydro One	2033
Agincourt TS	Transformers T5/T6 replacement (NEW)	Hydro One	2033
Terauley TS	Transformers T1/T2/T3/T4 replacement (NEW)	Hydro One	2033
Carlaw TS	Transformers T1/T2 replacement* (NEW)	Hydro One	2033
Rexdale TS	Transformer T2 replacement (NEW)	Hydro One	2033
John TS	Transformer T3 replacement* (NEW)	Hydro One	2033
Duplex TS	Transformers T1/T2 & T3/T4 replacement*	Hydro One	2034
Fairchild TS	Transformers T1 & T3/T4 replacement	Hydro One	2034
Warden TS	Transformer T4 replacement (NEW)	Hydro One	2035
Finch TS	Transformer T1 replacement (NEW)	Hydro One	2035
H1L/H3L/H6LC/H8LC	Leaside Jct. X Bloor St. Jct. – Overhead line section renewal	Hydro One	2031
L9C/L12C	Leaside TS X Balfour Jct. – Overhead line section renewal	Hydro One	2031
H1L/H3L & H2JK	Underground cable replacement (NEW)	Hydro One	2035

*Transformers to be replaced with higher rated standard units.

Station/Circuit Name	Recommended Plan	Lead	Planned ISD	Budgetary Cost (\$M) ^(c)
Station Capacity Needs				
Bathurst TS & Finch TS	Connect Downsview MTS (Load Transfers to new Downsview MTS) - First DESN (Phase 1) - Second DESN (Phase 2)	THESL / Hydro One	2033 2039	\$135-155M ^(d)
Scarboro TS	Build third Scarboro TS DESN (Load Transfers to new Scarboro DESN)	Hydro One / THESL	2035	\$55-65M
Basin TS	Develop an expansion of Basin TS or add a new station in the area.	Hydro One / THESL	2035	\$55-65M
Sheppard TS	Expand T1/T2 DESN using the idle windings	Hydro One / THESL	2029	\$16M
Transformation Capacity Need				
Manby TS (West) Autotransformers	Load Transfer (Copeland T2/T4 to Leaside Supply) + Reliance on existing Manby Remedial Action Scheme	-	2026	-
Transmission Line Capacity Need				
Manby TS X Riverside Jct.: 115 kV Circuits	Upgrade capacity of 115 kV circuits	Hydro One	2029	\$25M
Richview TS X Manby TS: 230 kV Circuits	230 kV Corridor Reinforcement	Hydro One	2032	N/A ^(b)

Notes:

- a) The Planned In-Service dates are tentative and subject to change.
- b) The recommended plan to address the Richview TS x Manby TS corridor need is expected by Q4 2026 as part of the GTA West IRRP.
- c) Costs are tentative high-level budgetary planning estimates based on 2026 dollars and subject to change.
- d) Property procurement costs not included.

Table of Contents

1.	INTRODUCTION	12
2.	OBJECTIVES AND SCOPE OF REGIONAL INFRASTRUCTURE PLAN	13
3.	REGIONAL PLANNING PROCESS & RIP METHODOLOGY	14
3.1	Overview	14
3.2	Regional Infrastructure Plan Methodology	17
4.	REGIONAL DESCRIPTION AND CONNECTION CONFIGURATION	19
5.	TRANSMISSION FACILITIES COMPLETED IN THE LAST TEN YEARS AND/OR ARE UNDERWAY	23
6.	LOAD FORECAST AND STUDY ASSUMPTIONS	25
6.1.	Load Forecast	25
6.2.	Other Study Assumptions	27
7.	SYSTEM ADEQUACY AND REGIONAL NEEDS	28
7.1.	Asset Renewal Needs for Major HV Transmission Equipment	28
7.2.	Station Capacity Needs	30
7.3.	Transformation Capacity Needs	31
7.4.	Transmission Line Capacity Needs	32
7.5.	Long-Term Capacity Needs	33
8.	REGIONAL PLANS	34
8.1	Asset Renewal Needs for Major HV Transmission Equipment	36
8.1.1	Basin TS – T3/T5	36
8.1.2	Manby TS – T7/T9/T12 & T13/T14	36
8.1.3	Leslie TS – T1/T4	37
8.1.4	Dufferin TS – T2	37
8.1.5	Cecil TS – 115kV Switchgear	37
8.1.6	Bermondsey TS – T3/T4	38
8.1.7	Strachan TS – T13/T15	38
8.1.8	Agincourt TS – T5/T6	38
8.1.9	Terauley TS – T1/T2/T3/T4	39
8.1.10	Carlaw TS – T1/T2	39
8.1.11	Rexdale TS – T2	39

8.1.12	John TS – T3.....	39
8.1.13	Duplex TS – T1/T2/T3/T4	39
8.1.14	Fairchild TS – T1/T3/T4.....	40
8.1.15	Warden TS – T4	40
8.1.16	Finch TS – T1.....	40
8.1.17	H1L/H3L/H6LC/H8LC – Leaside Jct. X Bloor St. Jct.	40
8.1.18	L9C/L12C – Leaside TS X Balfour Jct.	41
8.1.19	H1L/H3L & H2JK – Underground Cable Replacement.....	42
8.2	Station Capacity Needs.....	43
8.2.1	Bathurst TS & Finch TS – 230 kV / 27.6 kV	44
8.2.2	Scarboro TS – 230 kV / 27.6 kV.....	45
8.2.3	Basin TS – 115 kV / 13.8 kV.....	46
8.2.4	Sheppard TS – 230 kV / 27.6 kV.....	46
8.3	Transformation Capacity Needs	47
8.3.1	Manby West – 230 / 115 kV Autotransformers	47
8.4	Transmission Lines Capacity Needs.....	49
8.4.1	K13J / K14J – 115 kV – Manby TS x Riverside Junction Overhead Line Upgrade	49
8.4.2	R1K / R2K / R13K / R15K – 230 kV – Richview TS x Manby TS.....	50
8.5	Long-Term Capacity Needs.....	51
8.5.1	Warden TS Capacity.....	51
8.5.2	Fairbank TS Capacity.....	51
8.5.3	Strachan TS Capacity	51
8.5.4	Dufferin TS Capacity	51
8.5.5	Glengrove TS Capacity	52
8.5.6	Manby TS DESN Switchyards Capacity	52
8.5.7	Fairchild TS Capacity	52
8.5.8	Leslie TS Capacity.....	52
8.5.9	Duplex TS Capacity	53
8.5.10	Main TS Capacity	53
8.5.11	Runnymede TS Capacity.....	53
8.5.12	Cherrywood TS X Leaside TS – 230kV Circuits and Leaside TS Autotransformer Capacity ...	53

8.5.13	Manby East – 230 / 115 kV Autotransformers.....	54
8.5.14	K1W/K3W (St. Clair Ave. Jct. X Fairbank TS) Capacity.....	54
8.5.15	Leaside TS X Wiltshire TS – 115kV Circuits Capacity	55
8.5.16	H1L/H3L Capacity – (Leaside TS X Bloor Jct.) and (Hearn SS X Basin TS) Sections	55
9.	CONCLUSION AND RECOMMENDATION	57
10.	REFERENCES.....	59
	Appendix A: Extreme Summer/Winter Weather Adjusted Net Load Forecast.....	60
	Appendix B: Lists of Step-Down Transformer Stations.....	64
	Appendix C: Lists of Transmission Circuits	66
	Appendix D: List of LDC's	67
	Appendix E: List of Municipalities in the Region.....	67
	Appendix F: Acronyms	68

List of Figures

Figure 3-1: Regional Planning Process Flowchart	16
Figure 3-2: Regional Infrastructure Plan Methodology	17
Figure 4-1: Map of Toronto Regional Planning Area	19
Figure 4-2: Geographical Area of East, North, and West 230 kV Area	20
Figure 4-3: Geographical Area of Central 115 kV Area (Manby and Leaside)	21
Figure 4-4: Toronto Transmission Single Line Diagram	22
Figure 6-1: Toronto region summer/winter Coincident Net Peak Load Forecast	26
Figure 6-2: Toronto region summer/winter Non-coincident Net Peak Load Forecast.....	26
Figure 8-1: Cecil TS located in Downtown Toronto	37
Figure 8-2: H1L/H3L/H6LC/H8LC – Leaside 34 Jct. X Bloor St. Jct. Section	41
Figure 8-3: L9C/L12C – Leaside TS X Balfour Jct. Section.....	42
Figure 8-4: H1L/H3L – Basin TS X Gerrard TS Section; H2JK – Basin TS X Don Fleet Jct. Section.....	43
Figure 8-5: Downsview Redevelopment Plan near Bathurst TS & Finch TS.....	44
Figure 8-6: Golden Mile Secondary Plan near Scarboro TS	45
Figure 8-7: Permanent Transfer of Copeland T2/T4 to the Leaside Supply.....	48

List of Tables

Table 1-1: Toronto region TWG Participants	12
Table 4-1: Transmission Station and Circuits in the Toronto region	22
Table 7-1: Major HV Transmission Asset assessed for Replacement in the region planned in next 10 years	29
Table 7-2: Toronto region Station Capacity Needs in next 10 years.....	30
Table 7-3: Toronto region Transformation Capacity Needs in next 10 years	31
Table 7-4: Toronto region Transmission Line Capacity Needs in next 10 years	32
Table 7-5: Toronto region Long-Term Capacity Needs in next 10-20 years	33
Table 8-1: Near/Mid-term Needs Identified in the region	34
Table 9-1: Recommended Plans over the next 10 Years	57

1. INTRODUCTION

The Regional Infrastructure Plan (RIP) is the final step of Regional Planning Process. Hydro One as the lead transmitter undertakes the development of a RIP with input from the Technical Working Group (TWG) for the region (includes representatives from Hydro One Transmission, IESO and LDCs) and publishes a RIP report. The third cycle of the Regional Planning process for the Toronto region was initiated with the publication of Needs Assessment (NA) and the report was published in December 2022 by Hydro One. This was followed by the Scoping Assessment (SA) & Integrated Regional Resource Plan (IRRP) which were published in March 2023 and in October 2025 respectively, by the Independent Electricity System Operator (IESO).

The RIP report includes a common discussion of all the options and recommended plans and preferred wire infrastructure investments identified in earlier phases to address the near- and medium-term needs.

This report was prepared by the Toronto TWG, led by Hydro One Networks Inc. The report presents the results of the assessment based on information provided by Hydro One, the Local Distribution Companies (LDC), the Municipalities and the IESO. Participants of the TWG are listed below in Table 1-1.

Table 1-1: Toronto region TWG Participants

Sr. no.	Name of TWG Participants
1	Hydro One Networks Inc. (Transmission)
2	Independent Electricity System Operator (IESO)
3	Toronto Hydro-Electric System Limited (“THESL”)
4	Hydro One Networks Inc. (Distribution)
5	Alectra Utilities Corporation (“Alectra”)
6	Elexicon Energy Inc. (“Elexicon”)

2. OBJECTIVES AND SCOPE OF REGIONAL INFRASTRUCTURE PLAN

This RIP report examines the needs in the Toronto region. Its objectives are to:

- Provide a comprehensive summary of needs and wires plans to address the needs for the Toronto region.
- Identify new supply needs that may have emerged since previous planning phases (e.g., Needs Assessment, Scoping Assessment, Local Plan, and/or Integrated Regional Resource Plan).
- Assess and develop wires plans to address these new needs.
- Identify investments in transmission and distribution facilities or both that should be developed and implemented on a coordinated basis to meet the electricity infrastructure needs within the region.

The RIP reviewed factors such as the load forecast, asset renewal for major high voltage transmission equipment, transmission and distribution system capability along with any updates with respect to local plans, Electricity Demand Side Management (“eDSM”) forecasts, renewable and non-renewable generation development, and other electricity system and local drivers that may impact the need and alternatives under consideration.

The scope of this RIP is as follows:

- A consolidated report of the needs and relevant wires plans to address near and medium-term needs 2026-2035 identified in previous planning phases (i.e., Needs Assessment, Scoping Assessment, Local Plan, or Integrated Regional Resource Plan).
- Identification of any new needs over the 2026-2035 period and wires plans to address these needs based on new and/or updated information.
- Consideration of long-term needs identified in the Toronto IRRP, Bulk system studies or as identified by the TWG.

3. REGIONAL PLANNING PROCESS & RIP METHODOLOGY

3.1 Overview

Bulk System Planning, Regional Planning and Distribution Planning are the three levels of planning for the electricity system in Ontario. Bulk system planning typically looks at issues that impact the system on a provincial level and requires longer lead time and larger investments. Comparatively, planning at the regional and distribution levels looks at issues on a more regional or localized level. Typically, the most essential and effective regional planning horizon is the near- to medium-term (1- 10 years), whereas long-term (10-20 years) regional planning mostly provides a future outlook with little details about investments because the needs and other factors may vary over time. On the other hand, bulk system plans are developed for the long term because of the larger magnitude of investments.

The regional planning process begins with a Needs Assessment which is led by the transmitter to identify, assess, and document which of the needs that,

- a) can be addressed directly between the customer and transmitter along with a recommended plan, and;
- b) require further regional coordination and identification of Local Distribution Companies (LDCs) to be involved in further regional planning activities for the region.

At the end of the NA, a decision is made by the TWG as to whether further regional coordination is necessary to address some or all the regional needs. If no further regional coordination is required, recommendation to implement the recommended option and any necessary investments are planned directly by the LDCs (or customers) and the transmitter. The region’s TWG can also recommend to the transmitter and LDCs to undertake a local planning process for further assessment when needs

- a) are local in nature,
- b) require limited investments in wires (transmission or distribution) solutions, and;
- c) do not require upstream transmission investments.

If coordination at the regional or sub-regional levels is required for identified regional needs, then the IESO initiates the SA phase. During this phase, the IESO, in collaboration with the transmitter and impacted LDCs, reviews the information collected as part of the NA phase, along with additional information on potential non-wires or resource alternatives, e.g., Electricity Demand Side Management (“eDSM”), Distributed Generation (DG), etc., in order to make a decision on the most appropriate regional planning approach including Local Plan (LP), IRRP and/or RIP.

The primary purpose of the IRRP is to identify and assess both resource and wires options at a higher or macro level, but sufficient to permit a comparison of resource options vs. wire infrastructure to address the needs. Worth noting, the LDCs’ eDSM targets as well as contracted DG plans provided by IESO and LDCs are reviewed and considered at each step in the regional planning process.

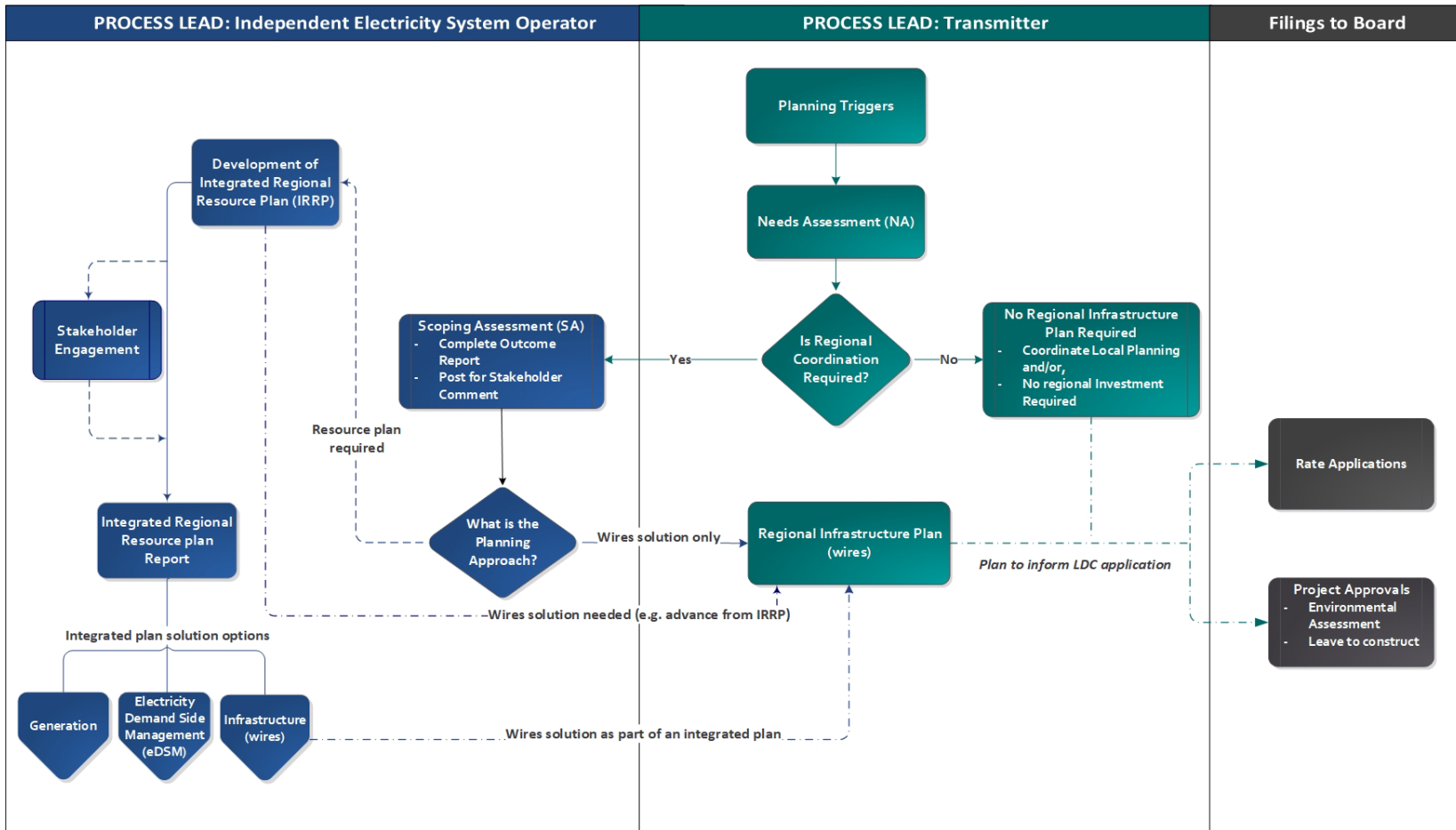
If and when an IRRP identifies that resource and/or wires options may be most appropriate to meet a need, resource/wires planning can be initiated in parallel with the IRRP or in the RIP phase to undertake a more detailed assessment, develop specific resource/wires alternatives, and recommend a preferred wires solution.

The RIP phase is the final phase of the regional planning process and involves discussion of previously identified needs and plans; identification of any new needs that may have emerged since the start of the planning cycle; and, development of a wires plan to address these needs. This phase is led and coordinated by the transmitter and the deliverable is a comprehensive and consolidated report of a wires plan for the region. Once completed, this report is also referenced in the transmitter's rate filing submissions and as part of LDC rate applications with a planning status letter provided by the transmitter to the LDC(s). Respecting the OEB timeline provision of the RIP, planning level stakeholder engagement is not undertaken during this phase. However, stakeholder engagement at a project specific level will be conducted as part of the project approval requirement.

The various phases of Regional Planning Process (NA, SA, IRRP, and RIP) and their respective phase trigger, lead, and outcome are shown below in Figure 3-1.

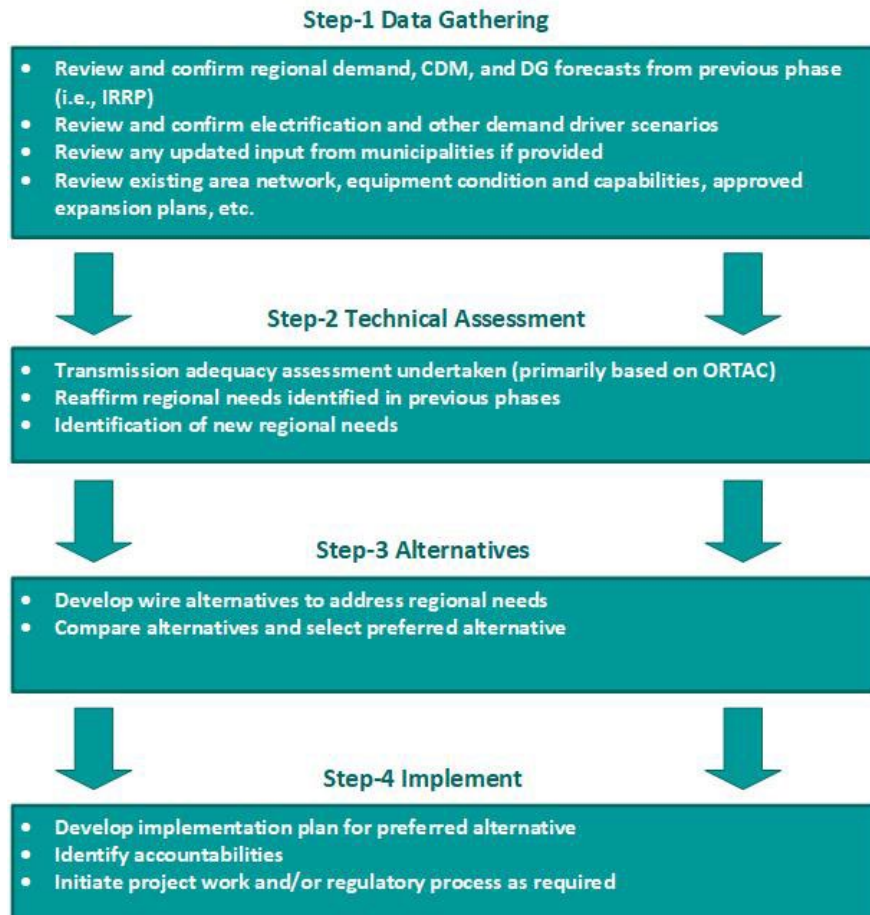


Figure 3-1: Regional Planning Process Flowchart



3.2 Regional Infrastructure Plan Methodology

Figure 3-2: Regional Infrastructure Plan Methodology



Regional Infrastructure Plan phase is a four-step process which are described below:

3.2.1. Data Gathering

The first step of the RIP process is the review of planning assessment data collected in the previous stages of the regional planning process. Hydro One collects this information and reviews it with TWG to reconfirm or update the information as required. The data collected includes:

- Net peak demand forecast at the transformer station level. This includes the effect of any distributed generation or eDSM programs. As agreed by TWG members, the load forecast from the Toronto IRRP was used for this RIP with the addition of the Alectra’s and Elexicon’s load which were not considered in the IRRP.

- Review and confirm electrification and other growth scenarios which affect the projects recommended in previous stages.
- Existing area network and capabilities including any bulk system power flow assumptions.
- Other data and assumptions as applicable such as asset condition, load transfer capabilities, and previously committed transmission and distribution system plans.

3.2.2. Technical Assessment

The second step is a technical assessment to review the adequacy of the regional system including any previously identified needs. Additional near and medium-term needs may be identified at this stage.

3.2.3. Alternative Development

The third step is the development of wires options to address the needs and determine a preferred alternative based on an assessment of technical considerations, feasibility, environmental impact, and costs.

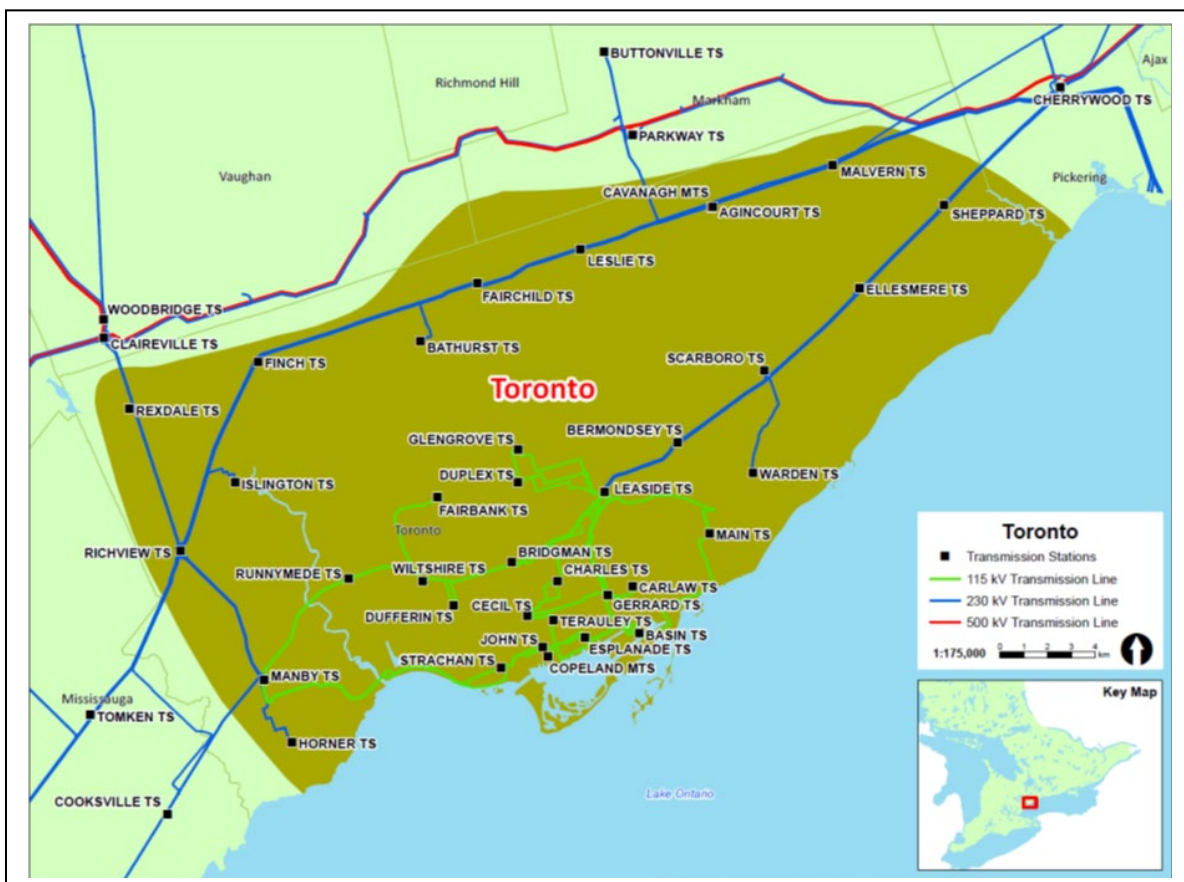
3.2.4. Implementation Plan

The fourth and last step is the development of the implementation plan for the preferred alternative, identify accountabilities and initiate project work or obtain permissions from the Regulatory Commission if any.

4. REGIONAL DESCRIPTION AND CONNECTION CONFIGURATION

The Toronto Region covers the area roughly bordered geographically by Lake Ontario on the south, Steeles Avenue on the north, Highway 427 on the west and Regional Road 30 on the east. It includes the City of Toronto, which is the largest City in Canada and the fourth largest in North America. Electrical supply to the region is provided from thirty-six (36) 230kV and 115kV step-down transformer stations. The boundaries of the Toronto region are shown in Figure 4-1 below.

Figure 4-1: Map of Toronto Regional Planning Area



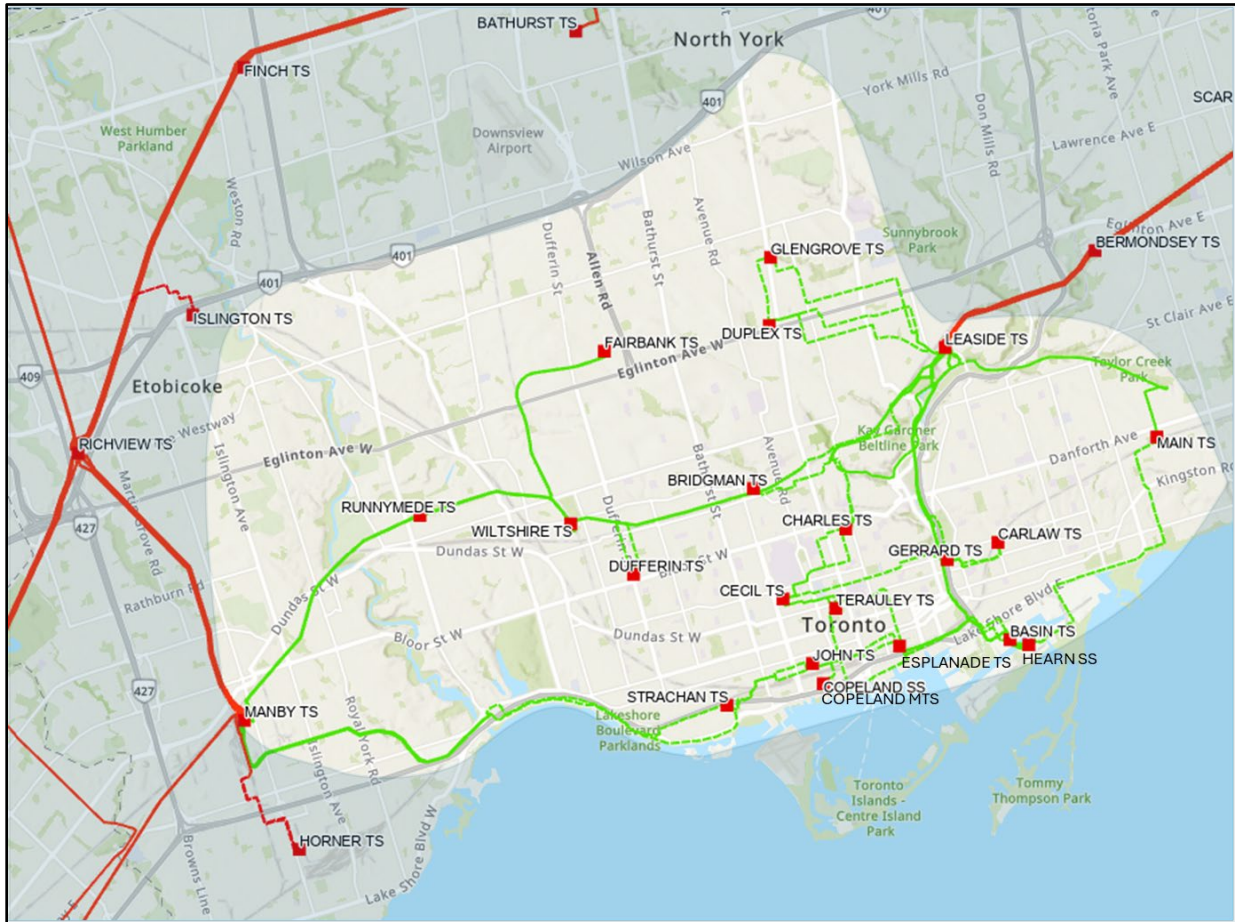
As shown in Figure 4-2, the eastern, northern, and western parts of the Region are supplied by eighteen (18) 230/27.6kV step-down transformer stations. As shown in Figure 4-3, the central area is supplied by two (2) 230/115kV autotransformer stations (Leaside TS and Manby TS) and sixteen (16) 115/13.8kV and two (2) 115/27.6kV step-down transformer stations. The region is also supplied locally by Portlands Energy Centre (“PEC”), a 600 MW combined-cycle power generating station located in the Port Lands area of the

Toronto Waterfront via Hearn Switching Station (“SS”). The sum of 2024 non-coincident and coincident summer peak load of the Region were about 4,870 MW and 4,430 MW, respectively.

Figure 4-2: Geographical Area of East, North, and West 230 kV Area



Figure 4-3: Geographical Area of Central 115 kV Area (Manby and Leaside)



Electricity demand in the region is projected to increase steadily over the forecast period, driven primarily by economic growth, electrification initiatives, customer connection activity, and municipal development plans. While the region has historically been summer-peaking, the forecast indicates a potential transition to winter-peaking by the early 2030s. The circuits and stations within the Toronto region are listed in Table 4-1 below:

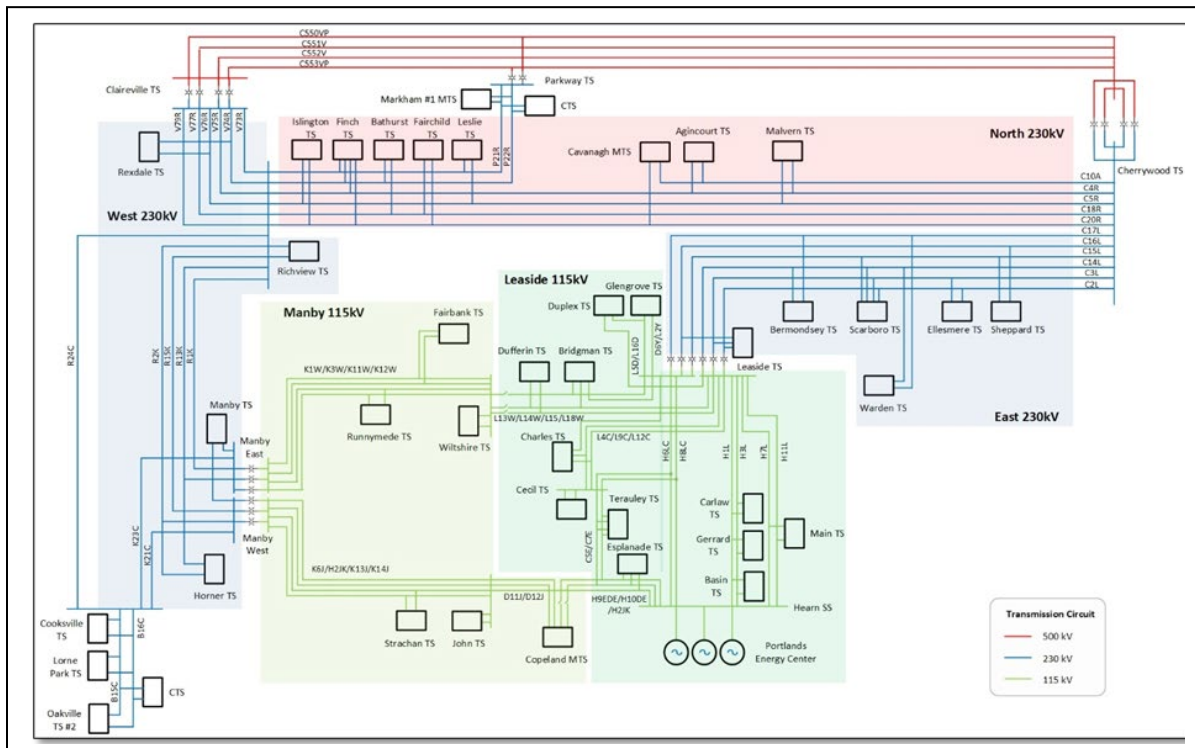
Table 4-1: Transmission Station and Circuits in the Toronto region

115kV Circuits	230kV Circuits	Transformer Stations	Generation Stations
K1W,K3W,K11W, K12W, K6J, K13J, K14J, H2JK, D11J, D12J, H9DE, H10DE, C5E, C7E, H6LC, H8LC, H1L, H3L, H7L, H11L, L13W, L14W, L15, L18W, L4C, L9C, L12C, L5D, L16D, L2Y, D6Y	R1K, R2K, R13K, R15K, R24C, K21C, K23C, C2L, C3L, C14L, C15L, C16L, C17L, C4R, C5R, C18R, C20R, C10A, P21R, P22R, V72R, V73R, V74R, V76R, V77R, V79R	Agincourt TS, Basin TS, Bathurst TS, Bermondsey TS, Bridgman TS, Carlaw TS, Cavanagh MTS, Cecil TS, Charles TS, Copeland MTS, Dufferin TS, Duplex TS, Ellesmere TS, Esplanade TS, Fairbank TS, Fairchild TS, Finch TS, Gerrard TS, Glengrove TS, Horner TS, Islington TS, John TS, Leaside TS*, Leslie TS, Main TS, Malvern TS, Manby TS*, Rexdale TS, Richview TS, Runnymede TS, Scarboro TS, Sheppard TS, Strachan TS, Terauley TS, Warden TS, Wiltshire TS	Portlands Energy Centre

*Stations with Autotransformers installed

The single line diagram of the Transmission Network of Toronto region is shown in Figure 4-4 below.

Figure 4-4: Toronto Transmission Single Line Diagram



5. TRANSMISSION FACILITIES COMPLETED IN THE LAST TEN YEARS AND/OR ARE UNDERWAY

In this section a complete list of all the projects that were completed in past ten years or are currently underway is provided and is briefly discussed in the sub-sections. As part of this or previous Regional Planning Cycle(s), several “Major HV Transmission Projects” were recommended in the **Toronto region** to improve the supply capability and reliability.

Hydro One is the Transmission Asset Owners (TAO) in the region and has undertaken the execution of the projects recommended in the past ten years. A summary and brief description of all the projects completed or are currently underway is given below:

I. Following Major projects were completed during the last ten years:

1. Midtown Transmission Reinforcement Project (2016) – Covered replacement of the aging L14W underground cable and addition of a new 115 kV circuit between Leaside TS and Bridgman TS.
2. Runnymede TS DESN#2 and Manby TS to Wiltshire TS Circuits Upgrade Project (2018) – covered building of a second 50/83 MVA, 115/27.6 kV DESN at Runnymede TS and reinforcement of the Manby TS to Wiltshire TS 115 kV circuits to accommodate increasing load demand in the area.
3. Clare R. Copeland 115 kV Switching Station (2019) – Built to connect a new THESL owned 115/13.8 kV step-down transformer station (Copeland MTS) in Downtown Toronto.
4. Manby SPS Load Rejection (L/R) Scheme (2019) – Built to ensure that loading on in-service equipment at Manby TS is not exceeded for loss of two out of three autotransformers in the Manby East and Manby West switchyards.
5. John TS transformer replacements (2019-2021) – 115/13.8 kV 45/75 MVA transformers T1, T2, and T4 were replaced with new 60/100 MVA units based on asset condition assessment.
6. Sheppard TS DESN replacement (2021) – 230/27.6 kV 50/83 MVA transformers T3 and T4 were replaced with new same size units T5 and T6 based on asset condition assessment.
7. Strachan TS transformer replacement (2021) – 115/13.8 kV 40/67 MVA transformer T12 was replaced with new 60/100 MVA unit based on asset condition assessment.
8. Runnymede TS DESN replacement (2022) – 115/27.6 kV 58/93 MVA transformers T3 and T4 were replaced with new 50/83 MVA units T5 and T6 based on asset condition assessment.
9. Horner TS new DESN (2022) – covers construction of a second 75/125MVA, 230/28 kV DESN at the Horner TS site to meet the load growth in the southwest Toronto area.
10. Bridgman TS transformer replacements (2024) – 115/13.8 kV 40/67 MVA transformers T11, T12 and T13 and 45/75MVA transformer T14 were replaced with new 60/100 MVA units based on asset condition assessment.

11. Fairbank TS DESN replacement (2024) – 115/27.6 kV 50/83 MVA transformers T1, T2, T3 and T4 were replaced with new same size units T5, T6, T7 and T8 based on asset condition assessment.
12. Scarboro TS transformer replacement (2024) – 230/27.6 kV 75/125 MVA transformer T23 was replaced with new same size unit based on asset condition assessment.
13. Copeland MTS new DESN with spare transformer (2024) – THESL installed new 115/13.8 kV 60/100 MVA transformers T2, T4, T5 at Copeland MTS to meet increasing demand in Downtown Toronto.
14. John TS transformer replacements (2025) - 115/13.8 kV 75/125 MVA transformers T5 and T6 were replaced with new 60/100 MVA units based on asset condition assessment.

II. Following Major projects are underway:

1. Circuits C5E/C7E underground cable replacement between Esplanade TS and Terauley (2026) – A 2.5 km tunnel between Esplanade TS and Terauley TS is to be built.
2. Richview to Manby Corridor Reinforcement (R X K) Project (2026) – Adding a third 230 kV double-circuit line between Richview TS and Manby TS, aimed to increase the transmission line capacity between the two stations to meet forecast load demand in the southwest GTA.
3. Main TS transformer replacement (2026) – 115/13.8 kV 45/75 MVA transformers T3 and T4 are to be replaced with new 60/100 MVA units based on asset condition assessment.
4. Charles TS transformer replacements (2027) – 115/13.8 kV 45/75 MVA transformers T3 and T4 are to be replaced with new 60/100 MVA units based on asset condition assessment.
5. Strachan TS transformer replacement (2027) – 115/13.8 kV 45/75 MVA transformer T14 is to be replaced with new 60/100 MVA unit based on asset condition assessment.
6. Malvern TS transformer replacement (2027) – 230/27.6 kV 75/125 MVA transformer T3 is to be replaced with new same size unit based on asset condition assessment.

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

6. LOAD FORECAST AND STUDY ASSUMPTIONS

6.1. Load Forecast

The major LDC in the Toronto region, THESL, has confirmed that there is no material change in the Toronto region IRRP Load Forecasts at this time and thus the IRRP forecasts were used in development of this Report. In addition, the other LDCs have also provided their load forecasts for the stations within the region that currently supply their customers, which were also considered in the development of this Report. TWG participants, including representatives from LDC's, the IESO and Hydro One, provided information and input for the IRRP and RIP load forecasts. Municipal plans were considered in developing the LDC forecasts, and additional municipal input on future load growth was obtained through the IRRP stakeholder engagement process.

During the study period, the load in the Toronto region is expected to grow at an average annual rate of approximately 2.5% in summer and 2.8% in winter from 2025 to 2044. The Region is summer peaking, however based on the forecast it is expected that the region will transition to winter-peaking in the near future. This shift is largely driven by electrified heating, which will significantly increase electricity demand during winter months.

Figure 6-1 & 6-2 show the Toronto region extreme summer/winter weather net coincident and non-coincident load forecast from 2025 to 2044. The load forecasts from the Toronto IRRP, along with the additional information for the shared stations, were used as agreed upon by the TWG.

The non-coincident and coincident reference forecasts for the individual stations in the region are available in Appendix A. These forecasts, along with the high-electrification forecasts in the IRRP, are used to determine any need in the region.

Figure 6-1: Toronto region summer/winter Coincident Net Peak Load Forecast

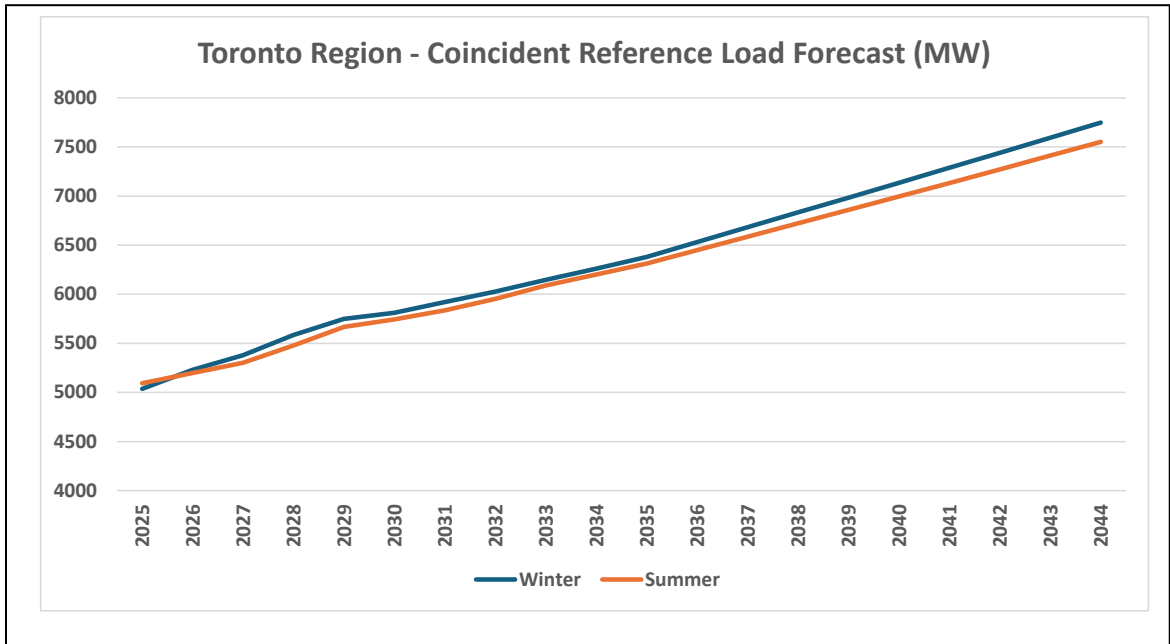
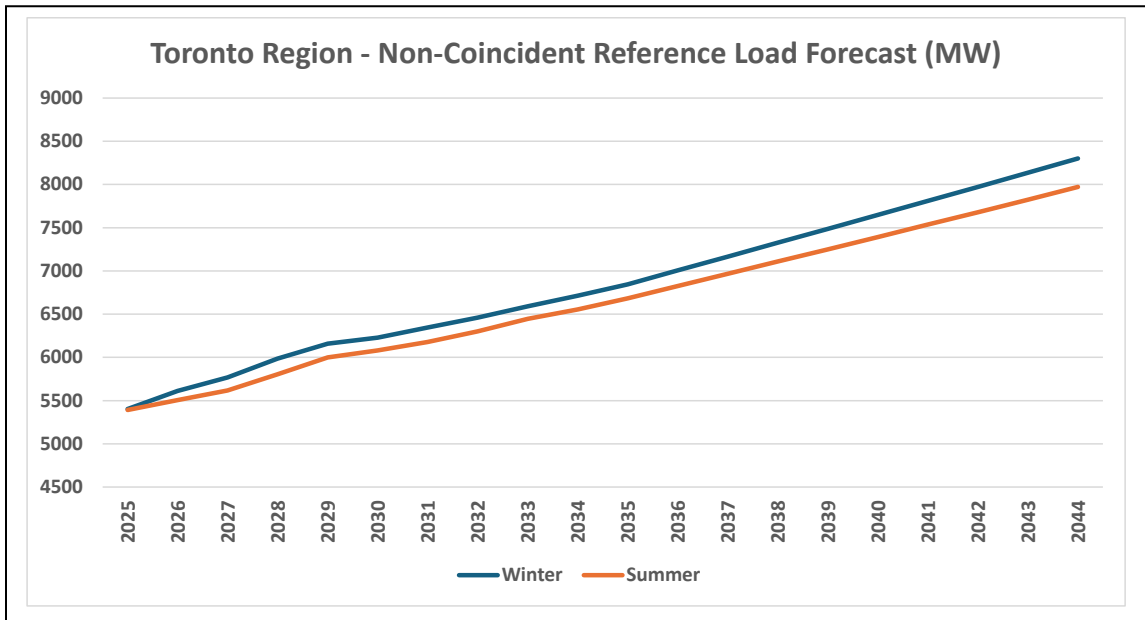


Figure 6-2: Toronto region summer/winter Non-coincident Net Peak Load Forecast



6.2. Other Study Assumptions

The following other assumptions are made in this report.

- The study period for the RIP assessments is 2025-2044.
- THESL has confirmed load forecasts up to 2044 in the area are the same as the IRRP. Alectra and Elexicon have provided load forecasts for the shared stations up to 2044.
- All planned facilities for which work has been initiated and are listed in section 4 are assumed to be in-service.
- The Region is currently summer peaking but is expected to be winter peaking during the study period, so this assessment considers both summer and winter peak loads.
- Station 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 transformer stations in the region is determined by the summer 10-day Limited Time Rating (LTR) based on 30°C ambient temperature.
- Adequacy assessment is conducted as per ORTAC. Enhanced criteria used in the IRRP were also considered in this report.¹

¹ The ORTAC does not require double element contingency events to be evaluated for local area (non-bulk) transmission systems, unless the contingency propagates to a higher voltage level or causes a net load loss greater than 1,000 MW. However, the IRRP also evaluated double element contingencies for the local areas in Toronto region due to the social and economic importance of continuous electricity supply to the area.

7. SYSTEM ADEQUACY AND REGIONAL NEEDS

This section reviews the adequacy of the existing Transmission Systems and Transformer Station facilities supplying the Toronto region and lists the facilities requiring reinforcement over the near and midterm period. The adequacy assessment assumes that all the projects that are currently underway, listed in “Section 5” are completed as per their respective in-service dates.

In current regional planning cycle, the following regional assessments were completed, and their findings were used as inputs to this RIP report:

- Toronto region Third cycle Needs Assessment Report, Completed in December 2022 by Hydro One
- Toronto region Third cycle Scoping Assessment Report, Completed in March 2023 by the IESO
- Toronto region Third cycle Integrated Regional Resource Plan Report, Completed in October 2025 by the IESO

The Technical Working Group identified several regional needs based on the forecasted load demand over the near to mid-term period in the reports mentioned above. The results of the Adequacy Assessment to define the needs are discussed in sub-sections “7.1 to 7.4” and a detailed description and status of plans to meet these needs are given in “Section 8” of this report.

7.1. Asset Renewal Needs for Major HV Transmission Equipment

In addition to the asset renewal needs identified in previous regional planning cycle, Hydro One and TWG have also identified new asset renewal needs for major high voltage transmission equipment that are expected to be replaced over the next 10 years in the Toronto region. The complete list of major HV transmission equipment requiring replacement in the Toronto region is provided in Table 7-1 in this sub-section. Hydro One and THESL are the only Transmission Asset Owner (TAO) in the Region.

Asset Replacement 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

Table 7-1: Major HV Transmission Asset assessed for Replacement in the region planned in next 10 years

Station/Circuit	Need Description	Planned ISD
Basin TS	Transformers T3/T5 replacement*	2030
Manby TS	Autotransformers (T7, T9, T12) replacement, Step-down transformer (T13/T14) replacement*	2030 2033
Leslie TS	Transformer T1, T4 replacement	2032
Dufferin TS	Transformer T2 replacement*	2032
Cecil TS	115kV Switchgear replacement	2032
Bermondsey TS	Transformers T3/T4 replacement	2033
Strachan TS	Transformers T13/T15 replacement*	2033
Agincourt TS	Transformers T5/T6 replacement	2033
Terauley TS	Transformers T1/T2/T3/T4 replacement	2033
Carlaw TS	Transformers T1/T2 replacement*	2033
Rexdale TS	Transformer T2 replacement	2033
John TS	Transformer T3 replacement*	2033
Duplex TS	Transformers T1/T2 & T3/T4 replacement*	2034
Fairchild TS	Transformers T1 & T3/T4 replacement	2034
Warden TS	Transformer T4 replacement	2035
Finch TS	Transformer T1 replacement	2035
H1L/H3L/H6LC/H8LC	Leaside Jct. X Bloor St. Jct. – Overhead line section renewal	2031
L9C/L12C	Leaside TS X Balfour Jct. – Overhead line section renewal	2031
H1L/H3L & H2JK	Underground cable replacement	2035

*Transformers to be replaced with higher rated standard units.

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

7.2. Station Capacity Needs

Over the study period 2025-2044 RIP reviewed the capacity of all the 230kV and 115kV Transforming stations within the Toronto region. The IRRP study had previously indicated that Bathurst TS and Scarboro TS require capacity relief within the 2026-2035 period. This RIP has further confirmed those needs. The need date for Sheppard TS and Finch TS capacity relief may also be advanced based on the load forecast considering the addition of Alectra's and Elexicon's load. The stations which require capacity relief during the 2026-2035 period are shown in Table 7-2 below. The need timeframe defines the time when the peak non-coincident reference load forecast exceeds the most limiting seasonal (summer or winter) Limited Time ratings.

Table 7-2: Toronto region Station Capacity Needs in next 10 years

Sr.no.	Station Name	Station LTR (MW) (Summer/Winter)	2025 Loading (MW) (Summer/Winter)	Ref. Forecast Need Date (Summer/Winter)
1	Bathurst TS	361 / 390	278 / 185	2035 / 2042
2	Scarboro TS	364 / 412	214 / 179	2035 / 2039
3	Basin TS	130 after asset renewal (existing LTR 88 / 104)	49 / 54	2035 / 2035
4	Sheppard TS	208 / 231	158 / 115	2029 / 2032
5	Finch TS	366 / 403	280 / 221	2033 / 2042

The options and preferred solutions to address these needs are discussed further in Section 8 of the report.

7.3. Transformation Capacity Needs

Over the study period 2025-2044 RIP reviewed the 230 kV to 115 kV transformation capacity needs within the Toronto region. The IRRP study had previously indicated that the following transformation capacity relief is required within the 2026-2035 period. This RIP has further confirmed this need as shown in Table 7-3 below. The need timeframe defines the time when the peak load forecast exceeds the most limiting seasonal (summer) area limit.

Table 7-3: Toronto region Transformation Capacity Needs in next 10 years

Sr.no.	Station Name	Area Limit (MW) (Summer)	2024 Loading (MW) (Summer)	Ref. Forecast Need Date
1	Manby TS (West) Autotransformers	570 (470) ⁽¹⁾	358 ⁽²⁾	2028 ⁽³⁾

- (1) Area limit of 570 MW is based on the loss of one autotransformer. Area limit of 470 MW is based on the loss of two autotransformers T1 and T2 and 150 MW of load shedding by Manby RAS after the loss of T1 and T2. The limit may increase after the most limiting autotransformer T12 is replaced.
- (2) The 2024 summer loading is being used as John T5/T6 2025 loading data is currently missing.
- (3) The 2028 need date is based on summer coincident reference forecast and an area limit of 470 MW. If control actions in between the loss of the first and second autotransformers are accounted for, the need date extends beyond 2044.

The need and the preferred solutions to address this need are discussed further in Section 8 of the report.

7.4. Transmission Line Capacity Needs

Over the study period 2025-2044 RIP reviewed the capacity of all the 230kV and 115kV Transmission lines within the Toronto region. The NA and IRRP studies had previously indicated that the following Transmission lines require capacity relief within the 2026-2035 period. This RIP has further confirmed those needs and based on the load forecast and following contingencies, the Transmission lines which require capacity relief during the study period are shown in Table 7-4 below. The need timeframe defines the time when the peak load forecast exceeds the most limiting seasonal (summer or winter) Limited Time ratings.

Table 7-4: Toronto region Transmission Line Capacity Needs in next 10 years

Sr.no.	Name of Circuit	Name of Section	Area Limit (MW) Summer	2025 Summer loading (MW)	Need Date
1	K13J / K14J	Manby TS X Riverside Jct.	510 / 370 ⁽¹⁾	358 ⁽²⁾	2026 ⁽³⁾
2	R1K/R2K/R13K/R15K	Richview TS x Manby TS	1840 ⁽⁴⁾	1560	2032 ⁽⁴⁾

(1) An area limit of 510 MW is based on the loss of one circuit K13J or K14J. An area limit of 370 MW is based on the loss of two circuits simultaneously K13J and K6J / H2JK.

(2) The 2024 summer loading is being used as John T5/T6 2025 loading data is currently missing.

(3) 2026 need date is based on summer coincident reference forecast and area limit of 370 MW.

(4) The area limit and need date based on reference forecast were provided by the IRRP.

The needs and the preferred solutions to address these needs are discussed further in Section 8 of the report.

7.5. Long-Term Capacity Needs

Over the study period 2025-2044 RIP reviewed the capacity of all the 230kV and 115kV Transmission lines within the Toronto region. The IRRP study had previously indicated that the following longer term capacity needs in Table 7-5 below.

Table 7-5: Toronto region Long-Term Capacity Needs in next 10-20 years

Need Type	Long-Term Need	Timing
Station Capacity	Warden TS	2036
	Fairbank TS	2042
	Strachan TS	2039
	Dufferin TS	2040
	Glengrove TS	2042
	Manby DESNs	2043
	Fairchild TS	2040
	Leslie TS	2039
	Duplex TS	2042
	Main TS	2043
	Runnymede TS	2043
Transformation Capacity	Leaside TS Autotransformers	2036
	Manby TS (East) Autotransformers	2041
Line Capacity	K1W/K3W (St.Clair Ave. Jct. X Fairbank TS)	2036
	Leaside TS X Wiltshire TS: 115kV Circuits	2036
	H1L/H3L Capacity – (Leaside TS X Bloor Jct.) and (Hearn SS X Basin TS)	2036 /2041
	Cherrywood TS X Leaside TS: 230kV Circuits	2036

These needs are discussed further in Section 8 of the report, and they will be monitored and evaluated in future planning cycles due to the forecast uncertainty and the longer-term timing of need.

8. REGIONAL PLANS

This section discusses the regional electric supply needs and presents all the wires alternatives considered to address these needs and identifies the best and preferred wires solutions for the Toronto Region. These needs include those previously identified in the NA and IRRP for the Toronto Region as well as any new needs identified during the RIP phase. All estimated costs included in the alternative analysis are considered as planning budgetary estimates and are used for comparative purposes only and may vary. The Needs in the region for the near- and mid-terms are summarized below in Table 8-1 below:

Table 8-1: Near/Mid-term Needs Identified in the region

Station/Circuit Name	Description of Need	Need Date	RIP Report Section
Asset Renewal Needs			
Basin TS	Transformers T3/T5 replacement*	2030	8.1.1
Manby TS	Autotransformers (T7, T9, T12) replacement, Step-down transformer (T13/T14) replacement*	2030 2033	8.1.2
Leslie TS	Transformer T1, T4 replacement	2032	8.1.3
Dufferin TS	Transformer T2 replacement*	2032	8.1.4
Cecil TS	115kV Switchgear replacement	2032	8.1.5
Bermondsey TS	Transformers T3/T4 replacement	2033	8.1.6
Strachan TS	Transformers T13/T15 replacement*	2033	8.1.7
Agincourt TS	Transformers T5/T6 replacement	2033	8.1.8
Terauley TS	Transformers T1/T2/T3/T4 replacement	2033	8.1.9
Carlaw TS	Transformers T1/T2 replacement*	2033	8.1.10
Rexdale TS	Transformer T2 replacement	2033	8.1.11
John TS	Transformer T3 replacement*	2033	8.1.12
Duplex TS	Transformers T1/T2 & T3/T4 replacement*	2034	8.1.13
Fairchild TS	Transformers T1 & T3/T4 replacement	2034	8.1.14
Warden TS	Transformer T4 replacement	2035	8.1.15

Finch TS	Transformer T1 replacement	2035	8.1.16
H1L/H3L/H6LC/H8LC	Leaside Jct. X Bloor St. Jct. – Overhead line section renewal	2031	8.1.17
L9C/L12C	Leaside TS X Balfour Jct. – Overhead line section renewal	2031	8.1.18
H1L/H3L & H2JK	Underground cable replacement	2035	8.1.19
Station Capacity Needs			
Bathurst TS & Finch	Connect Downsview MTS and supply Bathurst load - First DESN (Phase 1) - Second DESN (Phase 2)	2033 2039	8.2.1
Scarboro TS	Build third Scarboro TS DESN and supply Scarboro load	2035	8.2.2
Basin TS	Develop an expansion of Basin TS or add a new station in the area.	2035	8.2.3
Sheppard TS	Expand T1/T2 DESN using the idle windings	2029	8.2.4
Transformation Capacity Needs			
Manby TS (West) Autotransformers	Area supply is limited by the Limited Time Rating of one autotransformer with 150 MW RAS, if considering the loss of two autotransformers	2028	8.3.1
Transmission Line Capacity Needs			
Manby TS X Riverside Jct.: 115kV Circuits	Upgrade capacity of 115kV circuits.	2026	8.4.1
Richview TS X Manby TS: 230 kV Circuits	230 kV Corridor Reinforcement	2032	8.4.2

*Transformers to be replaced with higher rated standard units.

The potential long-term needs in the 2036 – 2044 timeframe are discussed in Section 8.5.1 to Section 8.5.16 in this report.

8.1 Asset Renewal Needs for Major HV Transmission Equipment

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, do 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.

8.1.1 Basin TS – T3/T5

The existing T3 and T5 transformers at Basin TS are 45/75 MVA units and are currently identified for replacement in 2030 based on asset condition assessment.

These units will be replaced with larger 60/100 MVA units to address asset renewal needs while also helping to address expected future station capacity needs. These replacement upgrades and other ancillary equipment renewals will contribute to increased capacity and maintaining supply reliability in the Basin TS area.

8.1.2 Manby TS – T7/T9/T12 & T13/T14

Several transformers at Manby TS are currently identified for replacement in the early 2030s based on asset condition assessments.

The existing T7, T9, and T12 autotransformers are 150/250 MVA units. These units will be replaced with like-for-like units to address asset renewal needs and contribute to maintaining reliability of supply to the Manby East and Manby West area.

The existing T13 and T14 transformers are 56/93 MVA units. These units will be replaced with the standard 75/125 MVA units to address asset renewal needs to maintain supply reliability in the local area and contribute to addressing expected future station capacity needs.

8.1.3 Leslie TS – T1/T4

The existing T1 and T4 transformers at Leslie TS are 75/125 MVA units and are currently identified for replacement in 2032 based on asset condition assessment.

The existing T1 transformer is a non-standard unit with dual LV voltage levels at 13.8 kV and 27.6 kV. As the 13.8 kV supply will no longer be required from Leslie TS, both T1 and T4 will be replaced with standard 230-27.6-27.6 kV 75/125 MVA units to address asset renewal needs. These replacements and other ancillary equipment renewals will support the ongoing supply reliability in the Leslie TS area. Following the replacement of the existing T2 with a standard unit, the 27.6 kV supply capability at Leslie TS is expected to increase.

8.1.4 Dufferin TS – T2

The existing T2 transformer at Dufferin TS is a 45/75 MVA unit and is currently identified for replacement in 2032 based on asset condition assessment.

This unit will be replaced with a 60/100 MVA unit to meet asset renewal requirements and align with the other units at Dufferin TS. This replacement will contribute to maintaining supply reliability in the Dufferin TS area.

8.1.5 Cecil TS – 115kV Switchgear

The existing Cecil TS 115kV gas-insulated switchgear (GIS) equipment includes eight 115kV breakers and associated ancillary switchgear equipment. This indoor GIS switchgear has been recommended for full replacement to address obsolescence and supportability issues that have started to become a risk from the perspective of maintainability, operability, and reliability.

Figure 8-1: Cecil TS located in Downtown Toronto



Alternative 1 – Standard In-situ Replacement: This alternative would include full replacement of the existing GIS switchgear in the same physical location with new switchgear of similar or better ratings. However, the existing space is very constrained and replacing equipment in-situ while maintaining operations would be a significant risk. As a result, this alternative is not considered feasible and is rejected.

Alternative 2 – Greenfield Replacements: This alternative would include full replacement of the existing GIS switchgear in a new physical location with new switchgear of similar or better ratings. This alternative would allow the switchgear to be replaced in a new greenfield location and minimize project execution risk and system operation risk. This alternative would address asset needs and maintain long-term supply reliability to customers in the region.

The recommended plan is to proceed with Alternative 2 to replace the existing GIS switchgear and maintain long-term supply reliability to customers in the region.

8.1.6 Bermondsey TS – T3/T4

The existing T3 and T4 transformers at Bermondsey TS are 75/125 MVA units and are currently identified for replacement in 2033 based on asset condition assessment.

These units will be replaced with like-for-like units to address asset renewal needs. These replacements and other ancillary equipment renewals will contribute to maintaining supply reliability in the Bermondsey TS area.

8.1.7 Strachan TS – T13/T15

The existing T13 and T15 transformers at Strachan TS are 45/75 MVA units and are currently identified for replacement in 2033 based on asset condition assessment.

These units will be replaced with larger 60/100 MVA units to address asset renewal needs while also helping to address expected future station capacity needs. These replacement upgrades and other ancillary equipment renewals will contribute to increased capacity and maintaining supply reliability in the Strachan TS area.

8.1.8 Agincourt TS – T5/T6

The existing T5 and T6 transformers at Agincourt TS are 75/125 MVA units and are currently identified for replacement in 2033 based on asset condition assessment.

These units will be replaced with like-for-like units to address asset renewal needs. These replacements and other ancillary equipment renewals will contribute to maintaining supply reliability in the Agincourt TS area.

8.1.9 Terauley TS – T1/T2/T3/T4

The existing T1, T2, T3, and T4 transformers at Terauley TS are 75/125 MVA units and are currently identified for replacement in 2033 based on asset condition assessment.

These units will be replaced with standard 60/100 MVA units to address asset renewal needs. These replacements and other ancillary equipment renewals will contribute to maintaining supply reliability in the Terauley TS area.

8.1.10 Carlaw TS – T1/T2

The existing T1 and T2 transformers at Carlaw TS are 45/75 MVA units and are currently identified for replacement in 2033 based on asset condition assessment.

These units will be replaced with larger 60/100 MVA units to address asset renewal needs while also helping to address any future station capacity needs. These replacement upgrades and other ancillary equipment renewals will contribute to increased capacity and maintaining supply reliability in the Carlaw TS area.

8.1.11 Rexdale TS – T2

The existing T2 transformer at Rexdale TS is a 75/125 MVA unit and is currently identified for replacement in 2033 based on asset condition assessment.

This unit will be replaced with a like-for-like unit to address asset renewal needs. This replacement and other ancillary equipment renewals will contribute to maintaining supply reliability in the Rexdale TS area.

8.1.12 John TS – T3

The existing T3 transformer at John TS is a 45/75 MVA unit and is currently identified for replacement in 2033 based on asset condition assessment.

This unit will be replaced with a larger 60/100 MVA unit aligning with other units at John TS to address asset renewal needs while also helping to address any future station capacity needs. This replacement upgrade and other ancillary equipment renewals will contribute to increased capacity and maintaining supply reliability in the John TS area.

8.1.13 Duplex TS – T1/T2/T3/T4

The existing T1, T2, T3, and T4 transformers at Duplex TS are 45/75 MVA units and are currently identified for replacement in 2034 based on asset condition assessment.

These units will be replaced with larger 60/100 MVA units to address asset renewal needs while also helping to address expected future station capacity needs. These replacement upgrades and other ancillary equipment renewals will contribute to increased capacity and maintaining supply reliability in the Duplex TS area.

8.1.14 Fairchild TS – T1/T3/T4

The existing T1, T3, and T4 transformers at Fairchild TS are 75/125 MVA units and are currently identified for replacement in 2034 based on asset condition assessment.

These units will be replaced with like-for-like units to address asset renewal needs. These replacements and other ancillary equipment renewals will contribute to maintaining supply reliability in the Fairchild TS area.

8.1.15 Warden TS – T4

The existing T4 transformer at Warden TS is a 75/125 MVA unit and is currently identified for replacement in 2035 based on asset condition assessment.

This unit will be replaced with a like-for-like unit to address asset renewal needs. This replacement and other ancillary equipment renewals will contribute to maintaining supply reliability in the Warden TS area.

8.1.16 Finch TS – T1

The existing T1 transformer at Finch TS is a 75/125 MVA unit and is currently identified for replacement in 2035 based on asset condition assessment.

This unit will be replaced with a like-for-like unit to address asset renewal needs. This replacement and other ancillary equipment renewals will contribute to maintaining supply reliability in the Finch TS area.

8.1.17 H1L/H3L/H6LC/H8LC – Leaside Jct. X Bloor St. Jct.

The 115 kV circuits H1L/H3L/H6LC/H8LC connect between the Leaside TS, Hearn SS and Cecil TS stations and supply step-down transformers at Basin TS, Gerrard TS, Carlaw TS, and Cecil TS. A 3 km overhead line section of these lines, between Leaside 34 Jct. and Bloor St. Jct., is predominantly steel lattice tower line. This 3 km line section between Leaside 34 Jct. and Bloor St. Jct. has been determined to require renewal. Figure 8-2 shows the Leaside 34 Jct. x Bloor St. Jct. line section of the H1L/H3L/H6LC/H8LC circuits.

Figure 8-2: H1L/H3L/H6LC/H8LC – Leaside 34 Jct. X Bloor St. Jct. Section



The following options were considered for this line section renewal:

Alternative 1 – Standard Renewal of Line Section: This alternative would prescribe a full refurbishment of the overhead line section and reconductor the section with new conductors on the existing towers. The ampacity recommendation in the IRRP will be considered and investigated during the project development stage. This alternative would address asset needs, improve line section capacity and minimize losses, and maintain long-term supply reliability to customers in the region.

Alternative 2 – Rebuild line section to 230 kV standard: This alternative would rebuild the line section to 230 kV standard and thereby allow the lines to potentially be operated at 230 kV in the future if all other sections were also upgraded. However, this alternative would be extremely costly and there are currently no plans to convert the other sections of these lines to higher voltages or to operate the lines at higher voltages. Therefore, this alternative is rejected.

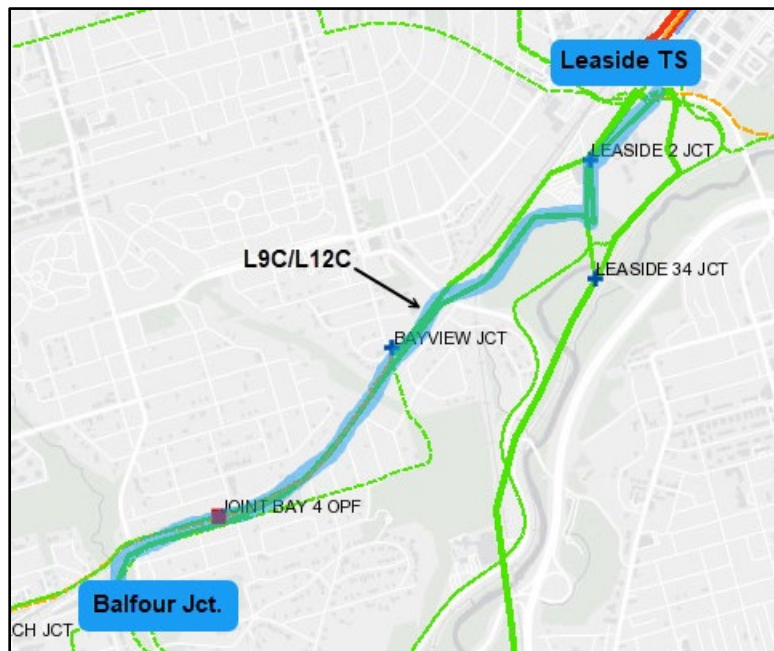
The recommended plan is to proceed with Alternative 1 to most cost effectively renew the line section and maintain long-term supply reliability to customers in the region.

8.1.18 L9C/L12C – Leaside TS X Balfour Jct.

The 115 kV circuits L9C/L12C connect between the Leaside TS and Cecil TS stations and supply step-down transformers at Charles TS and Cecil TS. A 3.5 km overhead line section of these lines, between Leaside TS

and Balfour Jct., is predominantly steel lattice tower line. This 3.5 km line section between Leaside TS and Balfour Jct. has been determined to require renewal. Figure 8-3 shows the Leaside TS x Balfour Jct. line section of the L9C/L12C circuits.

Figure 8-3: L9C/L12C – Leaside TS X Balfour Jct. Section



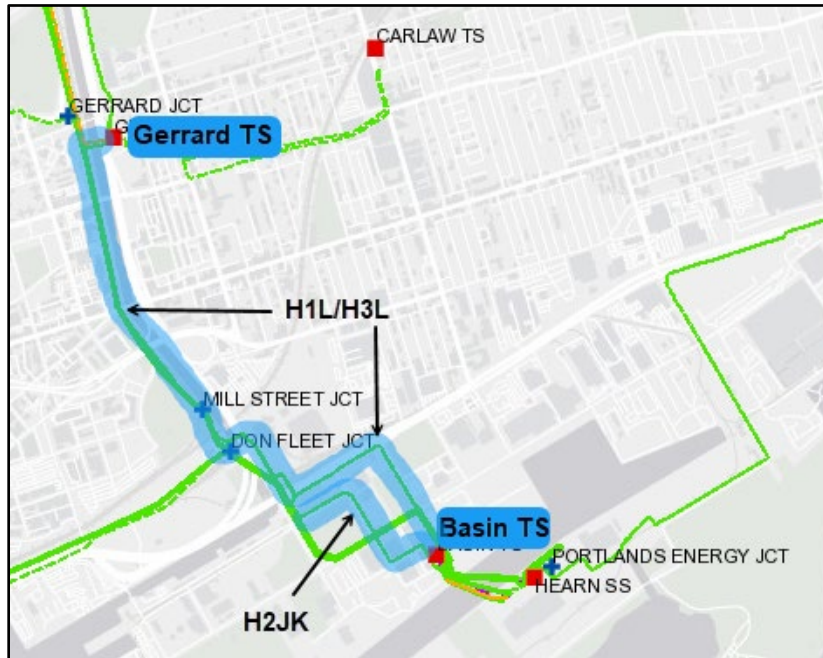
Preferred plan – Standard Renewal of Line Section: This would prescribe a full refurbishment of the overhead line section and reconductor the section with new conductors on the existing towers. The ampacity capability will be considered and investigated during the project development stage. This alternative would address asset needs, improve line section capacity and minimize losses, and maintain long-term supply reliability to customers in the region.

8.1.19 H1L/H3L & H2JK – Underground Cable Replacement

The 115 kV H1L/H3L circuits connect between the Leaside TS and Hearn SS stations and supply step-down transformers at Basin TS, Gerrard TS, and Carlaw TS. The 115 kV H2JK circuit connects between Hearn SS, John TS, and Manby TS with a normally open point at John TS. East of the John TS normally open point, H2JK primarily supplies Esplanade TS.

A 2.9 km underground cable section of H1L and H3L from Basin TS to Gerrard TS, and a 1.4 km underground cable section of H2JK from Basin TS to Don Fleet Jct. are 115 kV paper-insulated low-pressure oil-filled transmission cables. These cables parallel the Don River, are near Lake Ontario, and located in the Toronto Portlands. These cables are required to be replaced as verified through detailed condition assessments.

Figure 8-4: H1L/H3L – Basin TS X Gerrard TS Section; H2JK – Basin TS X Don Fleet Jct. Section



Preferred Plan – Replacement of Underground Cable Sections: This would prescribe a full replacement of the existing deteriorated oil-filled cables and ancillary equipment with oil-free cross-linked polyethylene (XLPE) cables and/or overhead lines with the largest feasible conductor sizes to minimize losses and improve capacity. This alternative would address asset renewal needs, improve line section capacity and minimize losses, and maintain long-term supply reliability to customers in the region.

8.2 Station Capacity Needs

A Station Capacity assessment was performed over the study period 2025-2044 for the 230kV and 115kV Transforming stations in the Toronto region using both the summer and winter peak load forecasts that were provided by the study team. This section describes the following Station capacity needs have been identified during the 2026-2035 period.

To address the station capacity needs, the recommendation of this planning cycle is a combination of new transformer stations and upgrades at existing stations. The RIP focuses on wire alternatives, however where possible non-wire alternatives are also considered as per the IRRP.

8.2.1 Bathurst TS & Finch TS – 230 kV / 27.6 kV

Significant load growth is anticipated in the Northwest Toronto area, particularly around Bathurst TS and Finch TS, primarily driven by the planned redevelopment of the Downsview area near Keele Street and Sheppard Avenue. Figure 8-5 shows the locations of Bathurst TS and Finch TS, along with the approximate area of the Downsview redevelopment plan.

Figure 8-5: Downsview Redevelopment Plan near Bathurst TS & Finch TS



Bathurst TS comprises two DESNs, T1/T2 and T3/T4 (all 75/125 MVA units), having a summer 10-Day LTR of 361 MW. The station’s 2025 actual non-coincident summer peak load was about 278 MW and is forecasted to be approximately 370 MW (net adjusted for extreme weather) or 102% of its LTR in 2035, based on summer non-coincident reference forecast.

Finch TS comprises two DESNs, T1/T2 and T3/T4 (all 75/125 MVA units), having a summer 10-Day LTR of 366 MW. The station’s 2025 actual non-coincident summer peak load was about 280 MW and is forecasted to be approximately 388 MW (net adjusted for extreme weather) or 106% of its LTR in 2035, based on summer non-coincident reference forecast².

To address a station capacity need of approximately 200-300 MW over the next 20 years, a new station or new DESN(s) will be required by 2035. THESL has proposed constructing a new Municipal Transformer

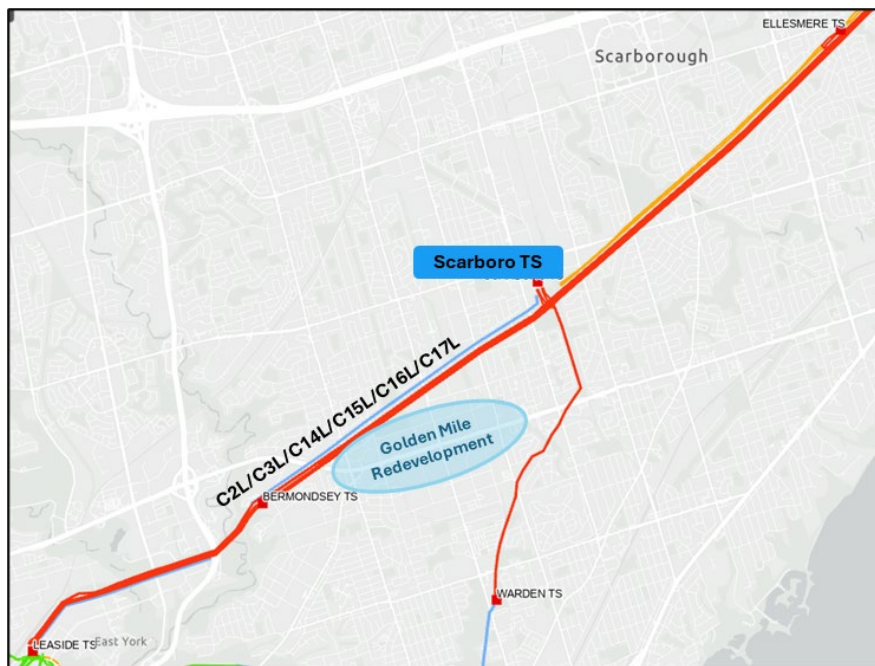
² Finch TS T1/T2 supply load for both THESL and Alectra. According to the IESO, Alectra’s load was not included in the IRRP forecast. When Alectra’s load is added, based on summer non-coincident reference forecast, the need date for station capacity relief at Finch TS advances from 2038 to 2033.

Station (“MTS”) in the vicinity of the Downsview area. Other alternatives, including building new DESN(s) at Bathurst TS and/or Finch TS, were considered. However, insufficient available space at or in proximity to the existing Bathurst TS property renders the addition of new DESN(s) infeasible. Furthermore, the location of Finch TS west of Highway 400 presents technical challenges associated with feeder crossings, making it a less favorable option for supporting the anticipated load growth in the Downsview area. According to the IRRP, the proposed new station with two DESNs can be connected to select Cherrywood TS x Richview TS circuit pairs, that are not on the same tower, along the Finch Corridor without the need for a switching station and without causing thermal overloads within the study period. Hydro One will continue to work closely with THESL in the coming years to support the connection of the new MTS.

8.2.2 Scarborough TS – 230 kV / 27.6 kV

Significant load growth is anticipated in the Scarborough area, particularly around Scarborough TS and Warden TS, primarily driven by the planned redevelopment of the Golden Mile along Eglinton Avenue East between Victoria Park Avenue and Birchmount Road. Figure 8-6 shows the location of Scarborough TS, along with the approximate area of the Golden Mile Secondary Plan.

Figure 8-6: Golden Mile Secondary Plan near Scarborough TS



Scarboro TS comprises two DESNs, T21/T22 (75/125 MVA) and T23/T24 (75/125 MVA), having a summer 10-Day LTR of 364 MW. The station’s 2025 actual non-coincident summer peak load was about 214 MW. Based on summer non-coincident reference forecast, Scarboro TS loading is forecasted to be

approximately 370 MW (net adjusted for extreme weather) by 2035 and over 500 MW by 2044. Its nearby station Warden TS is also forecasted to exceed its station capacity around 2036 and needs relief by transferring load to Scarboro TS. The other closest stations, Bermondsey TS and Ellesmere TS, are also projected to be loaded at about 75% and 100% of their station LTRs by 2044, respectively.

To address a station capacity need of approximately 150 MW over the next 20 years, a new station or DESN will be required by 2035. Spaces are available to accommodate an additional DESN at both the existing Scarboro TS and Warden TS properties. Scarboro TS is located adjacent to the Cherrywood to Leaside corridor, whereas Warden TS is supplied via a 4.5 km double-circuit overhead line tap from the same corridor. From a load reliability and operability perspective, building a new DESN at Scarboro TS represents the preferred alternative. Therefore, the TWG recommends that THESL and Hydro One keep monitoring the station loading and load forecast, and collaborate on the development of a third DESN at Scarboro TS in the next few years.

8.2.3 Basin TS – 115 kV / 13.8 kV

As described in Section 8.1.1, Basin TS currently comprises one DESN, T3/T5 (45/75 MVA), having a summer 10-Day LTR of 88 MW. These transformers will be replaced with 60/100 MVA units, tentatively by end of 2030. The Basin TS station capacity is expected to increase to approximately 130 MW and satisfy the need in the near to medium term. The station's 2025 actual non-coincident summer peak load was about 49 MW. Due to the City's development plan in the Port Lands area, the station loading is projected to reach 130 MW (net adjusted for extreme weather) by 2035, based on summer non-coincident reference forecast. Additional station capacity relief will be required by the end of the medium-term period or within the long-term planning horizon.

Hydro One and THESL have been continuously working with the City of Toronto on their relocation and/or reconfiguration request for the electricity infrastructure in the Port Lands area. While no updates are currently available, Hydro One and THESL will keep the TWG informed of any further developments. The TWG recommends that Hydro One and THESL maintain this collaboration with the City to finalize the site for a new or expanded Basin TS. The TWG will continue to monitor Basin TS loading and review the need in the next RP cycle.

8.2.4 Sheppard TS – 230 kV / 27.6 kV

Sheppard TS comprises two DESNs, T1/T2 (75/125 MVA units with idle winding) and T5/T6 (50/83 MVA units), having a summer 10-Day LTR of 208 MW. The station's 2025 actual non-coincident summer peak load was about 158 MW and is forecasted to be approximately 238 MW (net adjusted for extreme weather) or 114% of its station LTR in 2035, based on summer non-coincident reference forecast³.

³ Sheppard TS T5/T6 supply load for both THESL and Elexicon. According to the IESO, Elexicon's load was not included in the IRRP forecast. When Elexicon's load is added, based on summer non-coincident reference forecast, the need date for station capacity relief at Sheppard TS advances from 2038 to 2029.

To address this station capacity need, the TWG recommends utilizing the idle winding on transformers T1/T2. THESL and Hydro One are working together on the development of expanding the 27.6 kV switchyard. This investment is expected to increase the Sheppard TS station capacity by at least 60 MVA and meet the identified need through at least 2040 based on summer non-coincident reference forecast. The TWG further recommends ongoing monitoring and reassessment of Sheppard TS loading to determine any additional long-term needs in the next RP cycle.

8.3 Transformation Capacity Needs

A Transformation Capacity assessment was performed over the study period 2025-2044 for the 230 / 115 kV Manby and Leaside autotransformers in the Toronto region using both the summer and winter peak load forecasts that were provided by the study team. This section describes the following capacity need that has been identified during the 2026-2035 period.

To address the transformation capacity need, the recommendation from the IRRP is a combination of wire and non-wire solutions. The RIP focuses on wire alternatives.

8.3.1 Manby West – 230 / 115 kV Autotransformers

Manby TS is a major bulk electric switching and autotransformer station in the Toronto region. Station facilities include Manby West and Manby East 230 kV and 115 kV switchyards, six 230 / 115 kV autotransformers (T1/T2/T12 for Manby West, and T7/T8/T9 for Manby East), and six 230 / 27.6 kV step-down transformers supplying three DESNs (T3/T4, T13/ T14, and T5/T6).

Manby West and Manby East autotransformers supply two distinct 115kV load pockets. Manby West autotransformers normally supply three downstream 115 / 13.8 kV step-down transformer stations: Strachan TS, John TS, and Copeland MTS. The Manby West autotransformers may also be used in emergency situations to supply Esplanade TS and/or Terauley TS, which are normally served by the Leaside 115 kV transmission network.

The actual 2024 summer coincident loading for the Manby West area was 358 MW. The area limit based on the loss of a single autotransformer at Manby West is 570 MW⁴. According to the summer coincident reference forecast, the projected area load remains within the autotransformer limit; however, under the high-electrification scenario, the area load is expected to exceed the limit by 2043.

Based on the enhanced reliability criteria aligning with the IRRP, the scenario where two autotransformers are lost simultaneously and only one remains in service is also evaluated. Under this condition, the area limit is reduced to 470 MW⁵ with the presence of the existing Manby Remedial Action Scheme (“RAS”) which allows up to 150 MW of load rejection when two out of the three autotransformers

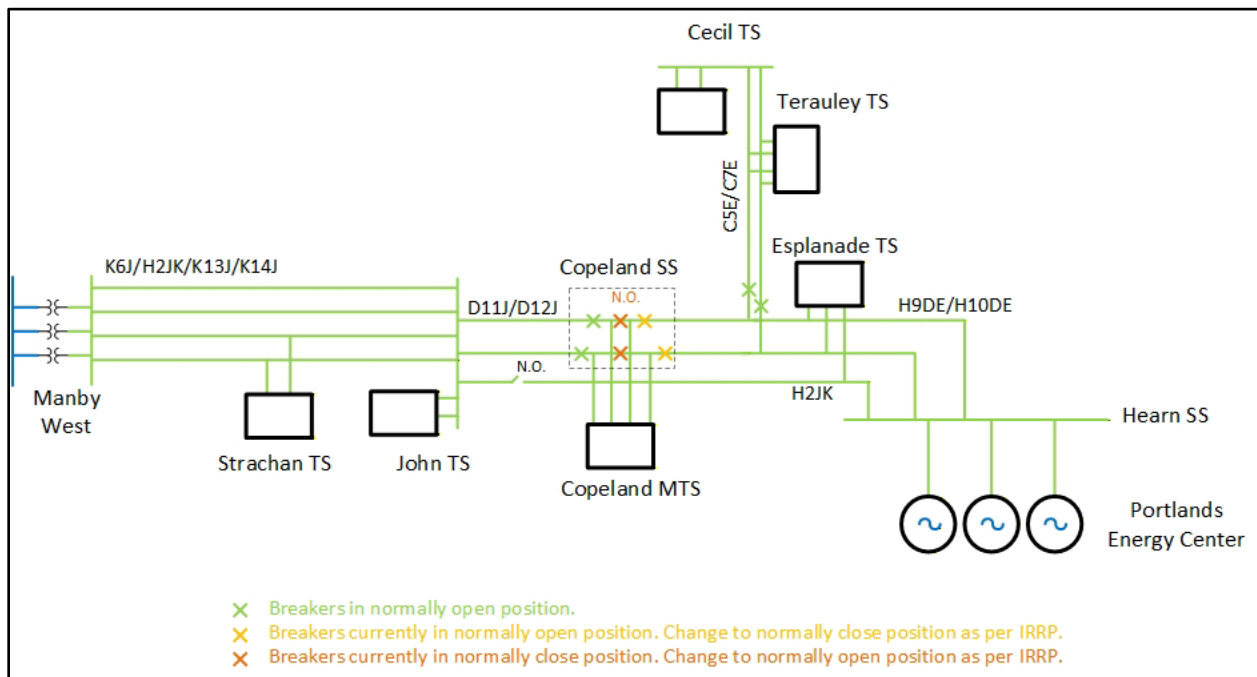
⁴ The existing autotransformer T12 is currently the most limiting unit and is planned for replacement by 2030. Following the T12 replacement, the autotransformer limit is expected to increase.

are out of service at the same time. Based on the summer coincident reference forecast, the projected area load is expected to exceed this limit by 2028.

As outlined in the IRRP, the recommended plan to address this need includes the continued reliance on Manby RAS, permanent transfer of Copeland MTS T2/T4 to the Leaside supply, incremental electricity Demand Side Management (“eDSM”), and the potential connection of Energy Storage Systems (“ESS”). Based on the summer coincident reference forecast, the permanent transfer of Copeland MTS T2/T4 to the Leaside supply keeps the Manby West load under the 465 MW limit within the study period. Under the high-electrification forecast⁵, the Many West load is expected to exceed the 465 MW limit by 2036. The potential non-wire solutions would further reduce the net load supplied by Manby West autotransformers and may also decrease the amount of load rejection required when two autotransformers are out simultaneously. The TWG recommends monitoring the demand growth in this area and revisiting this capacity need in the future regional planning cycle if the growth is significant.

Figure 8-7 shows the single line diagram of the Manby West area along with the partial transmission network of the Leaside / Hearn side. As recommended in the IRRP, Copeland T2/T4 is to be transferred to the Leaside / Hearn side by changing the normally open points at Copeland SS.

Figure 8-7: Permanent Transfer of Copeland T2/T4 to the Leaside Supply



⁵ For the High Electrification forecast, please refer to <https://www.ieso.ca/-/media/Files/IESO/Document-Library/regional-planning/Toronto/toronto-irrp-data-tables.xlsx>

8.4 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 2025-2044 for the 230kV and 115kV Transmission line circuits in the Toronto region by assessing thermal limits of the circuit and the voltage range as per ORTAC to cater to this need. The following line capacity needs have been identified during the 2026-2035 period.

8.4.1 K13J / K14J – 115 kV – Manby TS x Riverside Junction Overhead Line Upgrade

As described in Section 8.3.1, the Manby West autotransformers normally supply three downstream 115 / 13.8 kV step-down transformer stations: Strachan TS, John TS, and Copeland MTS. They may also be used in emergency situations to supply Esplanade TS and/or Terauley TS, which are normally served by the Leaside 115 kV transmission network. This supply is supported by a four-circuit corridor (K13J, K14J, K6J, and H2JK) between Manby West and John TS, as well as two underground cable circuits (D11J and D12J) from John TS to Copeland SS. The existing overhead sections of circuits K13J and K14J are the most limiting elements of the Manby West area supply.

The actual 2024 summer coincident loading for the Manby West area was 358 MW. The area limit based on the loss of a single circuit (K13J or K14J) is 510 MW. With Copeland T2/T4 supplied by Manby West, the projected area load is expected to exceed this limit by 2040 under the summer coincident reference forecast, and this need would shift into the near- to medium-term under the high-electrification scenario. If Copeland T2/T4 is permanently transferred to the Leaside supply as described in Section 8.3.1, the Manby West load is expected to remain within the limit under both the reference and high-electrification forecasts⁶.

Based on the enhanced reliability criteria aligning with the IRRP, the scenarios involving the simultaneous loss of two circuits are also evaluated. Under this condition, the area limit decreases to 370 MW⁷. Based on the summer coincident reference forecast, the projected area load is expected to exceed this limit by 2026 when Copeland T2/T4 is supplied from Manby West. Even with the permanent transfer of Copeland T2/T4 to the Leaside supply, the need persists and is only deferred to 2027 when double-element contingencies without control actions are considered.

Given the importance of supply reliability for Downtown Toronto and the increasing difficulty in securing outages as load demand grows, the TWG recommends upgrading the 115 kV overhead sections of circuits

⁶ For the High Electrification forecast, please refer to <https://www.ieso.ca/-/media/Files/IESO/Document-Library/regional-planning/Toronto/toronto-irrp-data-tables.xlsx>

⁷ The most limiting scenario is the loss of two circuits K13J and K6J / H2JK simultaneously with no control actions considered.

K13J and K14J between Manby TS and Riverside Junction to at least match the ampacity of the other two circuits in the corridor (K6J and H2JK). The current planned in-service date of this line upgrade is Q2-Q3 2029.

8.4.2 R1K / R2K / R13K / R15K – 230 kV – Richview TS x Manby TS

The 230 kV transmission corridor between Richview TS and Manby TS is the main supply path for the Western Sector of Central Toronto. Along this corridor there are four 230 kV circuits R1K, R2K, R13K, and R15K. Together with circuit R24C between Richview TS and Cooksville TS, this corridor also supplies the load in the southern Mississauga and Oakville areas via Manby TS.

As recommended in the previous RP, this corridor requires reinforcement to increase transfer capability in support of continued load growth in these areas. The reinforcement will be implemented in two phases. Phase 1 involves constructing a new 230 kV double-circuit line within the existing corridor and forming two supercircuits, R2K and R15K. Phase 1 is expected to be completed by March 2026. Phase 2 will unbundle these supercircuits, with one new circuit connected to Manby West and the other to Manby East. At Richview TS, the new circuits will be tapped into two existing 230 kV circuits from Claireville TS. Phase 2 is anticipated to be completed around 2030.

As outlined in the IRRP, the post-reinforcement LMC will increase to around 1840 MW, and the area load is expected to reach this limit by 2032 based on the reference forecast, under a breaker failure contingency at Richview TS resulting in the loss of two of the three circuits between Richview TS and Manby West. The TWG recommends further evaluation of this need and options in the GTA West IRRP.

8.5 Long-Term Capacity Needs

Transmission system planning must consider potential long-term needs to help inform current and future planning actions. A number of potential longer term needs have been identified as noted in Table 7-5. These needs will continue to be monitored and evaluated as needed in future regional planning cycles. No planning action or investment is required at this time as long term forecasts are uncertain and subject to potential change and the timing of the needs are longer term. The sections below discuss these potential needs.

8.5.1 Warden TS Capacity

Warden TS is comprised of one DESN unit, T1/T2 (75/125 MVA units), that has a summer 10-Day LTR of approximately 182 MW. The IRRP observes potential future station capacity exceedances in the long-term beginning approximately in 2036. A new DESN station at Scarboro TS has been proposed to address the station capacity needs in the area (see Section 8.2.2) and will also allow load to be offloaded from Warden TS. No investment or planning actions are required at this time, and the station and area needs will continue to be assessed in future planning cycles.

8.5.2 Fairbank TS Capacity

Fairbank TS consists of two DESN units, T5/T6 (50/83 MVA units) and T7/T8 (50/83 MVA units), that have a combined summer 10-Day LTR of approximately 222 MW. The IRRP observes potential future station capacity exceedances in the long-term beginning approximately in 2042. In addition, the Fairbank TS supply will also be limited to approximately 180 MW by the existing overhead line tap from St. Clair Ave. Jct. (see Section 8.5.14). The IRRP has proposed to address these long-term station and line capacity needs by transferring load from Fairbank TS to the new Downsview MTS (see Section 8.2.1). No investment or planning actions are required at this time, and the station and area needs will continue to be assessed in future planning cycles.

8.5.3 Strachan TS Capacity

Strachan TS consists of two DESN units, T12/T14 (one 60/100 MVA unit; one 45/75 MVA unit) and T13/T15 (45/75 MVA units), that have a combined summer 10-Day LTR of approximately 171 MW. The IRRP observes potential future station capacity exceedances in the long-term beginning approximately in 2039. The currently anticipated solutions to manage potential future excess load include increased local electricity demand side management and upsizing transformers upon renewal replacement. No other investment or planning actions are required at this time, and the station and area needs will continue to be assessed in future planning cycles.

8.5.4 Dufferin TS Capacity

Dufferin TS consists of two DESN units, T1/T3 (60/100 MVA units) and T2/T4 (one 45/75 MVA unit; one 60/100 MVA unit), that have a combined summer 10-Day LTR of approximately 180 MW. The IRRP

observes potential future station capacity exceedances in the long-term beginning approximately in 2040. In addition, the Dufferin TS supply is currently limited to approximately 135 MW by the existing underground cable tap from Dufferin Jct. and Barlett Jct. (see Section 8.5.15). A combination of remedies including upgrading the Dufferin TS supply cables, load transfers, increased local energy storage systems, and upsizing transformers upon renewal replacement are currently considered as potential solutions to address possible future excess load. No investment or planning actions are required at this time, and the station and area needs will continue to be assessed in future planning cycles.

8.5.5 Glengrove TS Capacity

Glengrove TS consists of two DESN units, T1/T3 (25/42 MVA units) and T2/T4 (25/42 MVA units), that have a combined summer 10-Day LTR of approximately 86 MW. The IRRP and RIP observe potential future station capacity exceedances in the long-term beginning approximately in 2042. The currently considered remedy is load transfer to Duplex TS, an adjacent load supply station, to address possible future excess load. No investment or planning actions are required at this time, and the station and area needs will continue to be assessed in future planning cycles.

8.5.6 Manby TS DESN Switchyards Capacity

Manby TS consists of three DESN units, T13/T14 (56/93 MVA units), T3/T4 (25/42 MVA units), and T5/T6 (25/42 MVA units), that have a combined summer 10-Day LTR of approximately 226 MW. The IRRP and RIP observe potential future station capacity exceedances in the long-term beginning approximately in 2036. The currently anticipated solutions to manage potential future excess load include upsizing transformers via renewal and upgrade replacements (see Section 8.1.2). The LV switchyard supplied by T13 and T14 is also proposed to be reconfigured concurrently with the transformer replacements to enable future LV switchyard replacements at other DESNs and support long-term capacity growth. No other investment or planning actions are required at this time, and the station and area needs will continue to be assessed in future planning cycles.

8.5.7 Fairchild TS Capacity

Fairchild TS consists of two DESN units, T1/T2 (75/125 MVA units) and T3/T4 (75/125 MVA units), that have a combined summer 10-Day LTR of approximately 346 MW. With the added consideration of Alectra load, the RIP observes potential future station capacity exceedances in the long-term beginning approximately in 2040. It is currently anticipated that any potential future excess load will be able to be managed through load transfers as Fairchild TS is relatively near to the proposed new Downsview MTS area. No investment or planning actions are required at this time, and the station and area needs will continue to be assessed in future planning cycles.

8.5.8 Leslie TS Capacity

Leslie TS consists of two DESN units, T1/T2 (75/125 MVA units) and T3/T4 (75/125 MVA units), that have a combined summer 10-Day LTR of approximately 323 MW. With the added consideration of Alectra load, the RIP observes potential future station capacity exceedances in the long-term beginning approximately

in 2039. It is currently anticipated that any potential future excess load can be managed primarily through improved capacity via transformer renewal and upgrade replacements (see Section 8.1.3). No other investment or planning actions are required at this time, and the station and area needs will continue to be assessed in future planning cycles.

8.5.9 Duplex TS Capacity

Duplex TS consists of two DESN units, T1/T2 (45/75 MVA units) and T3/T4 (45/75 MVA units), that have a combined summer 10-Day LTR of approximately 128 MW. The RIP observes potential future station capacity exceedances in the long-term beginning approximately in 2042. It is currently anticipated that any potential future excess load can be managed primarily through upsizing transformers via renewal replacements (see Section 8.1.13). No investment or planning actions are required at this time, and the station and area needs will continue to be assessed in future planning cycles.

8.5.10 Main TS Capacity

Main TS consists of one DESN unit, T3/T4 (60/100 MVA units), that has a winter 10-Day LTR of approximately 117 MW. The RIP observes potential future station capacity exceedances in the long-term beginning approximately in 2043. It is currently anticipated that any potential future excess load can be managed primarily through renewal replacements of downstream 13.8 kV switchgear that will resolve capacity limitations. No investment or planning actions are required at this time, and the station and area needs will continue to be assessed in future planning cycles.

8.5.11 Runnymede TS Capacity

Runnymede TS consists of two DESN units, T1/T2 (50/83 MVA units) and T5/T6 (50/83 MVA units), that have a combined winter 10-Day LTR of approximately 238 MW. The RIP observes potential future station capacity exceedances in the long-term beginning approximately in 2043. It is currently anticipated that any potential future excess load can be managed primarily through electricity demand side management measures. No investment or planning actions are required at this time, and the station and area needs will continue to be assessed in future planning cycles.

8.5.12 Cherrywood TS X Leaside TS – 230kV Circuits and Leaside TS Autotransformer Capacity

East Toronto is supplied from the east by six 230kV transmission lines that extend from Cherrywood TS to Leaside TS. The Cherrywood TS X Leaside TS lines directly supply six step-down transformer stations throughout Scarborough and East Toronto and also supply six 230/115 kV autotransformers (150/250 MVA units) at Leaside TS. The six Leaside TS autotransformers supply twelve step-down transformer stations via the Leaside 115 kV system.

The actual 2025 summer coincident peak load on the Cherrywood TS X Leaside TS lines was 2174 MW. Of the 2174 MW total, 1246 MW was supplied to the Leaside 115 kV system via the Leaside TS autotransformers. As outlined in the IRRP, the load meeting capability of the Cherrywood to Leaside lines is limited to approximately 2610 MW as a result of reaching voltage stability limits on the loss of two 230

kV supply circuits. Based on the summer reference load forecast, the Cherrywood to Leaside line loading is projected to reach this load level in approximately 2036.

The actions necessary to address the future long-term exceedances on the 230 kV supply lines and the Leaside autotransformers will be significant. As outlined in the IRRP, the recommended plan to address the Eastern Toronto needs is to introduce new supply. After assessing three distinct supply options, the IESO proposed a new underwater high-voltage direct current (HVDC) link between the Hearn SS area and the Bowmanville SS area as the preferred approach to provide new supply into the Eastern Toronto area. The HVDC link option will include extensive switchyard work at Hearn SS and Bowmanville SS as well as potentially new 230kV in-line breakers at Leaside TS on the Cherrywood TS X Leaside TS lines.

8.5.13 Manby East – 230 / 115 kV Autotransformers

As described in Section 8.3.1, Manby East comprises three 230 / 115 kV autotransformers (T7/T8/T9). They normally supply two 115 / 27.6 kV and one 115 / 13.8 kV step-down downstream transformer stations: Runnymede TS, Fairbank TS, and Wiltshire TS. The Manby East autotransformers may also be used in emergency situations to supply Dufferin TS and Bridgman TS, which are normally served by the Leaside 115 kV autotransformers.

The actual 2025 summer coincident loading for the Manby East area was 319 MW. The area limit based on the loss of a single autotransformer at Manby East is 560 MW⁸. According to the summer coincident reference forecast, the projected area load remains within the autotransformer limit during the study period.

Based on the enhanced criteria aligning with the IRRP, the scenario where two autotransformers are lost simultaneously and only one remains in service is also evaluated. Under this condition, the area limit is reduced to 460 MW with the presence of the existing Manby Remedial Action Scheme (“RAS”) which allows up to 150 MW of load rejection when two out of the three autotransformers are out of service at the same time. Based on the summer coincident reference forecast, the projected area load is expected to exceed this limit by 2041.

As outlined in the IRRP, the recommended plan to address this need includes the continued reliance on Manby RAS, permanent load transfer from Fairbank TS to the new Downsview MTS, and incremental eDSM. Given that the planned autotransformer replacements may postpone the need (based on enhanced criteria aligning with the IRRP) to beyond 2044, the TWG recommends monitoring the demand growth in this area and revisiting this capacity need in the future regional planning.

8.5.14 K1W/K3W (St. Clair Ave. Jct. X Fairbank TS) Capacity

K1W and K3W 115 kV lines, extending between Manby TS (East) and Wiltshire TS, supply load to Fairbank TS and Wiltshire TS. Along this line, a 4.5 km tap from St. Clair Ave. Jct. to Fairbank TS supplies the Fairbank

⁸ The existing autotransformer T7 is currently the most limiting unit and is planned for replacement by 2030. The other autotransformer T9 is also scheduled to be replaced at the same time. Following these replacements, the autotransformer limits are expected to increase.

TS. A portion of this line tap (~2.5 km) is currently planned to be relocated to accommodate new customer infrastructure.

The actual 2025 summer coincident peak load on the K1W/K3W line taps between St. Clair Ave. Jct. and Fairbank TS was approximately 122 MW. As noted in the IRRP, the load meeting capability of these line taps is approximately 180 MW based on the loss of one of the two circuits. It is currently anticipated and noted in the IRRP that the K1W/K3W line tap is projected to reach this load level in approximately 2036.

The current recommended plan to address this long-term need is to transfer load from Fairbank TS to the proposed Downsview MTS, as needed, to respect the limits of the K1W/K3W circuits. No investment or planning actions are required at this time, and the area supply needs will continue to be assessed in future planning cycles.

8.5.15 Leaside TS X Wiltshire TS – 115kV Circuits Capacity

The Leaside TS X Wiltshire TS corridor facilitates four 115 kV transmission lines (L13W, L14W, L18W, L15) that extend between Leaside TS and Wiltshire TS to supply load at Bridgman TS and Dufferin TS. Each line is comprised of a few distinct sections of either overhead conductors or underground cables. These lines are operated with the Wiltshire TS end normally open so they are, in effect, normally supplied radially from Leaside TS.

The actual 2025 summer coincident peak load on all L13W, L14W, L18W, L15 circuits was approximately 287 MW total. The L18W and L13W lines supply Dufferin TS via 1.3 km cable taps that have a load meeting capability to Dufferin TS of approximately 135 MW. These cable taps are known limitations and load level is managed accordingly to address this. Upgrading the capacity of these Dufferin TS cable taps would allow approximately 18 MW of additional Dufferin TS loading beyond which the main L13W line sections would start to become limiting. In the long term, as load growth at Bridgman TS and Dufferin TS evolves, sections of other lines may also reach limitations for certain contingencies.

As outlined in the IRRP and based on the load forecast that included the higher future Dufferin TS load, the plans to address the needs of this corridor currently include upgrading the capacity of the Dufferin TS supply cable taps, transferring load from the Dufferin TS load pocket to Wiltshire TS (assuming appropriately upgraded), and the installation of local energy storage systems. The TWG recommends monitoring the demand growth in this area and revisiting this capacity need in future regional planning cycles.

8.5.16 H1L/H3L Capacity – (Leaside TS X Bloor Jct.) and (Hearn SS X Basin TS) Sections

H1L and H3L 115 kV lines extend between Leaside TS and Hearn SS to supply load to Gerrard TS, Carlaw TS, and Basin TS. There are five distinct major line sections that make up the main path of each of these lines – two are overhead line sections; three are underground cable sections. The overhead line sections are the sections that may potentially experience capacity needs in the long-term.

The first overhead line section of H1L/H3L, from Leaside TS to Bloor St. Jct., may begin to experience capacity limitations in approximately 2036 when the Portlands Energy Centre G3 is unavailable and an n-2 contingency removes the H1L line, as noted in the IRRP. Similarly, the second overhead line section of

H1L/H3L, from Hearn SS to Basin TS, may begin to experience capacity limitations in approximately 2041 due to n-1 companion circuit outages.

The Leaside 34 Jct. x Bloor St. Jct. section of the H1L/H3L circuits is anticipated to be replaced by approximately 2031 due to asset renewal need. To address the long-term capacity need, the ampacity requirement identified in the IRRP will also be considered during the project development stage. For the Hearn SS X Basin TS section of the H1L/H3L circuits, the current recommended plan to address this long-term need is to re-conductor the line section with higher ampacity conductors. No investment or planning actions are required at this time, and the area supply needs will continue to be assessed in future planning cycles.

9. CONCLUSION AND RECOMMENDATION

This section concludes the Regional Infrastructure plan Report for the Toronto region. The Major Infrastructure investments recommended by the TWG in the near and mid-term planning horizon [2026-2035] are provided in Table 9-1 below, along with their planned in-service dates (ISD) and budgetary estimates for planning purposes.

Table 9-1: Recommended Plans over the next 10 Years

Station/Circuit Name	Recommended Plan	Lead	Planned ISD	Budgetary Cost (\$M) ^(c)
Asset Renewal Needs				
Basin TS	Transformers T3/T5 replacement*	Hydro One	2030	-
Manby TS	Autotransformers (T7, T9, T12) replacement, Step-down transformer (T13/T14) replacement*	Hydro One	2030 2033	
Leslie TS	Transformer T1, T4 replacement	Hydro One	2032	
Dufferin TS	Transformer T2 replacement*	Hydro One	2032	
Cecil TS	115kV Switchgear replacement	Hydro One	2032	
Bermondsey TS	Transformers T3/T4 replacement	Hydro One	2033	
Strachan TS	Transformers T13/T15 replacement*	Hydro One	2033	
Agincourt TS	Transformers T5/T6 replacement	Hydro One	2033	
Terauley TS	Transformers T1/T2/T3/T4 replacement	Hydro One	2033	
Carlaw TS	Transformers T1/T2 replacement*	Hydro One	2033	
Rexdale TS	Transformer T2 replacement	Hydro One	2033	
John TS	Transformer T3 replacement*	Hydro One	2033	
Duplex TS	Transformers T1/T2 & T3/T4 replacement*	Hydro One	2034	
Fairchild TS	Transformers T1 & T3/T4 replacement	Hydro One	2034	
Warden TS	Transformer T4 replacement	Hydro One	2035	
Finch TS	Transformer T1 replacement	Hydro One	2035	

H1L/H3L/H6LC/H8LC	Leaside Jct. X Bloor St. Jct. – Overhead line section renewal	Hydro One	2031	
L9C/L12C	Leaside TS X Balfour Jct. – Overhead line section renewal	Hydro One	2031	
H1L/H3L & H2JK	Underground cable replacement	Hydro One	2035	
Station Capacity Needs				
Bathurst TS & Finch TS	Connect Downsview MTS (Load Transfers to new Downsview MTS) - First DESN (Phase 1) - Second DESN (Phase 2)	THESL / Hydro One	2033 2039	\$135-155M ^(d)
Scarboro TS	Build third Scarboro TS DESN (Load Transfers to new Scarboro DESN)	Hydro One / THESL	2035	\$55-65M
Basin TS	Develop an expansion of Basin TS or add a new station in the area.	Hydro One / THESL	2035	\$55-65M
Sheppard TS	Expand T1/T2 DESN using the idle windings	Hydro One / THESL	2029	\$16M
Transformation Capacity Need				
Manby TS (West) Autotransformers	Load Transfer (Copeland T2/T4 to Leaside Supply) + Reliance on existing Manby Remedial Action Scheme	-	2026	-
Transmission Line Capacity Need				
Manby TS X Riverside Jct.: 115 kV Circuits	Upgrade capacity of 115 kV circuits	Hydro One	2029	\$25M
Richview TS X Manby TS: 230 kV Circuits	230 kV Corridor Reinforcement	Hydro One	2032	N/A ^(b)

*Transformer units to be replaced with higher rated standard units.

Notes:

- a) The Planned In-Service dates are tentative and subject to change.
- b) The recommended plan to address the Richview TS x Manby TS corridor need is expected by Q4 2026 as part of the GTA West IRRP.
- c) Costs are tentative high-level budgetary planning estimates based on 2026 dollars and subject to change.
- d) Property procurement costs not included.

10. REFERENCES

- [1] Hydro One, [Toronto RIP - Report \(2nd cycle\)](#), (published March 6, 2020)
- [2] Hydro One, [Toronto NA – Report \(3rd cycle\)](#), (published December 19, 2022)
- [3] Independent Electricity System Operator, [Toronto SA – Report \(3rd cycle\)](#), (published March 21, 2023)
- [4] Independent Electricity System Operator, [Toronto IRRP – Report \(3rd Cycle\)](#), (published October 31, 2025)
- [5] Independent Electricity System Operator, [Ontario Resource and Transmission Assessment Criteria](#) (issue 6.0 September 10, 2025)
- [6] Ontario Energy Board, [Transmission System Code](#) (issue July 14, 2000 rev. March 31, 2025)
- [7] Ontario Energy Board, [Distribution system Code](#) (issue July 14, 2000 rev. May 01, 2026)
- [8] Ontario Energy Board, [Load Forecast Guideline for Ontario](#) (issue October 13, 2022)

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

Table A.1: Toronto Region – Summer Coincident – Reference Load Forecast

AREA & STATION	LTR (MW)	Near to Medium-Term Forecast (MW)										Long-Term Forecast (MW)		
		2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2040	2044
NORTH 230kV	1902	1389	1410	1430	1493	1517	1542	1573	1611	1648	1680	1728	1924	2119
Agincourt TS	174	97	104	111	117	124	126	128	130	131	132	134	142	150
Bathurst TS	361	235	240	240	284	271	282	294	310	325	341	340	339	339
Cavanagh MTS	157	96	97	98	101	105	109	112	114	115	117	120	130	140
Downsview MTS		0	0	0	0	0	0	0	0	0	0	32	163	293
Fairchild TS	346	275	278	282	287	311	315	321	324	327	323	326	340	354
Finch TS	366	311	315	325	330	334	339	347	352	360	367	368	370	372
Leslie TS	323	257	259	256	254	251	249	247	256	265	274	280	306	331
Malvern TS	176	117	118	118	119	120	121	123	124	125	126	127	133	139
EAST 230kV	1502	971	1009	1047	1064	1088	1122	1159	1198	1232	1266	1297	1420	1543
Bermondsey TS	349	153	187	192	196	197	199	202	205	207	209	212	224	236
Ellesmere TS	189	143	142	150	152	153	155	158	160	162	163	166	175	185
Leaside TS	210	145	139	136	135	133	132	132	135	136	138	140	150	160
Scarboro TS	364	192	195	210	211	227	248	270	296	320	345	362	433	503
Sheppard TS	208	194	197	203	210	216	223	227	231	234	238	243	264	285
Warden TS	182	144	148	155	161	163	165	168	170	172	174	174	174	174
WEST 230kV	1239	817	803	816	831	840	847	866	882	891	901	917	979	1041
Horner TS	367	256	260	264	267	269	273	277	280	281	282	285	299	311
Manby TS	226	152	154	157	162	167	172	178	182	185	189	194	216	238
Rexdale TS	186	108	109	108	109	108	109	110	114	117	121	125	140	156
Richview TS	460	300	281	287	294	296	294	300	306	307	309	312	324	336
LEASIDE 115kV	1804	1191	1182	1194	1213	1220	1237	1252	1290	1313	1327	1357	1476	1600
Basin TS	88	57	52	56	65	69	80	85	106	116	125	134	170	206
Bridgman TS	191	130	129	126	125	124	122	119	119	120	118	120	127	138
Carlaw TS	74	46	37	36	35	35	35	35	36	37	38	40	47	55
Cecil TS	212	127	131	135	140	142	145	148	150	151	153	155	163	170
Charles TS	211	157	157	155	156	154	153	152	153	154	155	157	165	174
Dufferin TS	180	147	146	145	144	142	141	141	143	144	137	137	137	137
Duplex TS	128	82	83	86	88	91	93	96	98	100	102	106	122	138
Esplanade TS	186	109	106	108	110	111	113	117	120	121	123	125	132	139
Gerrard TS	128	63	63	64	64	64	64	65	66	66	67	69	74	79
Glengrove TS	86	61	62	62	62	62	62	63	64	66	68	70	78	86
Main TS	104	65	66	66	66	65	65	65	67	68	70	72	80	89
Terauley TS	216	146	149	155	157	160	163	167	169	170	171	173	182	191
MANBY E 115kV	620	347	347	355	364	370	378	390	397	403	421	428	457	486
Fairbank TS	222	152	149	151	155	157	161	166	168	170	165	165	165	165
Runnymede TS	220	119	122	125	129	133	135	139	143	146	159	162	173	185
Wiltshire TS	178	76	77	79	80	81	82	84	86	87	96	101	119	137
MANBY W 115kV	715	423	429	471	474	479	482	484	483	485	488	493	510	534
Copeland MTS	232	140	144	179	179	178	177	177	176	175	175	175	175	178
John TS	312	157	160	163	165	169	170	171	171	173	175	176	184	192
Strachan TS	171	125	126	130	130	132	134	136	136	137	138	142	152	164
Grand Total	7783	5137	5181	5314	5438	5514	5608	5723	5860	5971	6083	6219	6766	7323

Table A.2: Toronto Region – Winter Coincident – Reference Load Forecast

AREA & STATION	LTR (MW)	Near to Medium-Term Forecast (MW)										Long-Term Forecast (MW)		
		2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2040	2044
NORTH 230kV	2108	1342	1371	1394	1437	1465	1496	1521	1551	1581	1611	1658	1846	2035
Agincourt TS	193	84	90	96	102	109	112	113	115	116	117	119	129	138
Bathurst TS	390	219	227	230	254	262	253	263	275	288	320	325	344	363
Cavanagh MTS	187	110	111	113	116	120	124	128	129	131	132	135	149	162
Downsview MTS		0	0	0	0	0	0	0	0	0	0	17	86	154
Fairchild TS	389	258	262	268	273	277	300	304	307	310	293	299	321	344
Finch TS	403	285	288	293	298	303	310	315	319	323	326	332	357	381
Leslie TS	357	278	283	282	283	283	286	285	292	300	308	315	342	370
Malvern TS	190	109	110	110	110	111	112	113	113	114	114	115	119	124
EAST 230kV	1664	956	1010	1055	1072	1081	1114	1149	1183	1218	1250	1283	1415	1547
Bermondsey TS	389	141	180	186	190	191	194	197	199	202	204	208	223	238
Ellesmere TS	206	139	139	147	148	149	152	154	155	157	158	161	172	184
Leaside TS	229	149	146	145	144	142	144	145	148	150	152	156	171	187
Scarboro TS	412	196	202	219	221	219	236	256	278	301	322	340	411	482
Sheppard TS	231	174	179	187	193	199	206	211	214	218	221	226	244	263
Warden TS	198	157	163	171	177	179	183	186	188	190	193	193	193	194
WEST 230kV	1355	863	858	875	888	897	906	923	936	947	964	983	1057	1131
Horner TS	394	263	270	275	278	280	286	290	294	296	298	302	322	341
Manby TS	252	147	151	155	159	164	169	175	178	181	184	191	218	245
Rexdale TS	200	111	112	113	113	113	114	115	118	121	124	128	144	160
Richview TS	509	341	324	332	338	340	337	343	347	348	358	361	373	385
LEASIDE 115kV	1955	1289	1245	1265	1281	1290	1314	1329	1366	1393	1387	1421	1557	1697
Basin TS	104	66	59	62	69	73	84	87	107	116	125	133	165	197
Bridgman TS	199	135	135	133	133	131	130	127	128	129	130	132	142	156
Carlaw TS	81	58	49	49	48	48	48	49	50	52	53	56	66	76
Cecil TS	220	130	119	124	128	129	131	133	135	136	137	138	146	153
Charles TS	221	171	173	173	173	172	173	172	173	174	174	177	189	200
Dufferin TS	203	161	163	164	165	164	165	167	170	173	145	144	144	143
Duplex TS	144	88	91	95	97	100	102	106	108	110	112	117	136	155
Esplanade TS	200	113	97	99	100	101	102	105	107	109	111	112	119	126
Gerrard TS	146	69	70	71	71	71	72	73	74	75	76	78	87	95
Glen Grove TS	104	66	68	69	69	70	71	72	74	76	79	82	94	106
Main TS	117	76	78	79	80	80	81	82	84	86	88	92	106	120
Terauley TS	216	155	143	148	149	151	153	156	156	156	157	159	164	169
MANBY E 115kV	676	356	361	371	379	387	397	409	416	426	466	479	530	581
Fairbank TS	241	147	146	150	153	156	161	166	168	173	178	179	182	185
Runnymede TS	238	126	130	134	137	141	144	149	152	156	158	163	183	203
Wiltshire TS	198	83	85	88	89	90	91	94	96	97	130	137	165	193
MANBY W 115kV	766	365	416	461	462	464	465	467	465	468	474	480	501	528
Copeland MTS	244	74	131	167	167	165	163	163	162	161	161	160	159	161
John TS	326	150	153	157	158	159	159	160	158	160	163	164	174	185
Strachan TS	196	141	132	137	138	140	142	144	145	147	151	155	167	182
Grand Total	8524	5170	5260	5421	5519	5583	5692	5798	5918	6032	6151	6302	6905	7520

Table A.3: Toronto Region – Summer Non-Coincident – Reference Load Forecast

AREA & STATION	LTR (MW)	Near to Medium-Term Forecast (MW)										Long-Term Forecast (MW)		
		2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2040	2044
NORTH 230kV	1902	1480	1502	1523	1590	1614	1641	1674	1715	1745	1798	1847	2048	2248
Agincourt TS	174	102	109	117	124	131	133	135	137	138	140	142	150	158
Bathurst TS	361	254	261	261	308	294	306	319	336	345	370	369	368	367
Cavanagh MTS	157	107	107	109	113	117	121	125	127	128	130	133	144	156
Downsview MTS		0	0	0	0	0	0	0	0	0	0	32	163	293
Fairchild TS	346	283	285	290	294	320	324	329	333	336	332	335	350	364
Finch TS	366	329	333	343	348	352	358	365	371	378	388	388	390	393
Leslie TS	323	276	278	274	273	269	267	265	275	284	302	309	337	364
Malvern TS	176	129	129	129	130	131	133	135	136	137	138	139	146	153
EAST 230kV	1502	1021	1067	1106	1124	1150	1186	1225	1266	1303	1339	1370	1496	1622
Bermondsey TS	349	171	212	217	222	223	225	229	232	234	236	240	253	267
Ellesmere TS	189	146	146	154	155	157	159	162	164	166	167	169	179	189
Leaside TS	210	153	148	145	143	141	140	140	143	144	146	149	159	169
Scarboro TS	364	207	210	227	227	245	267	291	319	345	371	389	459	529
Sheppard TS	208	194	197	203	210	216	223	228	231	234	238	243	265	287
Warden TS	182	150	154	161	167	169	171	175	177	179	180	180	181	181
WEST 230kV	1239	899	887	902	919	929	937	957	973	983	986	1003	1072	1140
Horner TS	367	262	266	270	273	275	279	283	286	287	288	292	305	318
Manby TS	226	177	178	183	189	194	200	207	212	215	219	226	251	276
Rexdale TS	186	118	119	119	119	119	119	121	125	128	132	137	154	171
Richview TS	460	343	324	331	339	342	339	346	351	353	346	349	362	375
LEASIDE 115kV	1804	1231	1222	1234	1253	1260	1278	1293	1333	1357	1372	1403	1526	1654
Basin TS	88	59	55	59	67	72	84	89	110	121	130	140	177	215
Bridgman TS	191	131	130	128	127	125	123	120	121	121	119	121	128	139
Carlaw TS	74	49	39	38	38	38	37	37	38	40	41	43	51	58
Cecil TS	212	131	135	139	145	147	150	152	155	156	157	160	168	176
Charles TS	211	162	162	160	161	159	158	157	158	159	159	162	170	179
Dufferin TS	180	151	150	149	148	146	145	144	146	148	141	141	140	140
Duplex TS	128	83	84	87	89	92	94	97	100	101	103	107	123	139
Esplanade TS	186	112	109	111	112	114	116	120	123	124	126	128	135	143
Gerrard TS	128	75	75	75	75	75	76	77	78	78	79	81	87	92
Glengrove TS	86	62	63	63	63	63	64	64	66	68	70	72	80	88
Main TS	104	68	68	68	68	68	67	68	69	70	72	74	83	92
Terauley TS	216	148	151	157	159	162	165	169	171	172	173	176	184	193
MANBY E 115kV	620	373	373	381	391	398	406	419	426	432	452	460	491	522
Fairbank TS	222	165	161	163	168	170	174	179	182	182	179	179	179	179
Runnymede TS	220	130	132	136	140	144	147	152	156	159	174	177	189	201
Wiltshire TS	178	79	80	82	83	84	85	88	89	91	100	105	124	142
MANBY W 115kV	715	441	448	491	494	500	502	504	504	506	507	512	530	556
Copeland MTS	232	143	147	183	183	182	181	181	180	179	179	179	179	182
John TS	312	167	170	173	175	179	181	182	182	183	184	185	193	202
Strachan TS	171	131	132	136	136	138	140	142	143	144	145	148	159	172
Grand Total	7783	5445	5498	5638	5772	5851	5950	6072	6218	6326	6455	6596	7164	7742

Table A.4: Toronto Region – Winter Non-Coincident – Reference Load Forecast

AREA & STATION	LTR (MW)	Near to Medium-Term Forecast (MW)										Long-Term Forecast (MW)		
		2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2040	2044
NORTH 230kV	2108	1470	1502	1527	1576	1608	1643	1671	1703	1736	1775	1825	2026	2227
Agincourt TS	193	103	111	119	126	134	137	140	141	142	144	147	158	169
Bathurst TS	390	243	252	255	282	290	281	293	307	321	355	360	381	402
Cavanagh MTS	187	123	125	127	131	135	140	143	145	147	149	152	167	182
Downsview MTS		0	0	0	0	0	0	0	0	0	0	17	86	154
Fairchild TS	389	272	277	283	288	292	316	320	323	326	309	315	339	362
Finch TS	403	316	320	326	331	337	344	351	355	359	362	369	396	423
Leslie TS	357	293	298	297	298	299	302	301	309	317	332	339	369	398
Malvern TS	190	119	121	121	121	121	123	124	124	125	125	126	131	136
EAST 230kV	1664	1020	1079	1126	1144	1153	1188	1225	1262	1299	1333	1367	1504	1641
Bermondsey TS	389	150	192	199	203	204	207	210	213	215	218	222	238	254
Ellesmere TS	206	149	150	158	159	161	163	166	167	168	170	173	185	197
Leaside TS	229	157	153	152	151	150	151	153	156	158	160	164	180	197
Scarboro TS	412	211	218	236	237	236	254	275	299	323	346	364	434	505
Sheppard TS	231	194	199	207	214	220	228	233	236	240	244	249	270	291
Warden TS	198	160	166	174	180	182	185	189	191	193	196	196	196	197
WEST 230kV	1355	931	926	945	959	969	979	997	1012	1023	1042	1063	1145	1227
Horner TS	394	274	281	286	289	292	298	302	306	308	310	315	335	355
Manby TS	252	166	170	175	179	184	190	197	200	204	208	215	246	277
Rexdale TS	200	129	131	131	131	132	133	134	138	141	145	150	168	187
Richview TS	509	362	345	352	359	361	358	364	368	370	380	383	396	409
LEASIDE 115kV	1955	1341	1292	1314	1331	1340	1365	1382	1421	1449	1444	1480	1623	1770
Basin TS	104	72	64	68	76	80	91	95	117	127	136	145	180	216
Bridgman TS	199	139	138	137	136	135	134	131	132	133	133	136	147	161
Carlaw TS	81	61	52	52	51	51	52	52	53	55	56	59	70	81
Cecil TS	220	139	126	131	135	136	139	141	143	144	145	147	155	162
Charles TS	221	177	178	178	178	177	178	177	178	179	180	183	194	206
Dufferin TS	203	165	167	168	168	168	169	170	174	177	148	148	147	147
Duplex TS	144	89	92	96	98	100	103	106	109	111	113	118	137	156
Esplanade TS	200	119	101	104	104	105	107	110	113	114	116	118	125	132
Gerrard TS	146	80	80	81	81	82	83	84	85	86	87	90	99	108
Glengrove TS	104	67	69	70	71	71	72	73	75	78	80	83	96	108
Main TS	117	77	79	79	80	81	82	83	85	87	89	92	107	121
Terauley TS	216	158	145	150	151	153	155	158	158	159	160	161	166	172
MANBY E 115kV	676	396	401	413	422	430	441	454	462	474	516	530	586	642
Fairbank TS	241	158	157	161	165	168	173	178	180	186	192	192	196	199
Runnymede TS	238	153	157	162	166	170	174	179	183	187	190	196	220	244
Wiltshire TS	198	85	87	90	91	92	94	97	99	100	134	141	170	199
MANBY W 115kV	766	396	449	496	497	500	501	503	502	505	506	512	535	565
Copeland MTS	244	76	136	173	172	170	169	169	168	167	166	166	165	167
John TS	326	171	174	179	180	182	183	183	182	183	182	184	194	206
Strachan TS	196	148	139	144	145	147	149	152	152	155	159	163	176	192
Grand Total	8524	5553	5649	5821	5929	5999	6117	6232	6362	6486	6616	6777	7419	8073

Appendix B: Lists of Step-Down Transformer Stations

Sr. No.	Transformer Station	Voltage (kV)	Supply Circuits
1	Agincourt TS T5/T6	230/27.6	C4R/C10A
2	Basin TS T3/T5	115/13.8	H3L/H1L
3	Bathurst TS T1/T2	230/27.6	P22R/C18R
4	Bathurst TS T3/T4	230/27.6	P22R/C18R
5	Bermondsey TS T1/T2	230/27.6	C17L/C14L
6	Bermondsey TS T3/T4	230/27.6	C17L/C14L
7	Bridgman TS T11/T12/T13/T14/T15	115/13.8	L14W/L15/L18W
8	Carlaw TS T1/T2	115/13.8	H1L/H3L
9	Cavanagh MTS T1/T2	230/27.6	C20R/C10A
10	Cecil TS T1/T2	115/13.8	Cecil Buses H & P
11	Cecil TS T3/T4	115/13.8	Cecil Buses P & H
12	Charles TS T1/T2	115/13.8	L4C/L9C
13	Charles TS T3/T4	115/13.8	L12C/L4C
14	Copeland MTS T1/T3	115/13.8	D11J/D12J
15	Copeland MTS T2/T4	115/13.8	D11J/D12J
16	Dufferin TS T1/T3	115/13.8	L13W/L18W
17	Dufferin TS T2/T4	115/13.8	L13W/L18W
18	Duplex TS T1/T2	115/13.8	L16D/L5D
19	Duplex TS T3/T4	115/13.8	L5D/L16D
20	Ellesmere TS T3/T4	230/27.6	C2L/C3L
21	Esplanade TS T11/T12/T13	115/13.8	H2JK/H10EJ(C5E)/H9EJ(C7E)
22	Fairbank TS T5/T6	115/27.6	K3W/K1W
23	Fairbank TS T7/T8	115/27.6	K3W/K1W
24	Fairchild TS T1/T2	230/27.6	C18R/C20R
25	Fairchild TS T3/T4	230/27.6	C18R/C20R
26	Finch TS T1/T2	230/27.6	C20R/P22R
27	Finch TS T3/T4	230/27.6	P21R/C4R
28	Gerrard TS T1/T2	115/13.8	H3L/H1L
29	Glengrove TS T1/T3	115/13.8	D6Y/L2Y
30	Glengrove TS T2/T4	115/13.8	D6Y/L2Y

31	Horner TS T3/T4	230/27.6	R15K/R2K
32	Horner TS T1/T2	230/27.6	R2K/R15K
33	Islington TS T1/T2	230/27.6	C5R/C20R
34	John TS T1/T2/T3/T4	115/13.8	John Buses K1 & K2 & K3 & K4
35	John TS T5/T6	115/13.8	John Buses K1 & K4
36	Leaside TS T19/T20/T21 13.8	230/13.8	Leaside Buses HL2, HL3, HL16
37	Leaside TS T19/T20/T21 27.6	230/27.6	Leaside Buses HL2, HL3, HL16
38	Leslie TS T1/T2 13.8	230/13.8	P21R/C5R
39	Leslie TS T1/T2 27.6	230/27.6	P21R/C5R
40	Leslie TS T3/T4	230/27.6	P21R/C5R
41	Main TS T3/T4	115/13.8	H7L/H11L
42	Malvern TS T3/T4	230/27.6	C4R/C5R
43	Manby TS T13/T14	230/27.6	Manby W Buses A1 & H1
44	Manby TS T3/T4	230/27.6	Manby W Buses A1 & H1
45	Manby TS T5/T6	230/27.6	Manby E Buses H2 & A2
46	Rexdale TS T1/T2	230/27.6	V74R/V76R
47	Richview TS T1/T2	230/27.6	Richview Buses H1 & A1
48	Richview TS T5/T6	230/27.6	V74R/V72R
49	Richview TS T7/T8	230/27.6	Richview Buses H2 & A2
50	Runnymede TS T1/T2	115/27.6	K11W/K12W
51	Runnymede TS T5/T6	115/27.6	K12W/K11W
52	Scarboro TS T21/T22	230/27.6	C14L/C2L
53	Scarboro TS T23/T24	230/27.6	C15L/C3L
54	Sheppard TS T1/T2	230/27.6	C16L/C15L
55	Sheppard TS T5/T6	230/27.6	C15L/C16L
56	Strachan TS T12/T14	115/13.8	H2JK/K6J
57	Strachan TS T13/T15	115/13.8	K6J/H2JK
58	Terauley TS T1/T4	115/13.8	C7E/C5E
59	Terauley TS T2/T3	115/13.8	C7E/C5E
60	Warden TS T3/T4	230/27.6	C14L/C17L
61	Wiltshire TS T1/T6	115/13.8	K1W/K3W (Wiltshire Buses H1 & H3)
62	Wiltshire TS T2/T7	115/13.8	K1W/K3W (Wiltshire Buses H1 & H3)

Appendix C: Lists of Transmission Circuits

Sr. No.	Connecting Stations	Circuit ID	Voltage (kV)
1	Richview x Manby	R1K, R2K, R13K, R15K	230
2	Richview x Cooksville	R24C	230
3	Manby x Cooksville	K21C, K23C	230
4	Cherrywood x Leaside	C2L, C3L, C14L, C15L, C16L, C17L	230
5	Cherrywood x Richview	C4R, C5R, C18R, C20R	230
6	Cherrywood x Agincourt	C10A	230
7	Parkway x Richview	P21R, P22R	230
8	Claireville x Richview	V72R, V73R, V74R, V76R, V77R, V79R	230
9	Manby East x Wiltshire	K1W, K3W, K11W, K12W	115
10	Manby West x John	K6J, K13J, K14J	115
11	Manby West x John x Hearn	H2JK	115
12	John x Copeland	D11J, D12J	115
13	Copeland x Esplanade x Hearn	H9DE, H10DE	115
14	Esplanade x Cecil	C5E, C7E	115
15	Hearn x Cecil x Leaside	H6LC, H8LC	115
16	Hearn x Leaside	H1L, H3L, H7L, H11L	115
17	Leaside x Bridgman x Wiltshire	L13W, L14W, L15, L18W	115
18	Leaside x Charles	L4C	115
19	Leaside x Cecil	L9C, L12C	115
20	Leaside x Duplex	L5D, L16D	115
21	Leaside x Glengrove	L2Y	115
22	Duplex x Glengrove	D6Y	115

Appendix D: List of LDC’s

Sr. no.	Name of LDC
1	Toronto Hydro-Electric System Limited (“THESL”)
2	Hydro One Networks Inc. (Distribution)
3	Alectra Utilities Corporation (“Alectra”)
4	Elexicon Energy Inc. (“Elexicon”)

Appendix E: List of Municipalities in the Region

Sr. no.	Name of Municipality
1	City of Toronto

Appendix F: Acronyms

Acronym	Description
A	Ampere
BES	Bulk Electric System
BPS	Bulk Power System
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
eDSM	Electricity Demand Side Management
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
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