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BY EMAIL AND RESS

May 28, 2024

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

Dear Ms. Marconi,

EB-2024-0155 – Hydro One Networks Inc. Leave to Construct Application – St. Clair Transmission Line Project – Application and Evidence

Pursuant to Section 92 of the *Ontario Energy Board Act, 1998*, (the “Act”), Hydro One Networks Inc. (“Hydro One”) seeks the Ontario Energy Board’s (“OEB”) approval for an Order or Orders granting leave to construct transmission facilities (“**SCTL Project**” or “**Project**”) in the West of London area between St. Clair Township and the Municipality of Chatham-Kent.

Additionally, pursuant to Section 97 of the Act, Hydro One seeks OEB approval for an Order granting approval of the forms of land use agreements offered or to be offered to affected landowners.

Hydro One is confirming that the documents filed in support of the referenced application do not include any personal information under the *Freedom of Information and Protection of Privacy Act (Ontario)* (“FIPPA”) with respect to this Application. Any FIPPA related information in the Application has been redacted.

Furthermore, Hydro One is confirming that the System Impact Assessment report appendices, which contain confidential information and if disclosed could reasonably be expected to pose a potential security threat to the integrated power system, have been omitted from this Application. This approach is consistent with the OEB’s recent guidance on the filing System Impact Assessment reports, dated April 4, 2024, where the OEB concluded that these appendices are not generally required for the OEB’s determination of the issues in electricity transmission leave to construct proceedings.

An electronic copy of this Application and Evidence has been filed using the Board’s Regulatory Electronic Submission System.

Sincerely,



Joanne Richardson

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EXHIBIT LIST

Exhibit	Tab	Schedule	Attachment	Contents
A				
	1	1		Exhibit List
	1	2		Application Table of Concordance
	1	3		List of Acronyms and Abbreviations
B				
	1	1		Application
	2	1		Project Overview Documents
	2	1	1	General Area Map
	2	1	2	Schematic Diagram of Proposed Line Facilities and Wallaceburg TS Configuration
	2	1	3	Schematic Diagram of Proposed Lambton TS Configuration
	2	1	4	Schematic Diagram of Proposed Chatham SS Configuration
	3	1		Evidence In Support of Need
	3	1	1	Order-in-Council
	3	1	2	Deputy Minister of Energy Letter to OEB
	3	1	3	Order-in-Council – Priority Project
	3	1	4	OEB Decision Order re: Transmission Licence Amendment
	3	1	5	Hydro One's Transmission Licence – as amended
	3	1	6	IESO Supplemental Evidence to Support the Need for the St. Clair (Lambton to Chatham) Line Project
	4	1		Project Categorization and Classification
	5	1		Cost Benefit Analysis and Options
	6	1		Quantitative and Qualitative Benefits of the Project
	7	1		Apportioning Project Costs and Risks
	8	1		Connection Projects Requiring Network Reinforcement

Exhibit	Tab	Schedule	Attachment	Contents
	9	1		Transmission Rate Impact Assessment
	10	1		Revenue Requirement Information and Deferral Account Requests
	10	1	1	Investment Summary Document: T-SS-09 West of London Transmission Reinforcement
	11	1		Project Schedule
C				
	1	1		Descriptions of the Physical Design
D				
	1	1		Operational Details
E				
	1	1		Land Matters
	1	1	1	Detailed Routing Maps
	1	1	2	List of Properties and Permits Associated with the Project Route
	1	1	3	Early Access Agreement
	1	1	4	Option to Purchase a Limited Interest – Easement
	1	1	5	Compensation and Incentive Agreement – Easement
	1	1	6	Option to Purchase – Fee Simple
	1	1	7	Compensation and Incentive Agreement – Fee Simple
	1	1	8	Option to Purchase a Limited Interest – Easement with a Voluntary Buyout Offer
	1	1	9	Agreement for Temporary Rights
	1	1	10	Off Corridor Access
	1	1	11	Crop Land Out of Production Agreement
	1	1	12	Damage Claim Agreement/Waiver
F				
	1	1		System Impact Assessment
	1	1	1	Draft IESO System Impact Assessment

Exhibit	Tab	Schedule	Attachment	Contents
G				
	1	1		Customer Impact Assessment
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H				
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APPLICATION TABLE OF CONCORDANCE

Exhibit	Content	FR Section	Hydro One S.92 Application Section
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	Evidence in Support of Need for the Project	4.3.2.3	B-03-01 – Evidence in Support of Need
	Project Categorization	4.3.2.4	B-04-01 – Project Categorization and Classification
	Analysis of Alternatives	4.3.2.5	B-05-01 – Cost Benefit Analysis and Options B-06-01 – Quantitative and Qualitative Benefits of the Project H-01-01 – Regional and Bulk Planning
	Project Costs	4.3.2.6	B-07-01 – Apportioning Project Costs and Risks B-09-01 – Transmission Rate Impact Assessment
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	Connection Projects Requiring Network Reinforcement	4.3.2.10	B-08-01 – Connection Projects Requiring Network Reinforcement
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Exhibit	Content	FR Section	Hydro One S.92 Application Section
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D	Design Specification and Operational Data	4.3.4	
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	Description of Land Rights Required	4.3.5.1	E-01-01 – Land Matters
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	Bulk System Plan	4.3.8.3	H-01-01 – Regional and Bulk Planning

1

LIST OF ACRONYMS AND ABBREVIATIONS

<u>Acronym or Abbreviation</u>	<u>Acronym or Abbreviation Expansion</u>
A	Amperes
AACE	Association for the Advancement of Cost Engineering (<i>estimate classification system</i>)
AC/DC	Alternating Current / Direct Current
ACSR	Aluminium-Conductor Steel-Reinforced cable
ACSR/TW	Aluminium-Conductor Steel-Reinforced, trapezoidal shaped cable
AFUDC	Allowance for Funds Used During Construction
ATP	Affiliate Transmission Projects
C	Celsius
CGS	Customer Generating Station
CIA	Customer Impact Assessment
Class EA	Class Environmental Assessment
CSA	Canadian Standards Association
CxL	Chatham by Lakeshore Transmission Line
DCF	Discounted Cash Flow
EA	Environmental Assessment
ECI	Early Contractor Involvement
ECI-EPC	Refers to an ECI delivery model that engages the services of an external OE and the services of EPC contractors.
EPC	Engineering, Procurement and Construction
ESR	Environmental Study Report
EWT	East-West Tie
Hydro One (<i>HONI</i>)	Hydro One Networks Inc.
IESO	Independent Electricity System Operator
ISD	Investment Summary Document
ISOC	Integrated System Operating Center
JRAP	Joint Rate Application
kcmil	Kilo-circular mils (<i>unit of measure of the area of a wire with a circular cross section</i>)
km	Kilometer
kV	Kilovolt

<u>Acronym or Abbreviation</u>	<u>Acronym or Abbreviation Expansion</u>
kW	Kilowatt
LACP	Land Acquisition Compensation Principles
m	Meter
MECP	Ministry of the Environment, Conservation and Parks
MTS	Municipal Transformer Station
MVA	Megavolt-ampere
MW	Megawatt
MWHR (or MWH)	Megawatt-hour
NERC	North American Electric Reliability Corporation
NPCC	Northeast Power Coordinating Council
NPV	Net Present Value
OEB	Ontario Energy Board (the Board)
OIC	Order in Council
OMA	Operations, Maintenance and Administrative costs
OPG	Ontario Power Generation
OPGW	Optical Ground Wire
PV	Present Value
ROE	Return on Equity
ROW	Right-of-Way
RPP	Regulated Price Plan
SCADA	Supervisory Control and Data Acquisition system
SCTL	St. Clair Transmission Line
SIA	System Impact Assessment
SS	Switching Station
TAC	Technical Advisory Committee
TS	Transformer Station
TSC	Transmission System Code
TSP	Transmission System Plan
UTR	Uniform Transmission Rates
XLPE	Cross-linked polyethylene cable

IN THE MATTER OF the *Ontario Energy Board Act, 1998*;

AND IN THE MATTER OF an Application by Hydro One pursuant to s. 97 of the Act for an Order granting approval of the forms of land use agreements offered or to be offered to affected landowners.

1. The Applicant is Hydro One, a subsidiary of Hydro One Inc. The Applicant is an Ontario corporation with its head office in the City of Toronto. Hydro One carries on the business, among other things, of owning and operating transmission facilities within Ontario.
2. Hydro One hereby applies to the OEB pursuant to s. 92 of the Act for an Order or Orders granting leave to construct a 230 kV double-circuit transmission line from Lambton TS, connecting to Wallaceburg TS and terminating at Chatham SS in the West of London area. The approximate length of the transmission line facilities is 64 km.
3. These facilities are required to increase long-term transmission supply capacity to the West of London area as recommended by the IESO in their report entitled the “*Need for Bulk Transmission Reinforcements West of London*”. That IESO Report is provided as **Attachment 2** in **Exhibit H, Tab 1, Schedule 1**. The Project has

1 been identified as a non-discretionary development project in **Exhibit B, Tab 4,**
2 **Schedule 1.**

3

4 4. In accordance with s. 96.1 of the Act and Order in Council 876/2022, the Lieutenant
5 Governor in Council declared that the SCTL Project is a priority project. In
6 accordance with Order in Council 875/2022, the Minister of Energy directed Hydro
7 One to develop and seek all necessary approvals for the construction of the SCTL
8 Project. Copies of the Orders in Council and the Minister of Energy's Directive are
9 found at **Exhibit B, Tab 3, Schedule 1, Attachments 1 to 3.**

10

11 5. Hydro One is committed to working with Indigenous governments and communities
12 in a spirit of cooperation and shared responsibility. The company acknowledges
13 that Indigenous governments and communities have unique historic and cultural
14 relationships with their land and a unique knowledge of the natural environment.
15 Forging meaningful relationships with Indigenous governments and communities
16 based upon trust, confidence, and accountability is vital to advancing reconciliation
17 and achieving Hydro One's corporate objectives. Hydro One has been engaging
18 with Indigenous governments and communities since early in the development
19 process and will continue that engagement and involvement in project decisions
20 throughout the life cycle of the Project. Additionally, Hydro One has, and will
21 continue to throughout the life cycle of the Project, engage in economic
22 participation negotiations with impacted Indigenous communities including
23 employment, training, contracting and equity participation in the Project. Hydro
24 One expects that after completion of the SCTL Project, ownership of the applied-
25 for transmission line facilities will be transferred and owned by a limited partnership
26 that will include ownership interests held by impacted First Nations. As of the time
27 of this Application, the limited partnership has not yet been finalized. As
28 negotiations are ongoing, Hydro One is not currently able to provide commercial
29 details. However, those details will be provided to the OEB once the limited
30 partnership is formed and through subsequent transmission licence and asset

1 transfer applications made to the OEB. In light of these circumstances, Hydro One
2 is proposing costs associated with the transmission line facilities are accounted for
3 in the OEB-approved ATP regulatory account¹ and not form part of Hydro One's
4 rate base. For reference purposes, further information on the ATP regulatory
5 account is provided at **Exhibit B, Tab 10, Schedule 1**. Hydro One is not
6 anticipating the limited partnership to impact the Project cost estimates provided
7 at **Exhibit B, Tab 7, Schedule 1**.

8
9 6. The 230 kV conductor selected by Hydro One to complete the Project has been
10 predicated on Hydro One's commitment to minimize transmission line losses
11 where feasible. Further information regarding the transmission line loss analysis
12 for this Project is provided in **Exhibit B, Tab 5, Schedule 1**.

13
14 7. An overview map of this area is provided in **Exhibit B, Tab 2, Schedule 1**,
15 **Attachment 1**, and schematic diagrams of the proposed Project can be found at
16 **Exhibit B, Tab 2, Schedule 1, Attachments 2 to 4**.

17
18 8. New permanent land rights on properties between Lambton TS and Chatham SS
19 will be required to accommodate the proposed transmission facilities. Temporary
20 rights for construction purposes will also be required at specific locations along the
21 corridor. Further information regarding the real estate needs to complete this
22 project are provided in **Exhibit E, Tab 1, Schedule 1**.

23
24 9. The Project is subject to the applicable Class EA process in accordance with the
25 *Ontario Environmental Assessment Act*. On February 5, 2024, Hydro One filed the
26 Final ESR and Statement of Completion with the MECP.

27
28 10. The proposed in-service date for the Project is December 2028, assuming a
29 construction commencement date of March 2025 and an OEB approval of this

¹ EB-2021-0169

1 Application by December 2024. A project schedule is provided at **Exhibit B, Tab**
2 **11, Schedule 1.**

3

4 11. The IESO has completed a Draft SIA. The final version is expected from the IESO
5 shortly and will be filed upon receipt. The Draft SIA concludes that the Project is
6 expected to have no material adverse impact on the reliability of the integrated
7 power system and recommends that a *Notification of Conditional Approval for*
8 *Connection* be issued. The IESO's Draft SIA is provided as **Exhibit F, Tab 1,**
9 **Schedule 1, Attachment 1.**

10

11 12. Hydro One has completed a Draft CIA in accordance with Hydro One's connection
12 procedures. A copy of the Draft CIA is provided as **Exhibit G, Tab 1, Schedule**
13 **1, Attachment 1.** The final version is expected to be completed shortly and will be
14 filed upon completion. Hydro One will fulfill all requirements of the SIA and the
15 CIA, and will obtain all necessary approvals, permits, licences, certificates,
16 agreements, and rights required to construct the Project.

17

18 13. The forecast total capital cost of the Project transmission facilities is \$469 million².
19 Details pertaining to these costs are provided at **Exhibit B, Tab 7, Schedule 1.**

20

21 14. The Project will enable up to 450 MW of supply capacity into the West of Chatham
22 area. Subsequently, the expected rate impact associated with the Project (using
23 2024 OEB-approved uniform transmission rates as filed in **Exhibit B, Tab 9,**
24 **Schedule 1)** is a \$0.14/month decrease on a typical residential customer's bill
25 under RPP.

26

27 15. This Application is also seeking approval of the forms of the agreement offered or
28 to be offered to affected landowners, pursuant to s. 97 of the Act. The majority of
29 these agreements are in the same form as previously approved in prior Hydro

² There will be an additional \$2.9M of OMA removal costs associated with constructing this Project.

1 One's leave to construct proceedings. Any agreements that have not been
2 previously approved by the OEB or have been altered from their last approval have
3 all been explicitly identified in the Application. The forms of the applied-for
4 agreements are found as attachments to **Exhibit E, Tab 1, Schedule 1**.

5

6 16. The Application is supported by written evidence which includes details of the
7 Applicant's proposal for the transmission line. The written evidence is prefiled and
8 may be amended from time to time prior to the Board's final decision on this
9 Application.

10

11 17. Based on the foregoing, and the information provided in the prefiled evidence,
12 Hydro One submits that the Project is in the public interest. The Project meets the
13 need of the transmission system and improves quality of service and reliability and
14 reduces the price paid by ratepayers.

15

16 18. Hydro One consents to the conditions outlined in the OEB's standard conditions of
17 approval for electricity transmission leave to construct applications³ for this Project.

18

19 19. Hydro One requests that a copy of all documents filed with the Board be served
20 on the Applicant and the Applicant's counsel, as follows:

21 **a) The Applicant:**

22 Eryn MacKinnon
23 Regulatory Advisor
24 Hydro One Networks Inc.

25

26 Mailing Address:
27 7th Floor, South Tower
28 483 Bay Street
29 Toronto, Ontario M5G 2P5

³ <https://www.oeb.ca/sites/default/files/issues-list-LTC-electricity.pdf>

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3

4 **b) The Applicant's counsel:**

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6 Partner
7 McCarthy Tétrault LLP
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PROJECT OVERVIEW DOCUMENTS

Hydro One is seeking approval to construct and operate transmission facilities to meet the requirements set out in Hydro One's Transmission Licence. More specifically, the relief sought in this Application satisfies the direction of the Minister of Energy¹, as amended into Hydro One's Transmission License², *to develop and seek approvals for a new 230 kilovolt (kV) transmission line from Lambton Transformer Station to Chatham Switching Station, including associated station facility expansions or upgrades required at the terminal stations*. The following proposed facilities are subject to s. 92 approval:

- Approximately 64 km of 230 kV double-circuit transmission line from Lambton TS, connecting to Wallaceburg TS, and terminating at Chatham SS on a combination of a new corridor and widened existing 115 kV transmission corridor.
- Terminal station modifications at Lambton TS and Chatham SS to accommodate the new transmission line.
- Conversion of Wallaceburg TS from 115 kV supply to 230 kV supply to enable the new transmission line to repurpose its existing 115 kV transmission supply line corridor.

A map showing the geographic location of the existing facilities as well as schematic diagrams of the proposed facilities are provided in **Exhibit B, Tab 2, Schedule 1, Attachment 1** and **Exhibit B, Tab 2, Schedule 1, Attachments 2 to 4**, respectively.

The transmission system in the area requires reinforcement in order to ensure sufficient bulk transfer capability east of Chatham to reliably supply the rapidly increasing load demand in the Windsor–Essex Region and surrounding Chatham area. The Project will

¹ Exhibit B, Tab 3, Schedule 1, Attachments 1 and 3.

² Exhibit B, Tab 3, Schedule 1, Attachment 5.

1 also improve the deliverability of resources in the Lambton-Sarnia area for provincial
2 supply.

3
4 Further information on the overhead transmission line and the station facilities is provided
5 below.

6 7 **Overhead Transmission Line**

8 There are two existing 230 kV transmission circuits connecting Lambton TS and Chatham
9 SS, with nomenclatures L28C and L29C. With the completion of this Project, there will be
10 four 230 kV transmission circuits between the two stations. The total route length of the
11 proposed 230 kV double-circuit transmission line between Lambton TS and Chatham SS
12 is approximately 64 km. The route passes through one county (Lambton) and one
13 municipality (Chatham-Kent).

14
15 As developed through the completed Class EA process, approximately 80% of the line
16 work is located on existing transmission corridors. Notably, the proposed 230 kV
17 transmission line route will repurpose a section of an existing 115 kV transmission line
18 corridor between Kimball Junction and Kent Junction, approximately 41 km in length.³
19 This existing 115 kV single-circuit transmission line (N5K) currently supplies only
20 Wallaceburg TS, a 115/27.6 kV load supply station. For the section of the existing 115 kV
21 transmission corridor that will be repurposed for this Project, the existing 115 kV
22 structures, conductor and associated components will be dismantled, removed, and
23 replaced, and the corridor will be widened, as required, to accommodate the proposed
24 230 kV double-circuit transmission line. The remaining sections of the existing 115 kV
25 transmission line corridor that are not repurposed will be idled and rendered safe.

26 27 **Lambton TS Line Termination and Switching Facilities**

28 Lambton TS station property will be expanded, and the station will require new and
29 modified structures within the station property to accommodate the termination of the two

³ The balance of the 80% is achieved because the preferred route utilizes existing corridor lands that are not yet occupied by transmission infrastructure.

1 new 230 kV transmission circuits. The Project will also require modifications to
2 telecommunications facilities at Lambton TS to provide status information and control
3 capability to Hydro One's ISOC and status information to the IESO. Modifications and
4 additions to protection and control, SCADA, metering, and AC/DC station service at
5 Lambton TS, are required to provide protection, control and status of the new facilities. A
6 schematic diagram showing the proposed configuration at Lambton TS is provided at
7 **Exhibit B, Tab 2, Schedule 1, Attachment 3.**

8 9 **Chatham SS Line Terminations and Switching Facilities**

10 Chatham SS will require new and modified structures within the existing station property
11 to accommodate the termination of the two new 230 kV transmission circuits. The Project
12 will also require modifications to telecommunications facilities at Chatham SS to provide
13 status information and control capability to Hydro One's ISOC and status information to
14 the IESO. Modifications and additions to protection and control, SCADA, metering, and
15 AC/DC station service at Chatham SS, are required to provide protection, control and
16 status of the new facilities. A schematic diagram showing the proposed configuration at
17 Chatham SS is provided at **Exhibit B, Tab 2, Schedule 1, Attachment 4.**

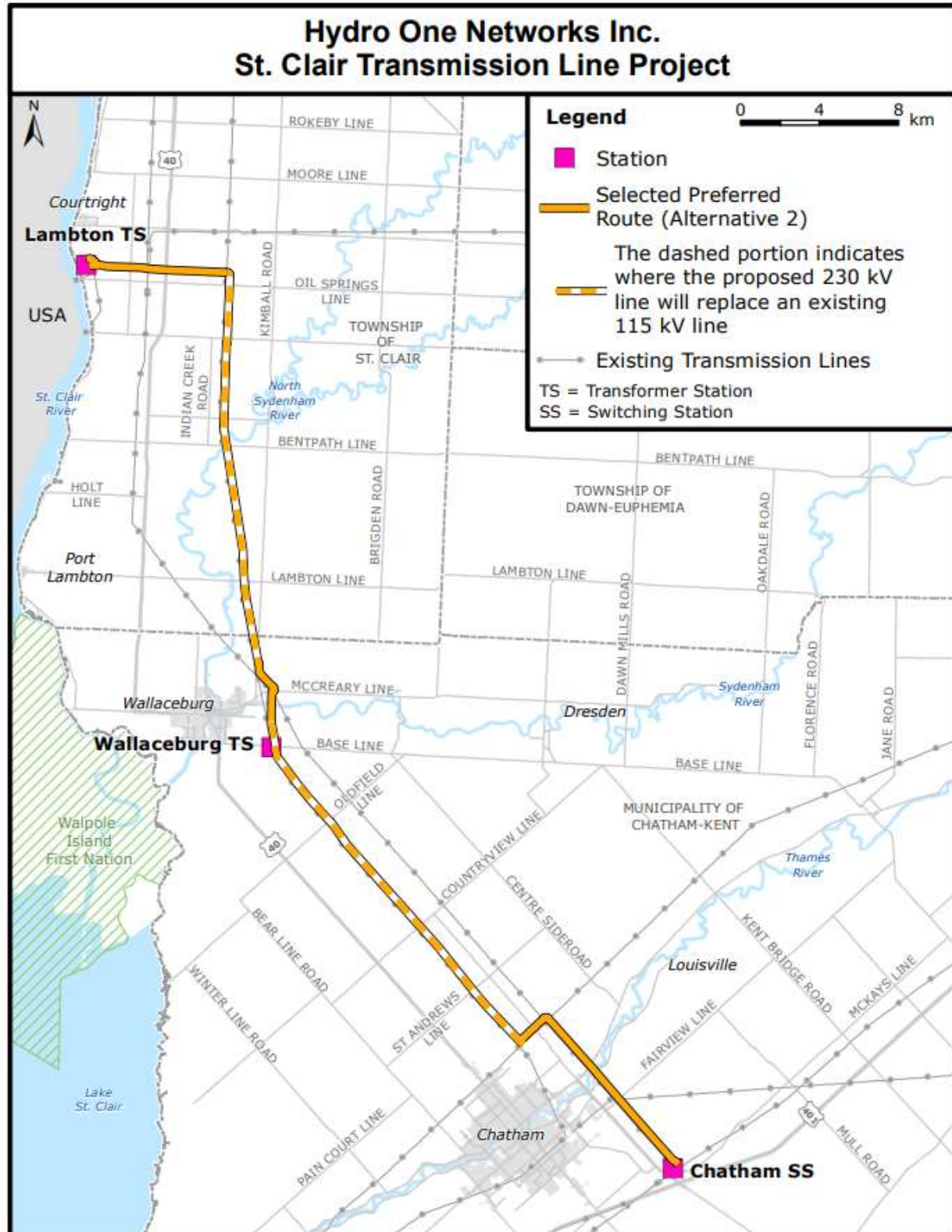
18 19 **Wallaceburg TS and Switching Facilities**

20 With the repurposing of the 115 kV transmission line corridor, Wallaceburg TS will be
21 converted from a single-circuit supply 115/27.6 kV load station to a double-circuit supply
22 230/27.6 kV load station with connection to the proposed 230 kV double-circuit
23 transmission line. To achieve this conversion, the Wallaceburg TS station property fence
24 line will be expanded, and the station will require new structures within the station property
25 to accommodate the connection to the new 230 kV transmission circuits. The Project will
26 also require installation of two new 230/27.6 kV transformers and associated equipment;
27 as well as modifications to the telecommunications facilities at Wallaceburg TS to provide
28 status information and control capability to Hydro One's ISOC and status information to
29 the IESO. Modifications and additions to protection, control, and SCADA at Wallaceburg
30 TS are also required. Furthermore, the Project will entail removal of the existing 115 kV
31 equipment and the existing control and microwave building to accommodate the new

- 1 transformer area. A schematic diagram showing the proposed configuration at
- 2 Wallaceburg TS is included within the line facilities schematic at **Exhibit B, Tab 2,**
- 3 **Schedule 1, Attachment 2.**

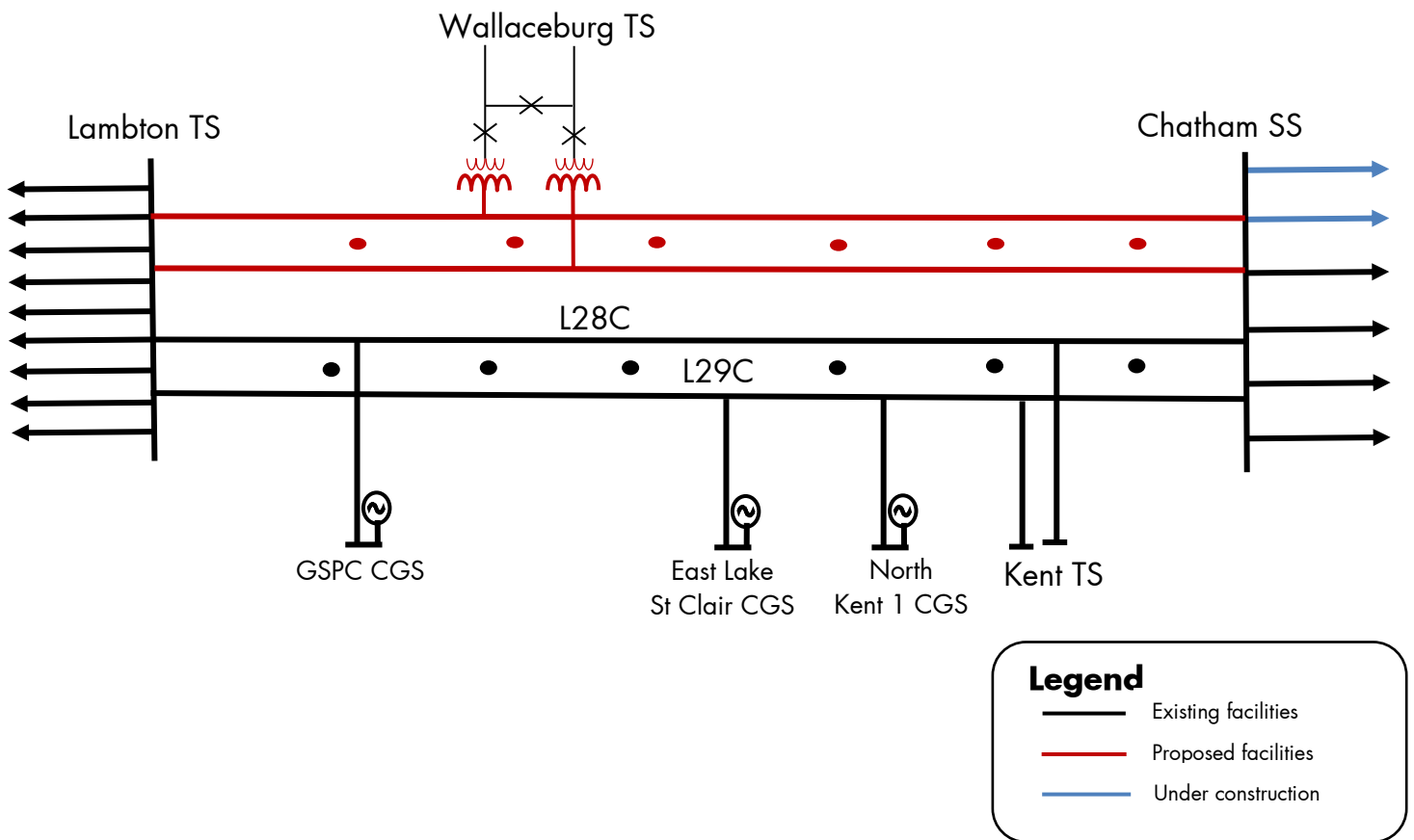
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GENERAL AREA MAP



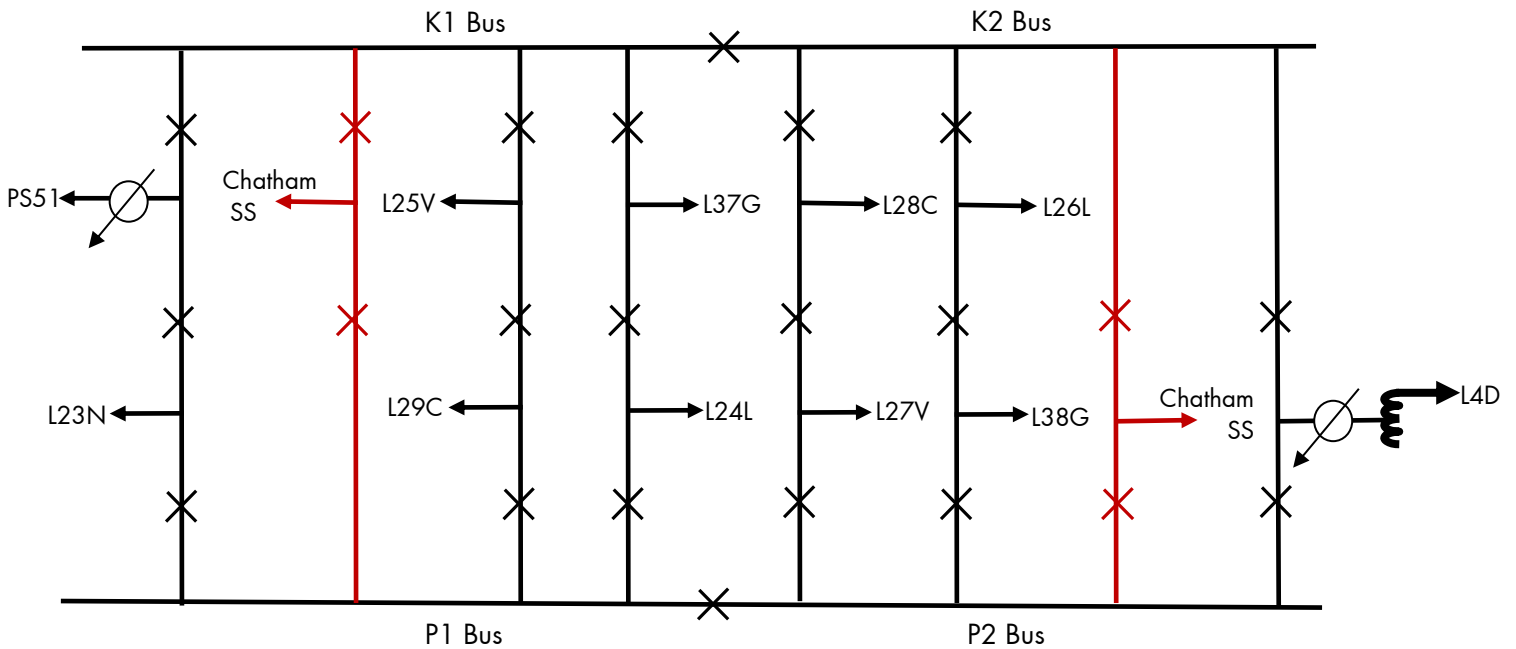
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PROPOSED FACILITIES:
LAMBTON TS TO CHATHAM SS 230 KV SCHEMATIC DIAGRAM AND
WALLACEBURG TS SIMPLIFIED SCHEMATIC DIAGRAM



1
2

PROPOSED FACILITIES:
230 kV LAMBTON TS SIMPLIFIED SCHEMATIC DIAGRAM

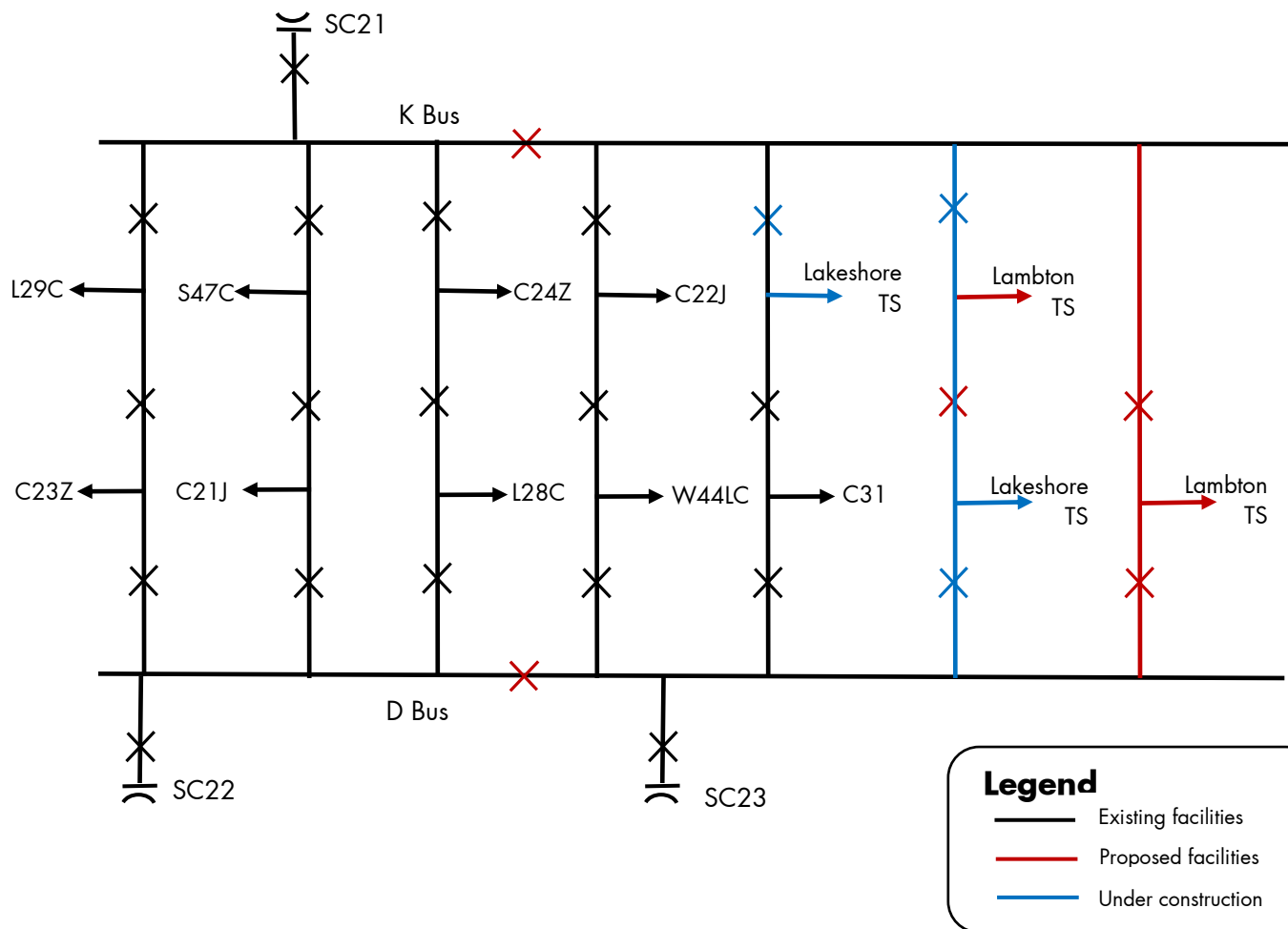


Legend

- Existing facilities
- Proposed facilities

1
2

PROPOSED FACILITIES:
230 kV CHATHAM SS SIMPLIFIED SCHEMATIC DIAGRAM



EVIDENCE IN SUPPORT OF NEED

On March 31, 2022, the Lieutenant Governor in Council issued an Orders in Council (“**OIC**”), declaring that construction of the SCTL Project is needed in accordance with s.28.6.1 of the Act and that the Project has been determined to be a priority project for purposes of s.96.1(2) of the Act. Copies of the OICs and correspondence from the Ontario Minister of Energy to the OEB (dated April 4, 2022) are included as **Attachments 1** through **3** of this Schedule. Under this authority, the Project must be accepted by the Board as needed for purposes of this Application.

On April 6, 2022, the OEB issued a Decision and Order (EB-2022-0142) amending Hydro One’s Transmission License (ET-2003-0035) to include the following additional conditions:

- Develop and seek approvals for a new 230 kV transmission line from Lambton TS to Chatham SS, including associated station facility expansions or upgrades required at the terminal stations.
- Develop the project in accordance with the scope and timing recommended by the IESO and provide the OEB with a copy of any said recommendations from the IESO.

A copy of the OEB’s Decision and Order and amended HONI Transmission License is included as **Attachment 4 and Attachment 5** of this Schedule, respectively.

Additionally, the IESO published a bulk system planning report entitled “*Need for Bulk System Reinforcement West of London*” dated September 23, 2021 (“**IESO Report**”) which is provided as **Attachment 2** in **Exhibit H, Tab 1, Schedule 1**. The IESO Report provides further detail on the need to reinforce the transmission system to:

- Ensure sufficient bulk transfer capability east of Chatham to supply the forecast load in the Windsor-Essex region and surrounding Chatham area: and
- Improve the deliverability of resources in the Lambton-Sarnia area.

1 For reference purposes, as part of the development phase of the Project, Hydro One
2 completed a Class EA in accordance with the *Ontario Environmental Assessment Act*. To
3 that end, since February 2022, Hydro One conducted consultation with municipal,
4 provincial, and federal government officials and agencies, Indigenous communities,
5 potentially affected and interested persons, businesses, and interest groups. This involved
6 Project notifications, communications and engagements resulting in issues identification
7 and resolution efforts. The consultation process included the development of a Project
8 website, several rounds of virtual and in-person community open houses, in-person and
9 virtual meetings with Indigenous communities, government officials, potentially affected
10 and interested persons, extensive correspondence with Rights-holders and stakeholders,
11 and dedicated Community Relations and Indigenous Relations representatives.

12
13 A robust TAC was established early in the Project planning process with members
14 representing multiple Indigenous, government, and interest groups to participate in
15 workshops throughout the Class EA process and help inform the Project team of important
16 Project issues and key decisions. The Final ESR¹, filed with the MECP in February 2024
17 was the culmination of a two-year EA consultation process and established the preferred
18 route to construct the 230 kV double-circuit transmission line directed by the government.
19 In accordance with the documentation detailed in the Final ESR, in order to select a
20 preferred route alternative a weighted multi-criteria decision-making approach was
21 undertaken that included consideration of the natural environment; the socio-economic
22 environment; Indigenous culture, values and land use; as well as technical and cost
23 considerations.

24
25 The route selected sustainably minimizes the overall impact to the natural and socio-
26 economic environments compared to the other route alternatives and minimizes impacts
27 to agricultural lands by utilizing existing transmission corridors for approximately 80% of
28 its total length. More specifically, the route will repurpose an existing 115 kV transmission

¹ <https://www.hydroone.com/abouthydroone/CorporateInformation/majorprojects/saint-clair/Documents/SCTL-Class-EA-Final-Environmental-Study-Report.pdf>

1 line corridor that currently supplies Wallaceburg TS. The route selection has triggered the
2 need for the conversion of Wallaceburg TS from a single-circuit supply 115/27.6 kV load
3 station to a double-circuit supply 230/27.6 kV load station with connection to the proposed
4 230 kV double-circuit transmission line. This conversion of Wallaceburg TS results in
5 improvements to the reliability and efficiency of the transmission system supplying the
6 Wallaceburg area. Further information on route definition can be found in Hydro One's
7 Final ESR.

8
9 In addition to the evidence detailed in the Final ESR with respect to the need for the work
10 to be completed at Wallaceburg TS, the IESO further supports the need for the conversion
11 of Wallaceburg TS as documented in its report completed for this leave to construct
12 application entitled "*Supplemental Evidence to Support the Need for the St. Clair (Lambton*
13 *to Chatham) Line Project*". A copy of this report is provided as **Attachment 6** of this
14 Schedule.

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Ontario

**Executive Council of Ontario
Order in Council**

On the recommendation of the undersigned, the Lieutenant Governor of Ontario, by and with the advice and concurrence of the Executive Council of Ontario, orders that:

**Conseil exécutif de l'Ontario
Décret**

Sur la recommandation de la personne soussignée, le lieutenant-gouverneur de l'Ontario, sur l'avis et avec le consentement du Conseil exécutif de l'Ontario, décrète ce qui suit :

WHEREAS Ontario considers it critical to expand Ontario's transmission system to provide a reliable and adequate supply of electricity to Southwestern Ontario to support economic growth in the region, including the rapidly growing agricultural sector and the potential for growth in the electric vehicle and broader automotive sectors;

AND WHEREAS on December 17, 2020, the Minister of Energy, Northern Development and Mines, with the approval of the Lieutenant Governor in Council pursuant to Order in Council No. 1499/2020 dated November 5, 2020, issued a directive to the Ontario Energy Board to amend Hydro One Networks Inc.'s electricity transmission licence to include a requirement that it proceed to develop and seek approvals for a new 230 kilovolt (kV) double-circuit transmission line from the existing Chatham Switching Station to the new Lakeshore Transformer Station to be located at Leamington Junction;

AND WHEREAS the Independent Electricity System Operator, the organization responsible for ensuring the reliability of Ontario's electricity grid, issued a bulk planning report dated September 23, 2021, entitled "Need for Bulk System Reinforcements West of London" which recommended new transmission infrastructure to meet forecast electricity demand growth and identified potential future projects that may be needed depending on how growth materializes and where generation resources are located;

AND WHEREAS the Government has determined that the development of the transmission projects should be undertaken by a transmitter that is best positioned to ensure that the infrastructure can be developed expediently and on a timeline that supports economic growth;

AND WHEREAS the Government has determined that concurrently conducting development work related to additional transmission projects that may be required in the future will preserve flexibility, result in cost and time savings and support more meaningful and transparent consultations as well as economic participation opportunities with Indigenous communities and stakeholders;

AND WHEREAS the Government has determined that the preferred manner of proceeding is to require Hydro One Networks Inc. to undertake the development of the transmission projects, including taking any and all steps that are deemed to be necessary and desirable in order to seek required approvals and fulfilling, as part of the environmental assessment process and other

O.C. | Décret : 875 / 2022

applicable provincial permits, any procedural aspects of the Crown's duty to consult potentially impacted Indigenous communities that may be delegated to it;

AND WHEREAS the Minister of Energy has, with the approval of the Lieutenant Governor in Council, the authority to issue Directives pursuant to section 28.6.1 of the *Ontario Energy Board Act, 1998*, which relate to the construction, expansion or re-enforcement of transmission systems;

NOW THEREFORE the Directive attached hereto is approved and shall be and is effective as of the date hereof.

- - - - -

ATTENDU QUE l'Ontario estime qu'il est crucial d'étendre le réseau de transport de l'Ontario pour assurer un acheminement fiable et adéquat d'électricité vers le Sud-Ouest de l'Ontario afin de favoriser la croissance économique dans la région, notamment la croissance rapide du secteur agricole et le potentiel de croissance des secteurs des véhicules électriques et, plus généralement, de l'automobile;

ATTENDU QUE, le 17 décembre 2020, le ministre de l'Énergie, du Développement du Nord et des Mines, en vertu du décret 1499/2020 du 5 novembre 2020 et avec l'approbation du lieutenant-gouverneur en conseil, a ordonné, par directive, à la Commission de l'énergie de l'Ontario de modifier le permis de transport d'électricité d'Hydro One Networks Inc. pour y inclure l'obligation d'obtenir les approbations nécessaires à la construction d'une nouvelle ligne de transport à double circuit de 230 kilovolts (kV), du poste de sectionnement de Chatham existant au nouveau poste de transformation de Lakeshore, qui sera situé à la jonction de Leamington;

ATTENDU QUE la Société indépendante d'exploitation du réseau d'électricité, l'organisme responsable de la fiabilité du réseau électrique de l'Ontario, a publié le 23 septembre 2021 un rapport de planification global intitulé « Need for Bulk System Reinforcements West of London », qui recommande la construction de nouvelles infrastructures de transport pour répondre à la croissance prévue de la demande d'électricité et définit des projets susceptibles de devenir nécessaires à l'avenir, suivant l'évolution de la croissance et la situation des ressources de production;

ATTENDU QUE le gouvernement a déterminé que le développement des projets d'infrastructures de transport devrait être confié au transporteur le mieux placé pour en assurer une exécution rapide et en temps opportun pour favoriser la croissance économique;

ATTENDU QUE le gouvernement a déterminé que l'exécution simultanée des travaux de développement liés aux projets d'infrastructures de transport supplémentaires qui pourraient s'avérer nécessaires à l'avenir préserveraient la souplesse, permettraient des réductions de coûts et des gains de temps et favoriseraient des consultations plus constructives et plus transparentes, tout en générant des occasions de participation économique pour les communautés autochtones et les parties prenantes;

ATTENDU QUE le gouvernement a déterminé que la façon de procéder la plus souhaitable était de demander à Hydro One Networks Inc. d'entreprendre le développement des projets d'infrastructures de transport, y compris prendre toutes les mesures jugées nécessaires et souhaitables pour obtenir les approbations exigées et, dans le cadre du processus d'évaluation environnementale et des autres

permis provinciaux applicables, effectuer toutes les formalités liées à l'obligation pour la Couronne de mener des consultations auprès des communautés autochtones susceptibles d'être touchées pouvant lui être déléguées;

ET ATTENDU QUE l'article 28.6.1 de la *Loi de 1998 sur la Commission de l'énergie de l'Ontario* donne au ministre de l'Énergie le pouvoir, avec l'approbation du lieutenant-gouverneur en conseil, de prendre des directives à l'égard de la construction, de l'extension ou du renforcement de réseaux de transport;

EN CONSÉQUENCE, la directive en annexe est approuvée et entre en vigueur à la date des présentes.



Recommended: Minister of Energy
Recommandé par : Le ministre de l'Énergie



Concurred: Chair of Cabinet
Appuyé par : Le président | la présidente du Conseil des ministres

Approved and Ordered: MAR 31 2022
Approuvé et décrété le :



Lieutenant Governor
La lieutenante-gouverneure

MINISTER'S DIRECTIVE

TO: THE ONTARIO ENERGY BOARD

I, Todd Smith, Minister of Energy, hereby direct the Ontario Energy Board ("Board") pursuant to section 28.6.1 of the *Ontario Energy Board Act, 1998* as follows:

1. The Board shall amend the conditions of the electricity transmission licence of Hydro One Networks Inc. ("Hydro One") to include a requirement that Hydro One proceed to do the following related to the construction, expansion or reinforcement of its transmission system:
 - i. Develop and seek approvals for the following transmission line projects:
 1. A new 230 kilovolt (kV) transmission line from Lambton Transformer Station to Chatham Switching Station, including associated station facility expansions or upgrades required at the terminal stations;
 2. A new 500 kV transmission line from Longwood Transformer Station to Lakeshore Transformer Station, including associated station facility expansions or upgrades required at the terminal stations;
 3. A second new 500 kV transmission line from Longwood Transformer Station to Lakeshore Transformer Station, including associated station facility expansions or upgrades required at the terminal stations; and
 4. A new 230 kV transmission line that connect the Windsor area to the Lakeshore Transformer Station, including associated station facility expansions or upgrades required at the terminal stations.
 - ii. The scope and timing for the transmission line projects listed in sub-paragraph i above shall accord with the recommendations of the IESO.
2. The Board shall require that Hydro One provide such reporting to the Board as the Board may consider appropriate, with respect to budget, timing, and risks in relation to the development of the transmission line projects listed in sub-paragraph 1 i.
3. The Board shall make the amendments to Hydro One's electricity transmission licence without holding a hearing.

DIRECTIVE DU MINISTRE

À L'INTENTION DE : LA COMMISSION DE L'ÉNERGIE DE L'ONTARIO

Je soussigné, Todd Smith, ministre de l'Énergie, ordonne par la présente à la Commission de l'énergie de l'Ontario (la « Commission »), en vertu de l'article 28.6.1 de la *Loi de 1998 sur la Commission de l'énergie de l'Ontario* que :

1. la Commission modifie les conditions du permis de transport d'électricité d'Hydro One Networks Inc. (« Hydro One ») pour y inclure l'obligation de faire ce qui suit à l'égard de la construction, de l'extension ou du renforcement de son réseau électrique :
 - i. obtenir les approbations nécessaires à la construction des lignes de transport d'électricité suivants :
 1. une nouvelle ligne de transport de 230 kilovolts du poste de transformation de Lambton au poste de sectionnement de Chatham, y compris les agrandissements ou améliorations nécessaires des installations annexes aux postes terminaux;
 2. une nouvelle ligne de transport de 500 kilovolts du poste de transformation de Longwood au poste de transformation de Lakeshore, y compris les agrandissements ou améliorations nécessaires des installations annexes aux postes terminaux;
 3. une deuxième nouvelle ligne de transport de 500 kilovolts du poste de transformation de Longwood au poste de transformation de Lakeshore, y compris les agrandissements ou améliorations nécessaires des installations annexes aux postes terminaux; et
 4. une nouvelle ligne de transport de 230 kilovolts connectant la région de Windsor au poste de transformation de Lakeshore, y compris les agrandissements ou améliorations des installations annexes nécessaires aux postes terminaux.
 - ii. La portée et le calendrier des projets de lignes de transport énumérés à l'alinéa i. ci-dessus doivent être conformes aux recommandations de la SIERE;
2. la Commission exige d'Hydro One qu'elle lui présente les rapports qu'elle peut juger adéquats en ce qui a trait au budget, au calendrier et aux risques liés au développement des projets de ligne de transport énumérés à l'alinéa 1 i;
3. la Commission apporte les modifications au permis de transport d'électricité d'Hydro One sans tenir d'audience à cet effet.

Ministry of Energy

Office of the Minister

77 Grenville Street, 10th Floor
Toronto ON M7A 2C1
Tel.: 416-327-6758

Ministère de l'Énergie

Bureau du ministre

77, rue Grenville, 10^e étage
Toronto ON M7A 2C1
Tél. : 416-327-6758



April 4, 2022

Mr. Richard Dicerni
Chair
Ontario Energy Board
2300 Yonge Street, 27th Floor
Toronto ON M4P 1E4

Dear Mr. Dicerni:

Southwestern Ontario is experiencing significant economic growth due to a rapidly expanding greenhouse sector and interest in major new developments in automotive battery manufacturing. This has underscored the need to accelerate critical electricity transmission projects so that power is available to support this growing region.

On September 23, 2021, the Independent Electricity System Operator issued a bulk planning report entitled Need for Bulk System Reinforcements West of London, which recommended new transmission infrastructure to meet forecast electricity demand growth and identified potential future projects that may be needed depending on how growth materializes and where generation resources are located.

I am writing to you today to inform you that under the authority of section 96.1(1) of the *Ontario Energy Board Act, 1998* (the Act), the Lieutenant Governor in Council made an order declaring that the construction, expansion or reinforcement of three transmission lines in Southwestern Ontario are needed as priority projects. The Order in Council took effect on March 31, 2022 and is attached to this letter.

Furthermore, under the authority of section 28.6.1 of the Act, I am, with the approval of the Lieutenant Governor in Council pursuant to Order in Council No. 875-2022, issuing a directive to the OEB to amend Hydro One Networks Inc.'s (Hydro One) electricity transmission licence to include a requirement that it proceed to develop and seek all necessary approvals for four new transmission projects in Southwestern Ontario, including two of the priority projects. The licence amendments required by this directive will further support the timely development of these transmission lines.

Please do not hesitate to contact my office with any questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'Todd Smith', with a long horizontal stroke extending to the right.

Todd Smith
Minister

Attachments

c: Susanna Zagar, Chief Executive Officer, OEB
Stephen Rhodes, Deputy Minister of Energy



Ontario

**Executive Council of Ontario
Order in Council**

**Conseil exécutif de l'Ontario
Décret**

On the recommendation of the undersigned, the Lieutenant Governor of Ontario, by and with the advice and concurrence of the Executive Council of Ontario, orders that:

Sur la recommandation de la personne soussignée, le lieutenant-gouverneur de l'Ontario, sur l'avis et avec le consentement du Conseil exécutif de l'Ontario, décrète ce qui suit :

WHEREAS Ontario considers it critical to expand Ontario's transmission system to provide a reliable and adequate supply of electricity to Southwestern Ontario to support economic growth in the region, including the rapidly growing agricultural sector and the potential for growth in the electric vehicle and broader automotive sectors;

AND WHEREAS Ontario considers the expansion of the electricity network in Southwestern Ontario to support economic growth to be a priority;

AND WHEREAS the Independent Electricity System Operator, the organization responsible for ensuring the reliability of Ontario's electricity grid, has published:

1. A bulk planning report dated June 13, 2019, entitled the "Need for Bulk Transmission Reinforcement in the Windsor-Essex Region, which recommended a new 230 kilovolt (kV) transmission line west of Chatham as the appropriate solution required to meet expected demand growth and system needs; and
2. A bulk planning report dated September 23, 2021, entitled the "Need for Bulk System Reinforcements West of London," which recommended a new 230 kV transmission line from Lambton to Chatham and a new 500 kV transmission line between Longwood and Lakeshore as the appropriate solutions to meet forecast electricity demand growth

AND WHEREAS the Lieutenant Governor in Council may make an order under section 96.1 of the *Ontario Energy Board Act, 1998* (the "Act") declaring that the construction, expansion or reinforcement of an electricity transmission line specified in the order is needed as a priority project;

AND WHEREAS an order under section 96.1 of the Act requires the Ontario Energy Board, in considering an application under section 92 of the Act in respect of an electricity transmission line specified in the order, to accept that the construction, expansion or reinforcement is needed when forming its opinion under section 96 of the Act;

NOW THEREFORE it is hereby declared pursuant to section 96.1 of the Act that the construction, expansion or reinforcement of the following electricity transmission lines are needed as priority projects:

1. A new 230 kV electricity transmission line from the existing Chatham Switching Station to the new Lakeshore Transformer Station, as described in the Minister's Directive issued to the Ontario Energy Board on December 17, 2020, as approved by the Lieutenant Governor in Council pursuant to Order in Council No. 1499/2020 dated November 5, 2020;
2. A new 230 kV electricity transmission line from Lambton Transformer Station to Chatham Switching Station as described in clause 1 of sub-paragraph 1 i of the Minister's Directive to the Ontario Energy Board, as approved by the Lieutenant Governor in Council pursuant to Order-in-Council No. 875 /2022 dated March 31, 2022; and
3. A new 500 kV electricity transmission line from Longwood Transformer Station to Lakeshore Transformer Station as described in clause 2 of sub-paragraph 1 i of the Minister's Directive to the Ontario Energy Board, as approved by the Lieutenant Governor in Council pursuant to Order-in-Council No. 875 /2022 dated March 31, 2022.

ATTENDU QUE l'Ontario estime qu'il est crucial d'étendre le réseau de transport de l'Ontario pour assurer un acheminement fiable et adéquat d'électricité vers le Sud-Ouest de l'Ontario afin de favoriser la croissance économique dans la région, notamment la croissance rapide du secteur agricole et le potentiel de croissance des secteurs des véhicules électriques et, plus généralement, de l'automobile;

ATTENDU QUE l'Ontario estime que l'extension du réseau d'électricité dans le Sud-Ouest de l'Ontario pour favoriser la croissance économique est une priorité;

ATTENDU QUE la Société indépendante d'exploitation du réseau d'électricité, l'organisme responsable de la fiabilité du réseau électrique, a publié :

1. en date du 13 juin 2019, un rapport de planification global intitulé « Need for Bulk Transmission Reinforcement in the Windsor-Essex Region », qui recommande, comme solution nécessaire pour répondre à la croissance prévue de la demande et aux besoins du réseau, la construction d'une nouvelle ligne de transport de 230 kilovolts à l'ouest de Chatham; et
2. en date du 23 septembre 2021, un rapport de planification global intitulé « Need for Bulk System Reinforcements West of London », qui recommande, comme solutions adéquates pour répondre à la croissance prévue de la demande d'électricité, la construction d'une nouvelle ligne de transport de 230 kilovolts entre Lambton et Chatham et d'une nouvelle ligne de transport de 500 kilovolts entre Longwood et Lakeshore;

ATTENDU QUE, en vertu de l'article 96.1 de la *Loi de 1998 sur la Commission de l'énergie de l'Ontario* (la « Loi »), le lieutenant-gouverneur en conseil peut, par décret, déclarer que la construction, l'extension ou le renforcement de toute ligne de transport d'électricité précisée dans le décret est nécessaire à titre de projet prioritaire;

ET ATTENDU QU'un décret pris en vertu de l'article 96.1 de la Loi oblige la Commission de l'énergie de l'Ontario, lorsqu'elle examine une requête présentée en application de l'article 92 de la Loi relativement à toute ligne de transport d'électricité précisée dans le décret, à accepter le fait que la construction, l'extension ou le renforcement est nécessaire lorsqu'elle se fait une opinion dans le cadre de l'article 96 de la Loi;

EN CONSÉQUENCE, il est par les présentes déclaré, en vertu de l'article 96.1 de la Loi, que la construction, l'extension ou le renforcement des lignes de transport d'électricité ci-dessous sont nécessaires à titre de projets prioritaires :

1. une nouvelle ligne de transport d'électricité de 230 kilovolts, du poste de sectionnement de Chatham existant au nouveau poste de transformation de Lakeshore, conformément à la description faite dans la directive du ministre adressée le 17 décembre 2020 à la Commission de l'énergie de l'Ontario et approuvée par le lieutenant-gouverneur en conseil en vertu du décret 1499/2020 du 5 novembre 2020;
2. une nouvelle ligne de transport d'électricité de 230 kilovolts, du poste de transformation de Lambton au poste de sectionnement de Chatham, conformément à la description faite à la clause 1 de l'alinéa 1 i de la directive du ministre adressée à la Commission de l'énergie de l'Ontario et approuvée par le lieutenant-gouverneur en conseil en vertu du décret 875 /2022 du 31 mars 2022; et
3. une nouvelle ligne de transport d'électricité de 500 kilovolts du poste de transformation de Longwood au poste de transformation de Lakeshore, conformément à la description faite à la clause 2 de l'alinéa 1 i de la directive du ministre adressée à la Commission de l'énergie de l'Ontario et approuvée par le lieutenant-gouverneur en conseil en vertu du décret 875 /2022 du 31 mars 2022.



Recommended: Minister of Energy

Recommandé par : Le ministre de l'Énergie



Concurred: Chair of Cabinet

Appuyé par : Le président | la présidente du Conseil des ministres

Approved and Ordered:
Approuvé et décrété le :

MAR 31 2022



Lieutenant Governor
La lieutenante-gouverneure



Ontario
Energy
Board | Commission
de l'énergie
de l'Ontario

DECISION AND ORDER

EB-2022-0142

Amending the Electricity Transmission Licence of Hydro One Networks Inc. to Require it to Develop and Seek Approvals for New Transmission Lines

BY DELEGATION, BEFORE: Brian Hewson
Vice President,
Consumer Protection & Industry Performance

April 6, 2022

INTRODUCTION AND SUMMARY

Further to a [Directive](#) from the Minister of Energy (Minister), the Ontario Energy Board (OEB), of its own motion, is commencing this proceeding to amend the electricity transmission licence¹ of Hydro One Networks Inc. (Hydro One) to include a requirement that it proceed to develop and seek all necessary approvals for four new transmission projects in Southwestern Ontario. Two of those projects have been declared to be needed as priority projects by Order in Council 876/2022 dated March 31, 2022.

BACKGROUND

Under section 28.6.1 of the *Ontario Energy Board Act, 1998* (Act), the Minister may issue directives to the OEB requiring the OEB to take such steps as are specified in the directive relating to the construction, expansion or reinforcement of transmission systems. Such a directive may, among other things, require the OEB to amend the licence conditions of a transmitter to require the transmitter to take the actions specified in the directive in relation to its transmission system. Such a directive may also specify whether the OEB is to hold a hearing for the purposes of implementing the directive.

On April 4, 2022, the OEB received a Directive under section 28.6.1 of the Act (Directive) under cover of a letter from the Minister. The Directive was approved by the Lieutenant Governor in Council on March 31, 2022 as Order in Council No. 875/2022. The Directive requires the OEB to amend Hydro One's electricity transmission licence to require Hydro One to develop and seek approvals for the following four transmission line projects (collectively referred to as the Projects):

1. A new 230 kilovolt (kV) transmission line from Lambton Transformer Station to Chatham Switching Station, including associated station facility expansions or upgrades required at the terminal stations;
2. A new 500 kV transmission line from Longwood Transformer Station to Lakeshore Transformer Station, including associated station facility expansions or upgrades required at the terminal stations;
3. A second new 500 kV transmission line from Longwood Transformer Station to Lakeshore Transformer Station, including associated station facility expansions or upgrades required at the terminal stations; and
4. A new 230 kV transmission line that connect the Windsor area to the Lakeshore Transformer Station, including associated station facility expansions or upgrades required at the terminal stations.

¹ ET-2003-0035

The Directive also requires that the OEB amend Hydro One's licence to include a condition that the scope and timing for the Projects accord with the recommendations of the Independent Electricity System Operator (IESO), and further directs the OEB to require that Hydro One provide such reporting to the OEB as the OEB may consider appropriate with respect to budget, timing and risks in relation to the development of the Projects.

The Order in Council accompanying the Directive states that expansion of Ontario's transmission system is critical to provide a reliable and adequate supply of electricity to Southwestern Ontario to support economic growth in the region, including the rapidly growing agricultural sector and the potential for growth in the electric vehicle and broader automotive sectors.

Two of the Projects listed in the Directive (numbers 1 and 2 above) have been declared to be needed as priority projects pursuant to section 96.1 of the Act in Order in Council 876/2022 dated March 31, 2022. A third project that is also declared to be needed as a priority project - a new 230 kV electricity transmission line from the existing Chatham Switching Station to the new Lakeshore Transformer Station – was the subject of a previous Directive issued to the OEB on December 17, 2020 and the OEB amended Hydro One's transmission licence in respect of that project by Decision and Order dated December 23, 2020.

In accordance with the Directive, the OEB is required to amend Hydro One's electricity transmission licence without a hearing.

This Decision and Order is being issued by Delegated Authority without a hearing.

DECISION

Further to the Directive, the OEB is amending Hydro One's electricity transmission licence to require it to develop and seek approvals for the four Projects set out in the Directive and listed above, and to develop the Projects in accordance with the project scope and timing recommended by the IESO.

With respect to reporting requirements, as an initial step the OEB is requiring Hydro One to file a copy of any recommendations received from the IESO related to the scope and timing of the development of each of the Projects. Further reporting requirements to enable the OEB to monitor Hydro One's progress towards the implementation of the conditions being added to its electricity transmission licence, including budget and risks, will be addressed at a later date.

IT IS ORDERED THAT:

1. Hydro One Networks Inc.'s electricity transmission licence ET-2003-0035 is amended by adding the following new conditions:

19.8.1 The Licensee shall develop and seek approvals for the following four transmission line projects:

- a) A new 230 kilovolt (kV) transmission line from Lambton Transformer Station to Chatham Switching Station, including associated station facility expansions or upgrades required at the terminal stations;
- b) A new 500 kV transmission line from Longwood Transformer Station to Lakeshore Transformer Station, including associated station facility expansions or upgrades required at the terminal stations;
- c) A second new 500 kV transmission line from Longwood Transformer Station to Lakeshore Transformer Station, including associated station facility expansions or upgrades required at the terminal stations; and
- d) A new 230 kV transmission line that connect the Windsor area to the Lakeshore Transformer Station, including associated station facility expansions or upgrades required at the terminal stations.

19.8.2 Development of the projects set out in condition 19.8.1 shall accord with the project scope and timing recommended by the Independent Electricity System Operator.

2. Hydro One shall, no later than April 27, 2022, file with the OEB a copy of any recommendations received from the Independent Electricity System Operator related to the scope and timing of the development of each of the Projects identified in paragraph 1 above.

DATED at Toronto, April 6, 2022

ONTARIO ENERGY BOARD

Original Signed By

Brian Hewson

Vice President, Consumer Protection & Industry Performance



Electricity Transmission Licence

ET-2003-0035

Hydro One Networks Inc.

Valid Until

October 30, 2043

Brian Hewson
Vice President, Consumer Protection & Industry Performance
Ontario Energy Board

Date of Issuance: October 31, 2023

Date of Amendment: November 14, 2023

Ontario Energy Board
P.O. Box 2319
2300 Yonge Street
27th Floor
Toronto, ON M4P 1E4

Commission de l'énergie de l'Ontario
C.P. 2319
2300, rue Yonge
27e étage
Toronto ON M4P 1E4

LIST OF AMENDMENTS

OEB File No.	Date of Amendment
EB-2002-0501	August 11, 2004
EB-2011-0055	February 28, 2011
EB-2013-0437	January 9, 2014
EB-2015-0262	November 26, 2015
EB-2015-0270	November 26, 2015
EB-2020-0309	December 23, 2020
EB-2022-0142	April 6, 2022
EB-2022-0085	May 6, 2022
EB-2023-0275	October 31, 2023 – licence renewal date
EB-2023-0319	November 14, 2023

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1 Definitions

In this Licence:

“Accounting Procedures Handbook” means the handbook, approved by the Board which specifies the accounting records, accounting principles and accounting separation standards to be followed by the Licensee;

“Act” means the *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15, Schedule B;

“Affiliate Relationships Code for Electricity Distributors and Transmitters” means the code, approved by the Board which, among other things, establishes the standards and conditions for the interaction between electricity distributors or transmitters and their respective affiliated companies;

“Board” means the Ontario Energy Board;

“Electricity Act” means the *Electricity Act, 1998*, S.O. 1998, c. 15, Schedule A;

“Licensee” means Hydro One Networks Inc.;

“Market Rules” means the rules made under section 32 of the Electricity Act;

“Performance Standards” means the performance targets for the distribution and connection activities of the Licensee as established by the Board in accordance with section 83 of the Act;

“Rate Order” means an Order or Orders of the Board establishing rates the Licensee is permitted to charge;

“transmission services” means services related to the transmission of electricity and the services the Board has required transmitters to carry out for which a charge or rate has been established in the Rate Order;

“Transmission System Code” means the code approved by the Board and in effect at the relevant time, which, among other things, establishes the obligations of a transmitter with respect to the services and terms of service to be offered to customers and provides minimum technical operating standards of transmission systems;

“wholesaler” means a person that purchases electricity or ancillary services in the IESO administered markets or directly from a generator or, a person who sells electricity or ancillary services through the IESO-administered markets or directly to another person other than a consumer.

2 Interpretation

- 2.1 In this Licence, words and phrases shall have the meaning ascribed to them in the Act or the Electricity Act. Words or phrases importing the singular shall include the plural and vice versa. Headings are for convenience only and shall not affect the interpretation of the Licence. Any reference to a document or a provision of a document includes an amendment or supplement to, or a replacement of, that document or that provision of that document. In the computation of time under this licence, where there is a reference to a number of days between two events, they shall be counted by excluding the day on which the first event happens and including the day on which the second event happens. Where the time for doing an act expires on a holiday, the act may be done on the next day that is not a holiday.

3 Authorization

- 3.1 The Licensee is authorized, under Part V of the Act and subject to the terms and conditions set out in this Licence to own and operate a transmission system consisting of the facilities described in Schedule 1 of this Licence, including all associated transmission equipment.

4 Obligation to Comply with Legislation, Regulations and Market Rules

- 4.1 The Licensee shall comply with all applicable provisions of the Act and the Electricity Act and regulations under these Acts, except where the Licensee has been exempted from such compliance by regulation.
- 4.2 The Licensee shall comply with all applicable Market Rules.

5 Obligation to Comply with Codes

- 5.1 The Licensee shall at all times comply with the following Codes (collectively the “Codes”) approved by the Board, except where the Licensee has been specifically exempted from such compliance by the Board. Any exemptions granted to the Licensee are set out in Schedule 2 of this Licence. The following Codes apply to this Licence:
- a) the Affiliate Relationships Code for Electricity Distributors and Transmitters; and
 - b) the Transmission System Code.
- 5.2 The Licensee shall:
- a) make a copy of the Codes available for inspection by members of the public at its head office and regional offices during normal business hours; and
 - b) provide a copy of the Codes to any person who requests it. The Licensee may impose a fair and reasonable charge for the cost of providing copies.

6 Requirement to Enter into an Operating Agreement

- 6.1 The Licensee shall enter into an agreement (“Operating Agreement”) with the IESO providing for the direction by the IESO of the operation of the Licensee’s transmission system. Following a request made by the IESO, the Licensee and the IESO shall enter into an Operating Agreement

within a period of 90 business days, unless extended with leave of the Board. The Operating Agreement shall be filed with the Board within ten (10) business days of its completion.

- 6.2 Where there is a dispute that cannot be resolved between the parties with respect to any of the terms and conditions of the Operating Agreement, the IESO or the Licensee may apply to the Board to determine the matter.

7 Obligation to Provide Non-discriminatory Access

- 7.1 The Licensee shall, upon the request of a consumer, generator, distributor or retailer, provide such consumer, generator, distributor or retailer, as the case may be, with access to the Licensee's transmission system and shall convey electricity on behalf of such consumer, generator, distributor or retailer in accordance with the terms of this Licence, the Transmission System Code and the Market Rules.

8 Obligation to Connect

- 8.1 If a request is made for connection to the Licensee's transmission system or for a change in the capacity of an existing connection, the Licensee shall respond to the request within 30 business days.
- 8.2 The Licensee shall process connection requests in accordance with published connection procedures and participate with the customer in the IESO's Connection Assessment and approval process in accordance with the Market Rules, its Rate Order(s) and the Transmission System Code.
- 8.3 An offer of connection shall be consistent with the terms of this Licence, the Market Rules, the Rate Order, and the Transmission System Code.
- 8.4 The terms of such offer to connect shall be fair and reasonable.
- 8.5 The Licensee shall not refuse to make an offer to connect unless it is permitted to do so by the Act or any Codes, standards or rules to which the Licensee is obligated to comply with as a condition of this Licence.

9 Obligation to Maintain System Integrity

- 9.1 The Licensee shall maintain its transmission system to the standards established in the Transmission System Code and Market Rules, and have regard to any other recognized industry operating or planning standards required by the Board.

10 Transmission Rates and Charges

- 10.1 The Licensee shall not charge for the connection of customers or the transmission of electricity except in accordance with the Licensee's Rate Order(s) as approved by the Board and the Transmission System Code.

11 Separation of Business Activities

- 11.1 The Licensee shall keep financial records associated with transmitting electricity separate from its financial records associated with distributing electricity or other activities in accordance with the Accounting Procedures Handbook and as otherwise required by the Board.

12 Expansion of Transmission System

- 12.1 The Licensee shall not construct, expand or reinforce an electricity transmission system or make an interconnection except in accordance with the Act and Regulations, the Transmission System Code and the Market Rules.

13 Provision of Information to the Board

- 13.1 The Licensee shall maintain records of and provide, in the manner and form determined by the Board, such information as the Board may require from time to time.
- 13.2 Without limiting the generality of paragraph 13.1, the Licensee shall notify the Board of any material change in circumstances that adversely affects or is likely to adversely affect the business, operations or assets of the Licensee as soon as practicable, but in any event no more than twenty (20) business days past the date upon which such change occurs.

14 Restrictions on Provision of Information

- 14.1 The Licensee shall not use information regarding a consumer, retailer, wholesaler or generator, obtained for one purpose for any other purpose without the written consent of the consumer, retailer, wholesaler or generator.
- 14.2 The Licensee shall not disclose information regarding a consumer, retailer, wholesaler or generator to any other party without the written consent of the consumer, retailer, wholesaler or generator, except where such information is required to be disclosed:
- a) to comply with any legislative or regulatory requirements, including the conditions of this Licence;
 - b) for billing, settlement or market operations purposes;
 - c) for law enforcement purposes; or
 - d) to a debt collection agency for the processing of past due accounts of the consumer, retailer, wholesaler or generator.
- 14.3 Information regarding consumers, retailers, wholesalers or generators may be disclosed where the information has been sufficiently aggregated such that their particular information cannot reasonably be identified.
- 14.4 The Licensee shall inform consumers, retailers, wholesalers and generators of the conditions under which their information may be released to a third party without their consent.
- 14.5 If the Licensee discloses information under this section, the Licensee shall ensure that the information is not be used for any other purpose except the purpose for which it was disclosed.

15 Term of Licence

- 15.1 This Licence shall take effect on October 31, 2023 and expire on October 30, 2043. The term of this Licence may be extended by the Board.

16 Transfer of Licence

- 16.1 In accordance with subsection 18(2) of the Act, this Licence is not transferable or assignable without leave of the Board.

17 Amendment of Licence

- 17.1 The Board may amend this Licence in accordance with section 74 of the Act or section 38 of the Electricity Act.

18 Fees and Assessments

- 18.1 The Licensee shall pay all fees charged and amounts assessed by the Board.

19 Expansion and Upgrading of Transmission System Further to Ministerial Directive

- 19.1 The Licensee shall, for the purposes of accommodating the safe connection of renewable energy generation facilities, immediately following February 28, 2011 work in co-operation with the Ontario Power Authority to establish the scope and timing of the transmission projects referred to in paragraphs 19.2 and 19.3.
- 19.2 The Licensee shall develop and seek approvals for the following transmission projects, the scope and timing of which shall be in accordance with the recommendations of the Ontario Power Authority made in the course of the Ontario Power Authority's transmission planning activities conducted in accordance with its objects, as well as those identified in a Directive issued to the Ontario Power Authority by the Minister of Energy on February 17, 2011 under section 25.30 of the *Electricity Act, 1998*:
- a) upgrade one or more existing transmission lines west of the City of London; and
 - b) a new transmission line west of the City of London.
- 19.3 The Licensee shall develop and implement the following transmission projects, the scope and timing of which shall be in accordance with the recommendations of the Ontario Power Authority made in the course of the Ontario Power Authority's transmission planning activities conducted in accordance with its objects, as well as those identified in a Directive issued to the Ontario Power Authority by the Minister of Energy on February 17, 2011 under section 25.30 of the *Electricity Act, 1998*:
- a) one or more devices to enhance transfer capability, such as series or static var compensation or other similar devices, in Southwestern Ontario; and
 - b) increase short circuit and/or transformer capacity at up to fifteen of the Licensee's transmission stations during the forty-eight month period beginning February 28, 2011 , to enable the connection of small-scale renewable energy generation facilities.

- 19.4 Paragraph 19.3 in no way limits the obligation of the Licensee to obtain all necessary approvals for the transmission projects referred to in that paragraph.
- 19.5 Immediately following January 9, 2014 the Licensee shall, for the purposes of accommodating load due to forecast demand growth over the long term, promoting the use of clean and renewable energy sources from Ontario's supply mix, and enhancing opportunities for the development and connection of new renewable generation facilities over the long term, work in co-operation with the Ontario Power Authority to establish the scope and timing of the transmission project referred to in paragraph 19.6.
- 19.6 The Licensee shall develop and seek approvals for the expansion or reinforcement of a portion or portions of the Licensee's electricity transmission network in the area west of Thunder Bay (the "Northwest Bulk Transmission Line Project"). The scope and timing of the Northwest Bulk Transmission Line Project shall be in accordance with the recommendations of the Ontario Power Authority made in the course of the Ontario Power Authority's transmission planning activities conducted in accordance with its statutory mandate, objects and responsibilities under the *Electricity Act, 1998*, including with any transmission planning activities identified in any direction issued, or to be issued, by the Minister of Energy to the Ontario Power Authority pursuant to Part II.2 of the *Electricity Act, 1998*.
- 19.7 The Licensee shall develop and seek approvals for a new 230 kilovolt double-circuit transmission line from the existing Chatham Switching Station to the new Lakeshore Transformer Station to be located at Leamington Junction (Chatham to Lakeshore Line), including associated station facilities to connect the Chatham to Lakeshore Line at the terminal stations. Development of the Chatham to Lakeshore Line shall accord with the project scope and timing recommended by the Independent Electricity System Operator.
- 19.8.1 The Licensee shall develop and seek approvals for the following four transmission line projects:
- a) A new 230 kilovolt (kV) transmission line from Lambton Transformer Station to Chatham Switching Station, including associated station facility expansions or upgrades required at the terminal stations;
 - b) A new 500 kV transmission line from Longwood Transformer Station to Lakeshore Transformer Station, including associated station facility expansions or upgrades required at the terminal stations;
 - c) A second new 500 kV transmission line from Longwood Transformer Station to Lakeshore Transformer Station, including associated station facility expansions or upgrades required at the terminal stations; and
 - d) A new 230 kV transmission line that connect the Windsor area to the Lakeshore Transformer Station, including associated station facility expansions or upgrades required at the terminal stations.
- 19.8.2 Development of the projects set out in condition 19.8.1 shall accord with the project scope and timing recommended by the Independent Electricity System Operator.
- 19.9.1 The Licensee shall develop and seek approval for the following three transmission line projects:

- a) A new 230 kilovolt (kV) transmission line from Mississagi Transformer Station to Third Line Transformer Station, including associated station facility expansions or upgrades required at the terminal stations;
- b) A new 500 kV transmission line from Mississagi Transformer Station to Hanmer Transformer Station, including associated station facility expansions or upgrades required at the terminal stations; and
- c) A new 230 kV transmission line from Dobbin Transformer Station to either Cherrywood Transformer Station or Clarington Transformer Station, including associated station facility expansions or upgrades required at the terminal stations.

19.9.2 The scope and timing for the development of the projects set out in condition 19.9.1, including the terminal point for the transmission line project listed in c), shall accord with the recommendations of the Independent Electricity System Operator.

20 Communication

- 20.1 The Licensee shall designate a person that will act as a primary contact with the Board on matters related to this Licence. The Licensee shall notify the Board promptly should the contact details change.
- 20.2 All official communication relating to this Licence shall be in writing.
- 20.3 All written communication is to be regarded as having been given by the sender and received by the addressee:
- a) when delivered in person to the addressee by hand, by registered mail or by courier;
 - b) ten (10) business days after the date of posting if the communication is sent by regular mail; and
 - c) when received by facsimile transmission by the addressee, according to the sender's transmission report.

21 Copies of the Licence

- 21.1 The Licensee shall:
- a) make a copy of this Licence available for inspection by members of the public at its head office and regional offices during normal business hours; and
 - b) provide a copy of this Licence to any person who requests it. The Licensee may impose a fair and reasonable charge for the cost of providing copies.

SCHEDULE 1 SPECIFICATION OF TRANSMISSION FACILITIES

This Schedule specifies the facilities over which the Licensee is authorized to transmit electricity in accordance with paragraph 3 of this Licence.

1. The transmission system and facilities of Hydro One Networks Inc. are depicted in the attached diagram and include transmission lines, transformation stations and all associated facilities. Hydro One may alter this diagram from time to time and shall file it with the Board, upon receipt of which the updated diagram shall be deemed to be the specification of transmission facilities under this schedule.

SCHEDULE 2 LIST OF CODE EXEMPTIONS

This Schedule specifies any specific Code requirements from which the licensee has been exempted.

1. The Licensee is exempted from Section 1.2.1 of Schedule E of Appendix 1 of the Transmission System Code so as to allow the Licensee:
 - to enter into a connection agreement with certain proposed customers on terms and conditions other than those set forth in the said section 1.2.1; and
 - to amend connection agreements already entered into by the licensee with customers, such that they may be amended to contain terms and conditions other than those set forth in the said section 1.2.1.
2. The modifications to the connection agreement are attached as Schedules 3 and 4 to this Licence. Schedule 3 contains changes needed to address legacy system configuration issues as well as operating concerns affecting all generating stations owned by OPG and Bruce Power. Schedule 4 contains changes needed to comply with the operational requirements of nuclear generating facilities, facilitate compliance with Power Reactor Operating Licences, issued by the Canadian Nuclear Safety Commission ("CNSC").
3. The Licensee is exempted from Sections 4.1.1 and 4.1.2 of the Transmission System Code for the purpose of entering into a Transmission Connection Agreement with Oneida Energy Storage LP for the connection of a 250 MW battery energy storage facility to its transmission system in the form approved in the OEB's Decision and Order in EB-2022-0085.

Supplemental Evidence to Support the Need for the St. Clair (Lambton to Chatham) Line Project

Independent Electricity System Operator



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1. Executive Summary

The Independent Electricity System Operator ("IESO") is providing this report in support of the Leave-to-Construct ("LTC") application for the St. Clair (Lambton to Chatham) project (the "Project") in accordance with the requirements of the Ontario Energy Board's ("OEB") Chapter 4 of the Filing Requirements for Electricity Transmission Applications (the "Filing Requirements").

Section 4.3.2.3 of the Filing Requirements requires the applicant to provide evidence that identifies the recommended and planned transmission and non-wire projects in any regional plans and/or bulk plans that have "linkages and/or interdependencies to the applied-for transmission project." In the context of an LTC application, "linkages and/or interdependencies" refers to projects (including the Project) where the impact of one or more recommended and planned transmission and non-wire projects has the potential to affect the need for, or viability of, another such project. Section 4.3.2.3 further specifies that "[s]uch projects, or those under consideration as part of an ongoing planning process, might span multiple regions."

The need and rationale for the Project is detailed in IESO's Need for Bulk System Reinforcements West of London report published September 2021 ("WOL Bulk Plan").¹ This Project is one of several bulk and regional projects recommended to address the growing demand for electricity in the region due to growth in the agricultural sector as well as economic development, particularly in the manufacturing and automotive industries.

The purpose of this report is to provide that the OEB with the most up to date and complete information to assess the LTC application for the Project in the context of the recommendations that have been made since the WOL Bulk Plan was published in 2021. This report supplements the WOL Bulk Plan by providing evidence on the linkages and/or interdependencies between the Project and the additional reinforcements planned for Southwestern Ontario. Overall, there are no material dependencies between the Project and subsequent recommended bulk solutions, however, not approving the Project could require the IESO to reassess the subsequent recommendations to ensure that the need for this Project is addressed through other means. The Project is linked to the previous bulk recommendation for the Chatham to Lakeshore line, as well as the regional capacity need in the Dresden area.

¹ https://www.ieso.ca/-/media/Files/IESO/Document-Library/regional-planning/southwest-ontario/WOL_Bulk_Report_Final_20210923.pdf
Note, the Project is referred to as "Lambton South" in the WOL Bulk Plan.

2. Summary of Recommendations in Southwest Ontario

The IESO has recommended a staged and multi-pronged approach of wires and non-wires solutions to address the significant growth in demand for electricity that is projected in southwest Ontario over the near, medium, and longer term. The IESO's planning in the area has been on-going since 2015 and is documented in five key reports (2015 Windsor-Essex IRRP, 2019 Windsor-Essex IRRP and Addendum, 2019 Windsor-Essex Bulk Plan, 2021 West of London Bulk Plan and 2022 Chatham-Kent/Lambton/Sarnia Regional Infrastructure Plan).

The IESO's recommended solutions include new transmission stations and circuits, new or reacquired resource requirements, conservation and demand management ("CDM"), and investments in innovation. The recommended transmission solutions represent approximately \$2 billion in bulk transmission investments, which are all required to ensure ongoing supply to the region due the pace and magnitude of the projected growth in demand.

Figure 1 identifies the timeline for the recommended solutions, which are staged to meet the projected growth in demand in southwest Ontario. Aside from the CDM measures that are ongoing, the stages for implementation of the recommended solutions are as follows:

- Stage 1: Lakeshore Switching Station, came in-service in 2022
- Stage 2: Chatham to Lakeshore line, currently under construction with a required in-service date for prior to the winter of 2025/2026
- Stage 3: Lambton to Chatham line (this Project), required by 2028 as detailed in the WOL Bulk Plan
- Stage 4: Longwood to Lakeshore line, required by 2030 as detailed in the WOL Bulk Plan
- Stage 5: 550 MW of local resources, required by 2030 as detailed in the WOL Bulk Plan

In addition to these recommendations, the 2022 Chatham-Kent/Lambton/Sarnia Regional Infrastructure Plan ("2022 CKLS RIP") identified a need for capacity in the Dresden area, which is currently supplied by Wallaceburg Transformer Station ("TS") and Kent TS. The 2022 CKLS RIP recommended a new Dresden TS supply station connected to the Project, along the Lambton to Chatham transmission corridor, noting that the need may be delayed if additional capacity becomes available at Wallaceburg TS based on the routing of the Project. The linkage between this Project and the 2022 CKLS RIP is further explained in Section 2.1. The details and analysis for the Stage 4 and 5 recommended solutions can be found in the WOL Bulk Plan.

The IESO's intent in recommending a staged plan was to closely match developments with the need maximize the value and use of each stage, as documented in the WOL Bulk Plan options analysis. If there are changes to the need, this will allow the IESO to reassess subsequent stages.

Appendix A contains further details on the recommendation solutions and their status. The Dresden area supply station as well as additional local supply stations in the Windsor-Essex region are indicated as proposed solutions below, pending customer commitment.

Figure 1: Recommended Solutions²

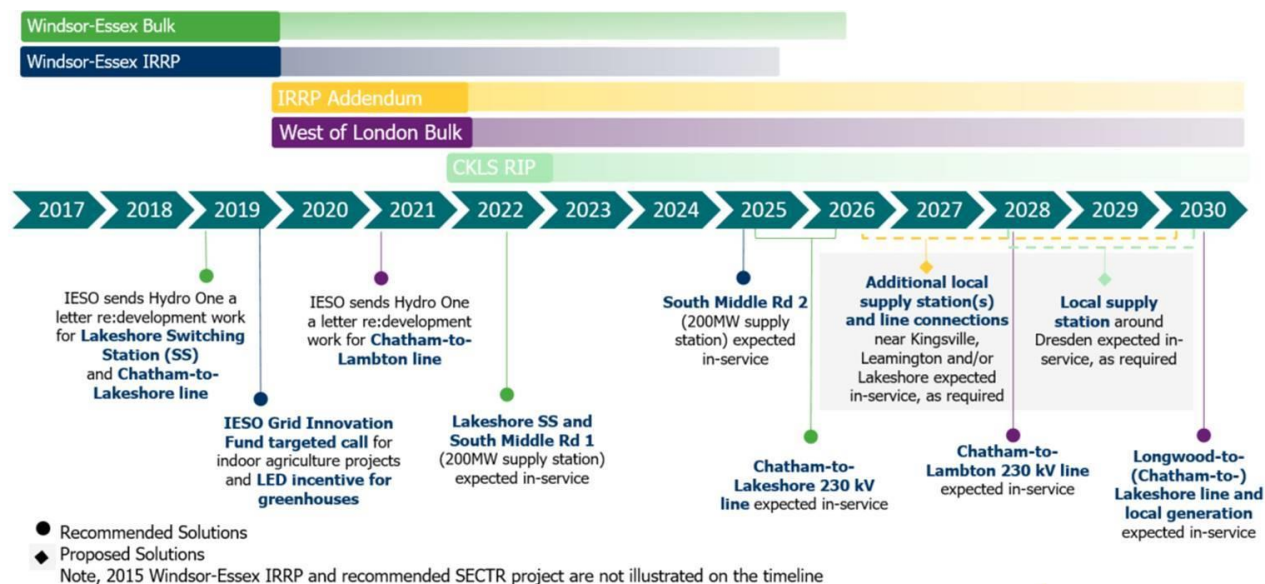


Figure 2 below provides a geographical depiction of the bulk recommended solutions outlined above to provide context on the relative location of the solutions.

Figure 2: Map of Recommended Solutions



2.1 Relationship of the Project to Southwest Ontario Recommendations

² The dark green, blue, yellow and purple bars refer to the duration of the plan development, while the lighter bars reference the duration of the plan implementation.

Although the Project is part of the staged and multi-pronged approach described above, the need for and recommendation of the Project was evaluated by the IESO in the WOL Bulk Plan independently of the other solutions (i.e. the IESO's evaluation did not rely on benefits of solutions in subsequent stages). The IESO's assessment for the Project included technical feasibility, cost-effectiveness, and input from interested stakeholders and community members. The Project will increase the supply transfer to the Windsor-Essex and Chatham-Kent area by approximately 450 MW, which would address the mid-term need identified in the WOL Bulk Plan. The Project will also enable the Chatham to Lakeshore line (Stage 2) to operate to at its full capability, maximizing the benefit of this asset.

These benefits will be realised with or without implementing the subsequent bulk system recommendations specified in the WOL Bulk Plan. Given the interconnected nature of the bulk transmission system, and the different termination points of the subsequent recommendations, the benefit of the Project is independent of the subsequent recommended solutions. Thus, the benefits of this Project are not dependent upon, and do not necessitate, approving and proceeding with the recommended solutions in subsequent stages (Stage 4-5). However, not approving the Project could require the IESO to reassess Stages 4-5, to ensure that the need for this Project is addressed through other means.

From a regional perspective, this Project will impact the need and timing of potential local supply stations needed in the area. The last cycle of regional planning for Chatham-Kent/Lambton/Sarnia, culminating in the 2022 CKLS RIP identified a supply capacity need in the Wallaceburg TS and Kent TS area (the Dresden area) due to new load connection requests. The 2022 CKLS RIP proposed a new Dresden TS supply station connected to the Project, along the Lambton to Chatham transmission corridor, which was assumed in the WOL Bulk Plan. Through the Environmental Assessment process, Hydro One identified route options that utilize the existing 115 kilovolt ("kV") transmission line (N5K) that currently supplies Wallaceburg TS. This would require (1) N5K be converted to a 230 kV line, forming part of the Project, and (2) Wallaceburg TS be upgraded from a 115 kV TS to a 230 kV TS, being supplied by the Project. The conversion of Wallaceburg TS would increase the supply capacity at Wallaceburg TS, which would delay the need for the Dresden TS supply station that was identified in the 2022 CKLS RIP. The WOL Bulk Plan assumed that Dresden TS would be supplied from the Project, thus transferring Wallaceburg TS to the Project is not expected to significantly impact the Stage 3-5 recommendations or the ability to supply load in the Windsor-Essex region. The next cycle of regional planning for the Chatham-Kent/Lambton/Sarnia region should reassess the need and plan for future supply within the region.

3. Future Planning in Southwest Ontario

The Minister of Energy has issued an Order-in-Council declaring three transmission line projects as priorities – the Chatham to Lakeshore Line, the Project, and the 500 kV Longwood-to-Lakeshore line. The priority declaration requires the OEB to accept that the three initial lines are needed when assessing whether the projects are in the public interest, expediting the review process so these projects can be brought online earlier.

The Minister also directed Hydro One to proceed with additional development work for projects potentially required in Southwest Ontario over the longer term, with scope to be further refined through planning by the IESO. These projects include:

- A second 500 kV transmission line from Longwood Transformer Station to Lakeshore Transformer Station, twinning the first Longwood to Lakeshore Line that is being developed; and
- A 230 kV line that would run from Windsor to Lakeshore Transformer Station (north of Leamington).

Conducting early development work on these lines concurrently with the priority projects referred to above is expected to result in cost and time savings and to help achieve more meaningful and transparent consultations with stakeholders and Indigenous communities.

Appendix A: Details of Recommendations in Southwest Ontario

Table 1 summarizes the recommendations in Southwest Ontario, to provide a picture of everything that is underway. Since initiatives are at various points in the transmission development process, for clarity the status of each initiative is defined as follows:

- **Planned** projects have been recommended but have not yet started further development work or implementation.
- **Under-development** indicates initiatives that have proceeded to the design and development activities, which would include obtaining Environmental Assessment and Leave-to-Construct approval, where necessary.
- **Under-construction** indicates that design work is completed, necessary approvals have been obtained, and it is being built.
- **Being implemented** indicates programs or negotiations are on-going, with proponents that have received or are going to reach an agreement with the IESO for services.
- **Completed** indicates that design, implementation, and construction have been completed and the project is operational.

Table 1: Details of Recommended Projects in Southwest Ontario

Type	Initiative	Documentation of Recommendation	In-Service Date	LTC Required	Status
Transmission	Supply to Essex County Reinforcement Project ("SECTR"), includes supply lines to Leamington and load stations at Leamington	2015 Windsor-Essex IRRP	2018-2020	Yes, obtained	Completed
CDM	CDM initiatives, including LED lighting incentives, and a Grid Innovation Fund targeted call for agricultural projects	2019 Windsor-Essex IRRP	2018 – on-going	No	Being implemented
Transmission	A new switching station at Leamington Junction (Lakeshore TS)	Lakeshore Switching Station Letter , and 2019 Windsor-Essex IRRP	2022	No	Completed
Transmission	Two new supply stations (South Middle Rd)	2019 Windsor-Essex IRRP	2022-2025	No	Under construction,

Type	Initiative	Documentation of Recommendation	In-Service Date	LTC Required	Status
	connected to Lakeshore TS				partially completed
Transmission	A new 230 kV double circuit line from Chatham Switching Station ("SS") to the new Lakeshore TS	Chatham to Lakeshore Line Letter , and 2019 Windsor-Essex Bulk Plan	2026	Yes	Under construction
Resource	Bilateral negotiations for Brighton Beach Generating Station	2021 Annual Acquisition Report , and 2021 West of London Bulk Plan	2024-2028	No	Completed
Transmission	Two new supply stations in Kingsville-Leamington and 230 kV connection lines to Lakeshore TS	2022 Windsor-Essex IRRP Addendum Report	2026-2028	No	Planned
Transmission	A new 230 kV double circuit line from Lambton TS to Chatham SS	Lambton to Chatham Line Letter , and 2021 West of London Bulk Plan	2028	Yes	Under development
Transmission	A new 500 kV single circuit line from Longwood TS to Lakeshore TS	2021 West of London Bulk Plan	2030	Yes	Under development
Resource	1,975 MW of new or reacquired resources within West of London, with 550 MW located in Windsor-Essex or Chatham-Kent	2021 West of London Bulk Plan	2030-2035	No	Under development ³⁴
Transmission	New supply station in Dresden connected to the Lambton to Chatham corridor	2022 Chatham-Kent/Lambton/Sarnia Regional Infrastructure Plan	2028	No	TBD

In addition to Table 1, the 2022 Windsor-Essex IRRP Addendum Study recommended early development work on an extension of the new tap line to supply new DESNs in the Kingsville area to

³ The required amount of local generation has been procured through executed procurements.

⁴ This Project helps address the supply need in Dresden. The next cycle of regional planning will need to reassess the need for a new supply station.

the tap line supplying Leamington TS. The plan also identifies additional transmission may be needed in the long-term between Windsor and Lakeshore. The ongoing cycle of regional planning will reassess these needs based on the updated Windsor-Essex forecast and outcomes of the executed procurements.

Similarly, the Minister has directed Hydro One to undertake early development work on that Windsor to Lakeshore reinforcement and a second single 500 kV line from Longwood to Lakeshore.

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PROJECT CATEGORIZATION AND CLASSIFICATION

PROJECT CATEGORIZATION

Subsection 4.3.2.4 of the Board's Filing Requirements requires applicants to categorize projects as being either discretionary or non-discretionary. Non-discretionary project characteristics include:

- a) mandatory requirements to satisfy reliability standards set by standards authorities including NPCC/NERC or the IESO;
- b) a need to connect new load (of a distributor or large user) or new generation connection;
- c) a need to address equipment loading or voltage/short circuit stresses when their rated capacities are exceeded;
- d) a transmission project that the transmitter is required by its licence to develop and seek approvals for;
- e) projects identified in a provincial government approved plan;
- f) projects that are required to achieve provincial government objectives that are prescribed in governmental directives or regulations; and
- g) priority transmission projects declared by Lieutenant Governor in Council order that the construction, expansion, or reinforcement of an electricity transmission line is needed as a priority project.

Based upon the above criteria, Hydro One submits that the SCTL Project is properly categorized as a non-discretionary project as it is being undertaken to comply with a mandatory requirement to satisfy obligations specified by the OEB in Hydro One's Transmission Licence as directed by government directives described in **Exhibit B, Tab 3, Schedule 1**.

PROJECT CLASSIFICATION

Projects are classified into three groups based on their purpose.

- Development Projects, which most closely align with the System Service category as defined in Chapter 5 of the OEB Filing Requirements for Utility System Plans, are those which:
 - i. provide an adequate supply capacity and/or maintain an acceptable or prescribed level of customer or system reliability for load growth or for meeting increased stresses on the system; or
 - ii. enhance system efficiency such as minimizing congestion on the transmission system and reducing system losses.
- Connection Projects, which most closely align with the System Access category as defined in Chapter 5 of the OEB Filing Requirements for Utility System Plans, are those which provide connection of a load or generation customer or group of customers to the transmission system.
- Sustainment Projects, which most closely align with the System Renewal category as defined in Chapter 5 of the OEB Filing Requirements for Utility System Plans, are those which maintain the performance of the transmission network at its current standard or replace end-of-life facilities on a “like for like” basis.

Based on the above criteria, the SCTL Project is a Development Project as the proposed transmission facilities provide for additional system capacity and maintain reliability and quality of electricity supply.

Categorization and Classification

		Project Need	
		Non-Discretionary	Discretionary
Project Class	Development	X	
	Connection		
	Sustainment		

COST BENEFIT ANALYSIS AND OPTIONS

There are no practical alternatives to the scope of work for which Hydro One is seeking the OEB's approval. As described in **Exhibit B, Tab 3, Schedule 1**, with the approval of the Lieutenant Governor in Council, as recommended by the Minister of Energy, declared that the Project is a priority project. Furthermore, as described at the same Schedule, Hydro One completed the mandated Class EA process in accordance with the *Ontario Environmental Assessment Act*, and the defined route for the Project was determined in accordance with those requirements.

An analysis of the alternatives to meet supply needs in the region were undertaken by the IESO and are included in Section 7 of the IESO Report's in **Exhibit H, Tab 1, Schedule 1, Attachment 2**. Since the IESO's recommendation is specific on what is required to address the system need, i.e., a transmission line from Lambton TS to Chatham SS, no other alternatives were considered.

1.0 TRANSMISSION LINE ALTERNATIVES

Conductor Size Alternative Analysis

Hydro One undertook an analysis of the conductor size alternatives that would, a) meet the supply needs in the Windsor-Essex region and surrounding Chatham area and, b) would also be the optimal conductor size and rating, based on the expected load scenario in terms of line losses. The conductor alternatives evaluated were:

1. Alternative 1 – 1192.5 kcmil ACSR conductor
2. Alternative 2 – 1443.7 kcmil ACSR/TW conductor
3. Alternative 3 – 1780 kcmil ACSR/TW conductor

Analysis and Recommendations

All alternatives listed above address the supply load need of the Project and provide a reliable supply to customers in the area. The following screening analysis considers the

impact of line losses. The screening analysis summarized in Table 1 below was conducted in accordance with Hydro One's Transmission Line Loss Guideline.¹

Table 1 - Screening Analysis

	Alt. #1 (1192.5 kcmil ACSR)	Alt. #2 (1443.7 kcmil ACSR/TW)	Alt. #3 (1780 kcmil ACSR/TW)
Net Capital Cost ^[2] (\$M)	\$331.484	\$332.465	\$356.926
Losses at Peak Flow ^[3] (MW)	15.66	12.96	10.63
Losses at System Peak (MW)	1.232	1.020	0.836
Annual Revenue Costs (\$M)	25.105	25.179	27.032
Annual Cost of Capital to Cover Losses (\$M)	0.177	0.146	0.120
Annual Cost of Energy Losses (\$M)	6.490	5.369	4.405
Annual Cost of Losses ^[4] (\$M)	6.667	5.516	4.525
Total Annual Cost ^[5] (\$M)	31.772	30.695	31.556

The screening analysis resulted in a change in alternative ranking and showed a similar Total Annual Cost, so a detailed 50-year NPV analysis was conducted. The NPV used a 5.65% discount rate, to evaluate which conductor alternative provided the best NPV result. The NPV sensitivity analysis was done using varying values for the prices of energy and a capacity price of \$143,640/MW consistent with Hydro One's Transmission Line Loss Guideline.

¹ As recently filed in proceeding EB-2023-0197, Exhibit I, Tab 2, Schedule 1, Attachment 1.

² Net Capital Cost is the total cost net of removals; and was based on a project definition equivalent to a Class 3 under the AACE estimate classification system for all alternatives.

³ Losses based on 2026 forecast flows.

⁴ Annual Cost of Losses is the summation of Annual Cost of Energy Losses (i.e. MWhR losses multiplied by the energy price) and the Annual Cost of Capital to Cover Losses (i.e. MW losses multiplied by Capacity Price).

⁵ Total Annual Cost is the summation of Annual Revenue Costs and Annual Cost of Losses.

1 The results of the NPV sensitivity analysis is provided in Table 2 below.

2

3

Table 2 - NPV Sensitivity Analysis of Alternatives

	Alt. #1 (1192.5 kmil ACSR)	Alt. #2 (1443.7 kmil ACSR/TW)	Alt. #3 (1780 kmil ACSR/TW)
Total Cost ^[6] (\$M)	\$333.51	\$334.49	\$358.95
Annual Losses (MWHR)	15,150.51	12,534.00	10,281.68
Losses at System Peak (MW)	1.232	1.020	0.836
Net Present Value (\$M)			
Price	Alt. #1 (1192.5 kmil ACSR)	Alt. #2 (1443.7 kmil ACSR/TW)	Alt. #3 (1780 kmil ACSR/TW)
Energy Price of \$47.3/MWHR and Capacity Price of \$143,640/MW	-305.05	-302.06	-319.53
Energy Price of \$120/MWHR and Capacity Price of \$143,640/MW	-332.37	-324.66	-338.06

4 The NPV analysis shows that Alternative #2 is the most economic alternative. All three
5 alternatives meet the capacity needs for the area, but based on the analysis above,
6 Alternative #2 is selected as the preferred and recommended alternative.

⁶ Total Cost includes both capital and removal costs.

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1 **QUANTITATIVE AND QUALITATIVE BENEFITS OF THE PROJECT**

2
3 As described in **Exhibit B, Tab 3, Schedule 1**, the new transmission line facilities will
4 ensure sufficient bulk transfer capability east of Chatham to reliably supply the rapidly
5 increasing load demand in the Windsor-Essex Region and surrounding Chatham area.
6 The new line will also improve the deliverability of resources in Lambton-Sarnia, as well
7 as enable the west of Chatham reinforcements¹ to operate to their full capability,
8 maximizing the benefit of those assets. As the selected route for the Project sustainably
9 utilizes approximately 80% of existing transmission corridor lands, overall impacts to the
10 natural and socio-economic environments are minimized. Improvements to the reliability
11 and efficiency of the transmission system supplying the Wallaceburg area through the
12 conversion from 115 kV to 230 kV supply of Wallaceburg TS also result. System benefits
13 delivered by the Project are predominantly documented in the IESO Report found at
14 **Exhibit H, Tab 1, Schedule 1, Attachment 2.**

15
16 Hydro One also conducted an economic analysis to investigate ratepayer impacts with
17 respect to transmission line losses. The NPV sensitivity analysis confirms that the 1443.7
18 kcmil ASCR/TW conductor is the most prudent conductor alternative to meet the needs of
19 the Project. The results of that analysis are further discussed in **Exhibit B, Tab 5,**
20 **Schedule 1.**

21
22 Furthermore, the Project will bring both short-term and long-term employment, training,
23 and business opportunities to the region. This includes opportunities for both Indigenous
24 and non-Indigenous communities, governments, and businesses to benefit from the
25 construction, operation, and maintenance of the Project. Hydro One is collaborating with
26 Indigenous communities and governments in the region to understand their interests and
27 aspirations in the future of Ontario's electricity grid. To advance action on reconciliation
28 and ensure the completion of the Project to meet Provincial energy needs, five local First

¹ As identified in the IESO's Report entitled '*Need for Bulk Transmission Reinforcement in the Windsor-Essex Region*', dated June 13, 2019.

- 1 Nations will have the opportunity to invest in a 50 per cent equity stake in the transmission
- 2 line component of the Project through Hydro One's First Nations equity partnership model.
- 3 The Project will meet Provincial energy needs while providing innovative and lasting
- 4 benefits to Indigenous governments and communities in procurement, employment,
- 5 economic benefits and investment opportunities.

APPORTIONING PROJECT COSTS AND RISKS

The estimated total cost of the SCTL Project is \$471.9M¹, the breakdown by line and station costs is shown below in Table 1 and Table 2 respectively.

Table 1 - Line Cost

	Estimated Cost (\$000's)
Materials	29,913
Labour	18,793
Equipment Rental & Contractor Costs	125,227
Sundry	5,207
Contingencies	27,950
Overhead ²	6,444
Allowance for Funds Used During Construction ³	41,803
Real Estate	79,156
Total Line Work	\$334,493

Table 2 - Station Cost

	Estimated Cost (\$000's)
Materials	29,111
Labour	24,916
Equipment Rental & Contractor Costs	47,691
Sundry	5
Contingencies	13,515
Overhead ²	7,298
Allowance for Funds Used During Construction ³	13,867
Real Estate	978
Total Station Work	\$137,381

¹ Includes \$2.9 million of OMA removal costs associated with constructing this Project.

² Overhead Costs allocated to the Project are for corporate services costs. For this capital project, these overhead costs are charged through an ECI-EPC overhead capitalization rate (EB-2023-0198) for the line costs and Hydro One's standard overhead capitalization rate (EB-2021-0110) for the station costs. As such they are considered "Indirect Overhead".

³ AFUDC is calculated using the Board's approved interest rate methodology (EB-2016-0160) to the Project's forecast monthly cash flow and carrying forward closing balances from the preceding month.

1 The cost of the work provided above allows for the schedule of approval, design and
2 construction activities provided in **Exhibit B, Tab 11, Schedule 1**.

3
4 The cost estimates provided in Table 1 and 2 of this Schedule, and similarly the Project
5 Schedule provided at **Exhibit B, Tab 11, Schedule 1**, are based on a project definition
6 equivalent to a Class 3⁴ under the AACE International (formerly the Association for the
7 Advancement of Cost Engineering) estimate classification system⁵.

8
9 Accordingly, the Project has proceeded with procurement of long lead materials, detailed
10 engineering and design activities, and subsurface verification through geotechnical
11 studies. The preferred route for the Project has been established and the Final ESR and
12 Statement of Completion has been filed with the MECP. Multiple appraisals for the real
13 estate component of the estimate have been finalized, and as further described in **Exhibit**
14 **E, Tab 1, Schedule 1** Hydro One has achieved voluntary early access agreements on
15 95% of the properties affected by the corridor and secured two voluntary property
16 settlements.

17
18 The Project cost estimate for the transmission line is based on a fixed price EPC contract,
19 and the selection of the EPC contractor used a two-stage process (known as the ECI-EPC
20 methodology)⁶. The first stage was to utilize an external owners engineer and qualify EPC
21 bidders based on experience and capacity to perform many of the development functions
22 that under the standard Hydro One EPC delivery model would be performed internally by
23 Hydro One. During the second stage, EPC contractors developed independent
24 competitive proposals. This process allowed the EPC contractors to obtain competitive
25 market pricing from their suppliers and vendors and to identify and evaluate engineering,
26 procurement and construction risks and opportunities during the development of their
27 offers. Thus, the cost estimate reflects current market-tested EPC pricing to deliver the

⁴ An estimate range of -20%/+30%

⁵ As per 96r-18 Cost Estimate Classification System – EPC Power Transmission Line Infrastructure Industries recommended practice document.

⁶ For detailed explanation of the ECI-EPC methodology and supporting third party analysis by Atrium refer to EB-2023-0198 Exhibit B, Tab 7, Schedule 1 and Attachment 1 of the same Schedule.

1 project and corresponding risk premiums that will be transferred to the EPC contractor.
2 Hydro One has entered into an agreement with the selected EPC contractor for the
3 transmission line, with a Limited Notice to Proceed on early activities to advance the
4 contractors' long lead procurement process.

6 **1.0 RISKS AND CONTINGENCIES**

7 As with most projects, there are risks associated with estimating costs. Hydro One's cost
8 estimate includes an allowance for contingencies in recognition of these risks. Hydro One
9 follows an industry established best practices methodology in developing the contingency
10 utilizing a risk management model that includes both a qualitative and a quantitative risk
11 analysis of identified risks to the Project.

12
13 The Project risks that predominantly contribute to the total contingency suggested for this
14 Project include the following:

- 15 • **Outage Constraints:** There is a risk of securing required transmission system outages
16 due to system instability, weather or environmental reasons, insufficient generation,
17 competing transmission system outages in the area, or critical load requirements.
18 Time-of-year can also dictate the outages schedule and potential for cancellations.
19 Outage delays or cancellations may cause schedule disruptions and increased costs.
- 20 • **Approvals, Permits and Authorizations:** Risk of delays or cost escalation in
21 obtaining required approvals including leave to construct, and all necessary land rights
22 (e.g., should property owners refuse Hydro One's voluntary agreements leading to the
23 necessity of expropriation) that may cause delay or disruption to the construction
24 schedule and additional cost.
- 25 • **Subsurface Conditions:** Risk that the actual subsurface or environmental conditions
26 are different from the ones determined through preliminary studies (e.g., contaminated
27 soil) that may require additional mitigations that will have a cost impact and could delay
28 or stop the project progress.

1 To mitigate these risks Hydro One has:

- 2 1. Established communication plans regarding schedule updates between Hydro
3 One and the EPC contractors to foresee any possible delays due to outage or
4 access constraints. Crew allocation will be optimized to minimize delays and
5 additional costs.
- 6 2. Factored outage planning into the planning and scheduling phase of the project to
7 ensure critical activities that are outage-dependent fall outside the peak load
8 season.
- 9 3. Proactively submitted all regulatory applications, project permit and authorizations
10 well in advance of the construction start of the Project, including the Final ESR with
11 the MECP and this leave to construct application.
- 12 4. Performed preliminary studies and testing to identify subsurface conditions in order
13 to develop implementation plans with EPC contractors to address the risk if
14 encountered during construction (e.g., testing of soil contamination levels to
15 determine disposal plans, as required).

16
17 Cost contingencies that have not been included in the total contingency suggested for this
18 project, due to the unlikelihood or uncertainty of occurrence, include:

- 19 • Labour disputes;
- 20 • Safety or environmental incidents;
- 21 • Significant changes in costs and/or availability of materials outside the control of Hydro
22 One since the estimate preparation; and
- 23 • Any other unforeseen and potentially significant event/occurrence.

24 25 **2.0 COSTS OF COMPARABLE PROJECTS - LINES**

26 The OEB Filing Requirements for *Electricity Transmission Applications, Chapter 4*,
27 requires the Applicant to provide information about a cost comparable project constructed
28 by the Applicant. Table 3 compares the line cost of the Project with three other recent
29 comparable projects.

- 1 • **Woodstock Area Transmission Reinforcement:** Upgraded an existing 115 kV
2 double-circuit transmission line (W7W/W12W) to construct a new 230 kV double-
3 circuit transmission line between Ingersoll and Woodstock (approximately
4 13.6 km) to address capacity needs in the Woodstock Area. The new 230 kV
5 double-circuit transmission line was connected to the existing 230 kV double-
6 circuit transmission line (M32W/M33W) at Ingersoll TS and replaced approximately
7 12 km of the existing 115 kV ROW from Ingersoll TS to the new Karn TS and
8 extended from Karn TS to Woodstock TS along the existing ROW. Leave to
9 construct approval for this project was provided under OEB docket EB-2007-0027.
- 10 • **Power South Nepean Project:** Upgraded an existing 115 kV single-circuit
11 transmission line to construct a new 230 kV double-circuit transmission line
12 (approximately 12.2 km) to address capacity needs in the South Nepean Area of
13 Ottawa. The new 230 kV double-circuit transmission line replaced approximately
14 10.9 km of the existing 115 kV single-circuit transmission line (S7M) from West
15 Hunt Club Road to Cambrian Road and extended an additional approximate
16 1.3 km from Cambrian Road to the new MTS. Leave to construct approval for this
17 project was provided under OEB docket EB-2019-0077.
- 18 • **Chatham x Lakeshore Transmission Line:** Constructed approximately 49 km of
19 new 230 kV double-circuit transmission line from Chatham SS to Lakeshore TS to
20 increase the transmission capability to the Windsor-Essex area. The 230 kV
21 double-circuit transmission line was built on a combination of a new corridor and
22 approximately 16 km of widened existing idle 115 kV transmission corridor (K6Z)
23 between Chatham and Tilbury. Leave to construct approval for this project was
24 provided under OEB docket EB-2022-0140.

25
26 These projects were selected as reasonable comparables because they are all 230 kV
27 double-circuit transmission lines and included a rebuild of an existing 115 kV transmission
28 line and structures. Additionally, the Woodstock Area Transmission Reinforcement and
29 Chatham x Lakeshore Transmission Line projects were selected as reasonable
30 comparable projects because they were projects utilizing the same sized 1443.7 kcmil

1 ACSR/TW conductor as contemplated for this Project and are also geographically situated
2 in similar Southwestern Ontario rural area.

3
4 For the purposes of the comparison, Hydro One has excluded costs associated with real
5 estate, underground line work, micropile foundations, and temporary bypass
6 arrangements.

7
8 Hydro One has excluded the real estate costs from all comparable projects and the
9 underground line work from the SCTL project because these are project-specific
10 requirements and not comparable between the projects.

11
12 Hydro One provides that although real estate costs are excluded from the comparison
13 provided in Table 3, the costs are reasonable as the real estate estimate for the SCTL
14 Project is supported by independent third-party appraisals, agriculture expert analysis of
15 commodity prices and a contingency amount that is reserved for potential expropriation.

16
17 Adjustment was also made for the region topography that would impact construction,
18 notably, the use of micropile foundations based on terrain characteristics along the
19 corridor on the Power South Nepean Project. And similarly, an adjustment for the use of
20 a line bypass required for the project-specific construction execution plans for the
21 Woodstock Area Transmission Reinforcement and Power South Nepean projects due to
22 load/outage constraints.

23
24 The variances in the unadjusted per/km cost to execute these projects is driven by the
25 timing differences in the in-service date. Therefore, Table 3 has been adjusted to show
26 comparable projects in 2028 dollars utilizing inflation values for future years consistent
27 with the inflation parameters provided by the OEB.

28
29 When considering the adjusted comparable cost per km ratio for all other transmission line
30 costs in Table 3, the comparable projects demonstrate that the estimate for the SCTL

1 Project is consistent with the cost to complete comparable transmission line works and is
2 reasonable.

3 **Table 3 - Costs of Comparable Line Projects**

Project	Woodstock Area Reinforcement (Line Cost)	Power South Nepean Project (Line Cost)	Chatham x Lakeshore Transmission Line (Line Cost)	St. Clair Transmission Line (Line Cost)
Circuit Operating Designation(s)	M32W/M31W plus K12/K7	S7M and E34M	C87H and C88H	L34C and L35C
Voltage	230 kV	230 kV	230 kV	230 kV
Structure Type	Steel Lattice and Steel Pole	Steel Lattice and Steel Pole	Steel Lattice	Steel Lattice
Single or Double Circuit	Double	Double	Double	Double
Conductor	1443.7 kcmil ACSR/TW	997.2 kcmil ACSR/TW	1443.7 kcmil ACSR/TW	1443.7 kcmil ACSR/TW
Location	Southwest Ontario	Eastern Ontario	Southwest Ontario	Southwest Ontario
Project Surroundings	Urban-Rural Parallel to Karn Rd	Urban-Rural Parallel to Hwy 416	Mostly Rural Parallel to Hwy 401	Mostly Rural
In-Service Year	2012	2021	2025	2028
Estimate or Actual	Actual	Actual	Estimate	Estimate
OEB-Approved Cost Estimate	\$42.9M ⁷	\$58.8M ⁸	\$235.3M ⁹	–
Total Cost	\$35,600K	\$51,276K	\$235,272K ¹⁰	\$334,493K
Less Adjustments:				
Real Estate	\$500K	\$2,229K	\$99,682K ¹¹	\$114,400K ¹²
Underground Line	N/A	N/A	N/A	\$9,103K
Micropile Foundation	N/A	\$6,730K	N/A	N/A
Bypass	\$4,300K	\$1,419K	N/A	N/A
Comparable Costs, before Escalation	\$30,800K	\$40,898K	\$135,590K	\$210,990K
Escalation Adjustment¹³	\$20,906K	\$15,798K	\$23,530K	N/A
Total Adjusted Comparable Cost	\$51,706K	\$56,696K	\$159,120K	\$210,990K
Approximate Length	13.6 km	12.2 km	49 km	64 km
Unit Cost	\$3,802K/km	\$4,647K/km	\$3,247K/km	\$3,297K/km

⁷ As per Section 92 leave to construct proceeding EB-2007-0027.

⁸ As per Section 92 leave to construct proceeding EB-2019-0077.

⁹ As per Section 92 leave to construct proceeding EB-2022-0140.

¹⁰ As per Hydro One's Notification of Material Change to the Chatham to Lakeshore Project, dated November 3, 2023, this project is anticipated to be in-service one year ahead of schedule and approximately \$15 million less than the total project cost estimate identified in the EB-2022-0140.

¹¹ This amount includes the direct real estate costs of \$69,683K plus contingency carried for expropriation, interest and overhead.

¹² This amount includes the direct real estate costs of \$79,156K (identified in Table 1) plus contingency carried for expropriation, interest and overhead.

¹³ Inflation adjustment factors used for comparator projects are consistent with the OEB's annual inflation parameters for electricity transmitters' rate applications.

3.0 COSTS OF COMPARABLE PROJECTS – STATIONS

For station cost comparison purposes, Table 4 below shows the cost, construction, and technical comparisons of the proposed terminal station modifications at Chatham SS and Lambton TS to the recently in-serviced Wawa TS and Lakehead TS in Northwestern Ontario undertaken for the EWT Line project, and the ongoing Chatham SS works undertaken for the Chatham x Lakeshore Transmission Line project.

Similarly, Table 5 below shows the cost, construction, and technical comparisons of the proposed Wallaceburg TS works to the recently in-serviced system renewal refurbishment projects at Chenaux TS and Parry Sound TS.

Unlike making a line comparison, where a per-kilometer cost can be derived, the same methodology and inferences for station work cannot always be achieved. There are several major differentiating factors, based on the unique site and station configuration, making individual station cost component comparisons difficult. Notwithstanding, the comparable projects selected are considered reasonable because the scope of work is very similar when compared to other terminal station modification projects (i.e. installation of new diameter, 230 kV circuit breakers, 230 kV disconnect switches and a new relay building for the terminal station modifications) as documented in Table 4; and likewise for Wallaceburg TS when compared to system renewal refurbishment projects (i.e. replacement of transformers and associated equipment) as documented in Table 5.

1 **Table 4 - Costs of Comparable Station Projects (Chatham SS/Lambton TS)**

Project	Chatham SS (CxL Project)	Wawa TS (EWT Project)	Lakehead TS (EWT Project)	Chatham SS (SCTL Project)	Lambton TS (SCTL Project)
Technical	Add one new diameter, (3) 230kV circuit breakers, (8) disconnect switches, new relay building	Add two new diameters, (6) 230kV circuit breakers, (14) disconnect switches, new relay building	Add one new diameter, (5) 230kV circuit breakers, (16) disconnect switches, new relay building, plus (1) 230kV shunt reactor, (1) 230kV cap bank and associated equipment	Add one new diameter, (5) 230kV circuit breakers, (12) disconnect switches	Add two new diameters, (4) 230kV circuit breakers, (10) disconnect switches, new relay building
Location	Southwest Ontario	Northern Ontario	Northern Ontario	Southwest Ontario	Southwest Ontario
Project Surroundings	Mostly rural	Rural	Rural	Mostly rural	Mostly rural
Environmental Issues	None	None	None	None	None
In-Service Year	2025	2022	2022	2028	2028
Estimate or Actual	Estimate	Actual	Actual	Estimate	Estimate
OEB-Approved Cost Estimate	\$28.8M¹⁴	\$44.8M¹⁵	\$50.9M¹⁶	–	–
Total Cost	\$28,788K	\$51,700K	\$57,700K	\$34,981K	\$53,501K
Less Adjustments:					
<i>Land Cost</i>	<i>N/A</i>	<i>\$169K</i>	<i>\$4K</i>	<i>N/A</i>	<i>\$1,239K¹⁷</i>
<i>Shunt Reactor & Cap Bank</i>	<i>N/A</i>	<i>N/A</i>	<i>\$3,649K</i>	<i>N/A</i>	<i>N/A</i>
Comparable Costs, before Escalation	\$28,788K	\$51,531K	\$54,047K	\$34,981K	\$52,262K
Escalation Adjustment¹⁸	\$4,996K	\$19,351K	\$20,296K	N/A	N/A
Total Adjusted Comparable Cost¹⁹	\$33,784K	\$70,882K	\$74,343K	\$34,981K	\$52,262K

¹⁴ As per Section 92 leave to construct proceeding EB-2022-0140.

¹⁵ As per Section 92 leave to construct proceeding EB-2017-0194.

¹⁶ As per Section 92 leave to construct proceeding EB-2017-0194.

¹⁷ This amount includes \$895K of direct real estate costs (a portion of the \$978K identified in Table 2) plus contingency carried for expropriation, interest and overhead.

¹⁸ Inflation adjustment factors used for comparator projects are consistent with the OEB's annual inflation parameters for electricity transmitters' rate applications.

¹⁹ Hydro One notes that two of the comparable station projects associated with the EWT project were executed during the COVID pandemic and distinct adjustments have not been made to reflect any of these incremental costs incurred as a result of construction during the pandemic. For reference, all incremental costs (including COVID) for all three EWT stations cumulatively was \$16.9 million as disclosed in the Final Report (EB-2017-0194) dated June 21, 2022.

1 Hydro One has adjusted the comparable projects to reflect the fact that Wawa TS and
2 Lakehead TS costs to connect the EWT lines, and the Lambton TS estimated costs to
3 connect the SCTL included land acquisition that are not comparable to all projects. An
4 adjustment was also made to exclude the cost of the 230 kV shunt reactor and capacitor
5 bank from the Lakehead TS project because these are project-specific requirements and
6 not comparable to the other projects. Furthermore, Table 4 has been adjusted to reflect
7 the timing differences in the in-service date by showing comparable projects in 2028
8 dollars utilizing inflation values for future years consistent with the inflation parameters
9 provided by the OEB.

10
11 When considering the adjusted comparable station costs in Table 4, the comparable
12 projects demonstrate that the estimate costs for Chatham SS and Lambton TS is
13 consistent with the cost to complete comparable terminal station modification work and is
14 reasonable.

1

Table 5 - Costs of Comparable Station Projects (Wallaceburg TS)

Project	Chenau TS	Parry Sound TS	Wallaceburg TS
Technical	Replace two 230/115kV 125MVA transformers and associated equipment, two 115kV breakers, new relay building, spill containment, drainage, and oil/water separator	Replace two 230/44kV 83MVA transformers and associated equipment, protection and control, spill containment, drainage, and oil/water separator	Install new 230 kV facilities, two 230/27.6 kV 83MVA transformers and associated equipment, protection and control, spill containment, drainage, oil/water separator and removal of existing 115 kV equipment and two existing buildings
Location	Eastern Ontario	Central Ontario	Southwest Ontario
Project Surroundings	Mostly rural	Mostly rural	Mostly rural
Environmental Issues	None	None	None
In-Service Year	2020	2023	2026
Estimate or Actual	Actual	Actual	Estimate
OEB-Approved Cost Estimate	N/A ²⁰	N/A ²⁰	–
Total Cost	\$45,036K	\$24,156K	\$48,900K
Less Adjustments:			
<i>Land Cost</i>	N/A	N/A	\$100K ²¹
<i>230kV Switching Facilities</i>	N/A	N/A	\$2,106K
<i>Station Property Fence Line Expansion</i>	N/A	N/A	\$2,271K
<i>Demolish/Removal Cost</i>	\$2,016K	\$587K	\$1,190K
Comparable Costs, before Escalation	\$43,020K	\$23,569K	\$43,233K
Escalation Adjustment²²	\$11,737K	\$4,203K	N/A
Total Adjusted Comparable Cost	\$54,757K	\$27,772K	\$43,233K

2

3 Hydro One has completed a limited number of projects requiring a 115 kV to 230 kV station
4 conversion, and none are a direct comparison to the scope of Wallaceburg TS as outlined
5 in this Application. Recent conversion projects have required the construction of an
6 entirely new station, not just a partial rebuild of existing facilities. Due to this limitation, the

²⁰ This project was encompassed within a previous Hydro One revenue requirement application. The project was not subject to leave to construct approval by the OEB. Therefore, the specific investment does not have a discrete OEB approval to appropriately reference for the purposes of this comparison.

²¹ This amount includes \$83K of direct real estate costs (a portion of the \$978K identified in Table 2) plus contingency carried for expropriation, interest and overhead.

²² Inflation adjustment factors used for comparator projects are consistent with the OEB's annual inflation parameters for electricity transmitters' rate applications.

1 comparable projects with closest scope similarities indicated in Table 5 are system
2 renewal refurbishment projects that required replacement of the transformers with larger
3 capacity units.

4
5 Hydro One has adjusted the Wallaceburg TS cost estimate to exclude the land costs,
6 230 kV switching facilities, and station property fence line expansion that are required for
7 the conversion of the station from 115 kV to 230 kV and associated connection to the
8 230 kV transmission line, which are project-specific requirements and not comparable to
9 the other system renewal refurbishment projects. Hydro One has also excluded the
10 demolish/removal costs from all comparable projects because these are project-specific
11 requirements and will vary between the projects. Furthermore, Table 5 has been adjusted
12 to reflect the timing differences in the in-service date by showing comparable projects in
13 2026 dollars utilizing inflation values for future years consistent with the inflation
14 parameters provided by the OEB.

15
16 The comparable projects demonstrate that the estimate for Wallaceburg TS is within a
17 reasonable range to that of comparable projects. However, there are several
18 differentiating factors that make comparing station cost components difficult. The major
19 differences contributing to the price variation of these station projects include:

- 20 • The unique complexities involved with the conversion of Wallaceburg TS that lead
21 to added Project complexity, planning, site coordination, and commissioning
22 activities; and
- 23 • Substantial increases in equipment and material costs because of global factors
24 driven by COVID-19 that were not present for the comparative projects, Chenaux
25 TS and Parry Sound TS. Since the COVID-19 pandemic, the industry is
26 experiencing additional risks associated with procurement driven by limited
27 quantities and global competition to satisfy global decarbonization/electrification
28 aims. This material supply shortage and increased manufacturing pressure has
29 resulted in the need to secure materials earlier in the project lifecycle or have the
30 Project exposed to longer lead times and potential delays. The ramifications result
31 in increased project costs for Wallaceburg TS relative to the comparable projects.

- 1 Given this information, when considering the adjusted comparable station costs in Table
- 2 5, and these price variation explanations, the comparable projects demonstrate that the
- 3 estimated cost for Wallaceburg TS is reasonable.

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1 **CONNECTION PROJECTS REQUIRING NETWORK REINFORCEMENT**
2
3 This is not a connection project. Facilities being constructed as part of this Project are
4 limited to those discussed in the details of the work being undertaken in **Exhibit C, Tab**
5 **1, Schedule 1.**

Filed: 2024-05-28
EB-2024-0155
Exhibit B
Tab 8
Schedule 1
Page 2 of 2

1

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TRANSMISSION RATE IMPACT ASSESSMENT

1.0 ECONOMIC FEASIBILITY

The Project costs will be included in the network, line and transformation connection pools for cost classification purposes and not allocated to any individual customer. See **Exhibit B, Tab 2, Schedule 1**, for information on the proposed work. No customer contribution is required for the Project.

A 25-year discounted cash flow analysis of the network pool work demonstrates that based on the estimated initial cost of \$422.9 million¹, plus the assumed impact on the future capital cost allowance, Hydro One's corporate income tax and approximately \$31.2 million in annual incremental network revenue utilizing the 2024 UTR over a 25-year evaluation period, this Project will have a negative net present value of \$64.3 million as seen in Tables 1 and 2.

A 25-year discounted cash flow analysis of the line connection pool work demonstrates that based on the estimated initial cost of \$2.2 million², plus the assumed impact on the future capital cost allowance, Hydro One's corporate income tax and approximately \$5.1 million in annual incremental line connection revenue utilizing the 2024 UTR over a 25-year evaluation period, this Project will have a positive net present value of \$49.2 million as seen in Tables 3 and 4.

A 25-year discounted cash flow analysis of the transformation connection pool work demonstrates that based on the estimated initial cost of \$46.8 million³, plus the assumed

¹ Initial network costs of \$422.9 million include \$420.9 million of up-front capital costs plus \$2.0 million cost of removals.

² Initial line connection costs of \$2.2 million include \$2.2 million of up-front capital costs plus \$0 million cost of removals.

³ Initial transformation connection costs of \$46.8 million include \$45.9 million of up-front capital costs plus \$0.9 million cost of removals.

1 impact on the future capital cost allowance, Hydro One's corporate income tax and
2 approximately \$17.3 million in annual incremental transformation connection revenue
3 utilizing the 2024 UTR over a 25-year evaluation period, this Project will have a positive
4 net present value of \$131.9 million as seen in Tables 5 and 6.

6 **2.0 COST RESPONSIBILITY**

7 The Project will increase the West of Chatham interface limit by about 450 MW, from
8 1500 MW to 1950 MW. The proposed two 230 kV circuits will result in a total of four 230 kV
9 circuits between Lambton TS and Chatham SS. This Project is not associated with any
10 specific load increase or customer load application. As identified by the IESO⁴, the
11 purpose of the Project is to:

- 12 • Ensure sufficient bulk transfer capability east of Chatham to supply the forecast load
13 in the Windsor-Essex region and surrounding Chatham area in the near- to mid-term;
14 and
- 15 • Improve the deliverability of resources in the Lambton-Sarnia area for intra-zonal and
16 provincial supply.

18 ***Network Pool***

19 Both Lambton TS and Chatham SS are existing network stations, hence the proposed two
20 230 kV circuits are to be included in the Network Pool as they directly connect these
21 network stations and meet the above stated IESO-identified needs. No customer capital
22 contribution is required, consistent with the provisions of Section 6.3.5 of the TSC.

24 ***Line Connection Pool***

25 As stated in **Exhibit B, Tab 3, Schedule 1**, Wallaceburg TS will be converted from a
26 115 kV supply to a 230 kV supply to accommodate the proposed 230 kV double-circuit
27 transmission line which is a network facility. Since this conversion was done solely for the
28 purpose of connecting the network facility, and not at the request of any customer, capital
29 contribution is not required. Facilities for connecting Wallaceburg TS to the proposed

⁴ Exhibit H, Tab 1, Schedule 1, Attachment 2.

230 kV double-circuit transmission line (i.e. 230 kV bus work, mid span openers; jumper connectors at the station gantry, and protection, control and telecommunications) and the associated cost is to be included in the Line Connection Pool.

Transformation Connection Pool

The existing Wallaceburg TS is a transformation connection asset. The conversion of Wallaceburg TS, as noted above, from a 115 kV supply to a 230 kV supply will require the replacement of the two existing 25/33/42 MVA, 115/27.6 kV transformers with two new 50/67/83 MVA, 230/27.6 kV transformers and other associated equipment. These facilities and the associated cost is to be included in the Transformation Connection Pool. This work is not attributable to any specific request by a customer, as identified above, thus a capital contribution will not be required.

3.0 RATE IMPACT ASSESSMENT

The analysis of the network, line and transformation connection pool rate impacts has been carried out on the basis of Hydro One's transmission revenue requirement for the year 2024, and the 2024 approved Ontario Transmission Rate Schedules. The network, line and transformation connection pool revenue requirements would be affected by the Project based on the project cost allocation.

Network Pool

Based on the estimated initial cost of \$422.9 million and the associated network pool incremental cash flows, there will be a change in the network pool revenue requirement once the Project's impacts are reflected in the transmission rate base at the projected in-service date of December 31, 2028. The 2024 OEB approved rate of \$5.78 per kW/month slightly increases to \$5.79 per kW/month between the 2nd and 10th year then decreases to \$5.78 per kW/month in the 11th to 18th year then decreases to \$5.77 per kW/month in the 19th to 23rd year, and then further decreases to \$5.76 per kW/month in the 24th year over a 25-year time horizon. The detailed analysis illustrating the calculation of the incremental network revenue and rate impact is provided in Tables 7 and 8 below.

1 ***Line Connection Pool***

2 Based on the estimated initial cost of \$2.2 million and the associated line pool incremental
3 cash flows, there will be a change in the line pool revenue requirement once the Project's
4 impacts are reflected in the transmission rate base at the projected in-service date of
5 December 31, 2028. Due to the enabled growth in the south-western Ontario area, the
6 steady net incremental revenue will have an overall rate mitigating impact over the 25-
7 year time horizon. The 2024 OEB approved rate of \$0.95 per kW/month decreases to
8 \$0.93 per kW/month over a 25-year time horizon. The detailed analysis illustrating the
9 calculation of the incremental line revenue and rate impact is provided in Tables 9 and 10
10 below.

11
12 ***Transformation Connection Pool***

13 Based on the estimated initial cost of \$46.8 million and the associated transformation pool
14 incremental cash flows, there will be a change in the transformation pool revenue
15 requirement once the Project's impacts are reflected in the transmission rate base at the
16 projected in-service date of December 31, 2028. Due to the enabled growth in the south-
17 western Ontario area, the steady net incremental revenue will have an overall rate
18 mitigating impact over the 25-year time horizon. The 2024 OEB approved rate of \$3.21
19 per kW/month decreases to \$3.14 per kW/month then decreases to \$3.13 per kW/month
20 in the 24th year over a 25-year time horizon. The detailed analysis illustrating the
21 calculation of the incremental transformation revenue and rate impact is provided in
22 Tables 11 and 12 below.

23
24 **Impact on Typical Residential Customer**

25 Based on the load forecast, initial capital costs and ongoing maintenance costs, adding
26 the costs of the required facilities to the network, line and transformation connection pools
27 will cause a \$0.14 per month decrease in a typical residential customer's bills under the
28 RPP. The table below shows this result for a typical residential customer who is under the
29 RPP, utilizing the maximum impact by rate pool, regardless of year.

A. Typical monthly bill	\$150.76 per month
B. Transmission component of monthly bill	\$16.54 per month
C. Line Connection Pool share of Transmission component	\$1.60 per month
D. Transformation Connection Pool share of Transmission component	\$5.42 per month
E. Network Connection Pool share of Transmission component	\$9.52 per month
F. Impact on Line Connection Pool Provincial Uniform Rates	-2.11%
G. Impact on Transformation Connection Pool Provincial Uniform Rates	-2.18%
H. Impact on Network Connection Pool Provincial Uniform Rates	0.17%
I. Decrease in Transmission costs for typical monthly bill (C x F + D x G + E x H)	\$-0.14 per month or \$-1.63 per year
J. Net decrease on typical residential customer bill (I / A)	-0.09%

Table 1 - Net Present Value, Network Pool page 1

[illegible]

1

Table 2 - Net Present Value, Network Pool, page 2

Month Year	Project year ended - annualized from In-Service Date ----->												
	Dec-31 <u>2041</u> 13	Dec-31 <u>2042</u> 14	Dec-31 <u>2043</u> 15	Dec-31 <u>2044</u> 16	Dec-31 <u>2045</u> 17	Dec-31 <u>2046</u> 18	Dec-31 <u>2047</u> 19	Dec-31 <u>2048</u> 20	Dec-31 <u>2049</u> 21	Dec-31 <u>2050</u> 22	Dec-31 <u>2051</u> 23	Dec-31 <u>2052</u> 24	Dec-31 <u>2053</u> 25
Revenue & Expense Forecast													
Load Forecast (MW)	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0
Load adjustments (MW)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Tariff Applied (\$/kW/Month)	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0
	<u>5.78</u>	<u>5.78</u>	<u>5.78</u>	<u>5.78</u>	<u>5.78</u>	<u>5.78</u>	<u>5.78</u>	<u>5.78</u>	<u>5.78</u>	<u>5.78</u>	<u>5.78</u>	<u>5.78</u>	<u>5.78</u>
Incremental Revenue - \$M	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2
Removal Costs - \$M													
On-going OM&A Costs - \$M	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)
Municipal Tax - \$M	<u>(1.4)</u>	<u>(1.4)</u>	<u>(1.4)</u>	<u>(1.4)</u>	<u>(1.4)</u>	<u>(1.4)</u>	<u>(1.4)</u>	<u>(1.4)</u>	<u>(1.4)</u>	<u>(1.4)</u>	<u>(1.4)</u>	<u>(1.4)</u>	<u>(1.4)</u>
Net Revenue/(Costs) before taxes - \$M	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5	29.5
Income Taxes	<u>(4.5)</u>	<u>(4.7)</u>	<u>(5.0)</u>	<u>(5.2)</u>	<u>(5.4)</u>	<u>(5.5)</u>	<u>(5.7)</u>	<u>(5.9)</u>	<u>(6.0)</u>	<u>(6.1)</u>	<u>(6.3)</u>	<u>(6.4)</u>	<u>(6.5)</u>
Operating Cash Flow (after taxes) - \$M	<u>25.1</u>	<u>24.8</u>	<u>24.6</u>	<u>24.3</u>	<u>24.1</u>	<u>24.0</u>	<u>23.8</u>	<u>23.6</u>	<u>23.5</u>	<u>23.4</u>	<u>23.2</u>	<u>23.1</u>	<u>23.0</u>
PV Operating Cash Flow (after taxes) - \$M (A)	12.6	11.8	11.1	10.4	9.7	9.1	8.6	8.1	7.6	7.2	6.7	6.3	6.0
Capital Expenditures - \$M													
Upfront - capital cost before overheads & AFUDC													
- Overheads													
- AFUDC													
Total upfront capital expenditures													
On-going capital expenditures	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PV On-going capital expenditures													
Total capital expenditures - \$M													
Capital Expenditures - \$M													
PV CCA Residual Tax Shield - \$M													
PV Working Capital - \$M													
PV Capital (after taxes) - \$M (B)													
Cumulative PV Cash Flow (after taxes) - \$M (A) + (B)	(166.9)	(155.1)	(144.0)	(133.7)	(123.9)	(114.8)	(106.2)	(98.1)	(90.5)	(83.3)	(76.6)	(70.3)	(64.3)

2

2

1

Table 4 - Net Present Value, Line Connection Pool, page 2

Month Year	Project year ended - annualized from In-Service Date ----->												
	Dec-31 <u>2041</u> 13	Dec-31 <u>2042</u> 14	Dec-31 <u>2043</u> 15	Dec-31 <u>2044</u> 16	Dec-31 <u>2045</u> 17	Dec-31 <u>2046</u> 18	Dec-31 <u>2047</u> 19	Dec-31 <u>2048</u> 20	Dec-31 <u>2049</u> 21	Dec-31 <u>2050</u> 22	Dec-31 <u>2051</u> 23	Dec-31 <u>2052</u> 24	Dec-31 <u>2053</u> 25
Revenue & Expense Forecast													
Load Forecast (MW)	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0
Load adjustments (MW)	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>	<u>0.0</u>
Tariff Applied (\$/kW/Month)	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0
	<u>0.95</u>	<u>0.95</u>	<u>0.95</u>	<u>0.95</u>	<u>0.95</u>	<u>0.95</u>	<u>0.95</u>	<u>0.95</u>	<u>0.95</u>	<u>0.95</u>	<u>0.95</u>	<u>0.95</u>	<u>0.95</u>
Incremental Revenue - \$M	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
Removal Costs - \$M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
On-going OM&A Costs - \$M	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>	<u>(0.0)</u>
Municipal Tax - \$M	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
Net Revenue/(Costs) before taxes - \$M	<u>(1.3)</u>	<u>(1.3)</u>	<u>(1.3)</u>	<u>(1.3)</u>	<u>(1.3)</u>	<u>(1.3)</u>	<u>(1.3)</u>	<u>(1.3)</u>	<u>(1.3)</u>	<u>(1.3)</u>	<u>(1.3)</u>	<u>(1.3)</u>	<u>(1.3)</u>
Income Taxes	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>
Operating Cash Flow (after taxes) - \$M	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>	<u>3.8</u>
PV Operating Cash Flow (after taxes) - \$M (A)	<u>1.9</u>	<u>1.8</u>	<u>1.7</u>	<u>1.6</u>	<u>1.5</u>	<u>1.4</u>	<u>1.4</u>	<u>1.3</u>	<u>1.2</u>	<u>1.2</u>	<u>1.1</u>	<u>1.0</u>	<u>1.0</u>
Capital Expenditures - \$M													
Upfront - capital cost before overheads & AFUDC													
- Overheads													
- AFUDC													
Total upfront capital expenditures	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
On-going capital expenditures													
PV On-going capital expenditures													
Total capital expenditures - \$M													
Capital Expenditures - \$M													
PV CCA Residual Tax Shield - \$M													
PV Working Capital - \$M													
PV Capital (after taxes) - \$M (B)													
Cumulative PV Cash Flow (after taxes) - \$M (A) + (B)	<u>33.0</u>	<u>34.8</u>	<u>36.5</u>	<u>38.1</u>	<u>39.6</u>	<u>41.1</u>	<u>42.4</u>	<u>43.7</u>	<u>44.9</u>	<u>46.1</u>	<u>47.2</u>	<u>48.2</u>	<u>49.2</u>

Table 5 - Net Present Value, Transformation Connection Pool, page 1

In-Service															
	Month	Date	←-----		Project year ended - annualized from In-Service Date								-----→		
	Year	Dec-31 2028	Dec-31 2029	Dec-31 2030	Dec-31 2031	Dec-31 2032	Dec-31 2033	Dec-31 2034	Dec-31 2035	Dec-31 2036	Dec-31 2037	Dec-31 2038	Dec-31 2039	Dec-31 2040	
		0	1	2	3	4	5	6	7	8	9	10	11	12	
Revenue & Expense Forecast															
				450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	
				3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	
Incremental Revenue - \$M															
			(0.9)	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	
			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.2	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	
Net Revenue/(Costs) before taxes - \$M															
			(0.9)	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	
			0.2	(4.1)	(3.6)	(3.7)	(3.8)	(3.8)	(3.9)	(3.9)	(4.0)	(4.0)	(4.1)	(4.1)	
Operating Cash Flow (after taxes) - \$M															
			(0.7)	13.1	13.5	13.5	13.4	13.3	13.3	13.2	13.2	13.1	13.1	13.0	
			Cumulative PV @												
			5.65%												
PV Operating Cash Flow (after taxes) - \$M	(A)	177.6	(0.7)	12.7	12.5	11.7	11.1	10.4	9.8	9.3	8.7	8.2	7.8	7.3	6.9
Capital Expenditures - \$M															
			(41.2)												
				(2.4)											
				(2.3)											
			(45.9)												
				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
				0.0											
			(45.9)												
Capital Expenditures - \$M															
PV CCA Residual Tax Shield - \$M			0.2												
PV Working Capital - \$M			0.0												
PV Capital (after taxes) - \$M	(B)	(45.7)	(45.7)												
Cumulative PV Cash Flow (after taxes) - \$M (A) + (B)		131.9	(46.3)	(33.6)	(21.1)	(9.4)	1.7	12.1	21.9	31.2	39.9	48.1	55.9	63.2	70.1

Discounted Cash Flow Summary		Other Assumptions	
Economic Study Horizon - Years:	25	In-Service Date:	31-Dec-28
Discount Rate - %	5.65%	Payback Year:	2032
	\$M	No. of years required for payback:	4
PV Incremental Revenue	235.2		
PV OM&A Costs	(0.9)		
PV Municipal Tax	(2.0)		
PV Income Taxes	(61.5)		
PV CCA Tax Shield	7.1		
PV Capital - Upfront	(45.9)		
Add: PV Capital Contribution	0.0		
PV Capital - On-going	0.0		
PV Working Capital	0.0		
PV Surplus / (Shortfall)	131.9		
Profitability Index*	3.9		

Notes:

*PV of total cash flow, excluding net capital expenditure & on-going capital & proceeds on disposal / PV of net capital expenditure & on-going capital & proceeds on disposal

1

Table 6 - Net Present Value, Transformation Connection Pool, page 2

Month Year	Project year ended - annualized from In-Service Date												
	Dec-31 2041 13	Dec-31 2042 14	Dec-31 2043 15	Dec-31 2044 16	Dec-31 2045 17	Dec-31 2046 18	Dec-31 2047 19	Dec-31 2048 20	Dec-31 2049 21	Dec-31 2050 22	Dec-31 2051 23	Dec-31 2052 24	Dec-31 2053 25
Revenue & Expense Forecast													
Load Forecast (MW)	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0
Load adjustments (MW)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tariff Applied (\$/kW/Month)	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0	450.0
Incremental Revenue - \$M	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21
Removal Costs - \$M	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
On-going OM&A Costs - \$M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Municipal Tax - \$M	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)	(0.2)
Net Revenue/(Costs) before taxes - \$M	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2	17.2
Income Taxes	(4.2)	(4.2)	(4.2)	(4.3)	(4.3)	(4.3)	(4.3)	(4.3)	(4.4)	(4.4)	(4.4)	(4.4)	(4.4)
Operating Cash Flow (after taxes) - \$M	13.0	13.0	12.9	12.9	12.9	12.9	12.8	12.8	12.8	12.8	12.8	12.8	12.8
PV Operating Cash Flow (after taxes) - \$M (A)	6.5	6.2	5.8	5.5	5.2	4.9	4.6	4.4	4.1	3.9	3.7	3.5	3.3
Capital Expenditures - \$M													
Upfront - capital cost before overheads & AFUDC													
- Overheads													
- AFUDC													
Total upfront capital expenditures													
On-going capital expenditures	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PV On-going capital expenditures													
Total capital expenditures - \$M													
Capital Expenditures - \$M													
PV CCA Residual Tax Shield - \$M													
PV Working Capital - \$M													
PV Capital (after taxes) - \$M (B)													
Cumulative PV Cash Flow (after taxes) - \$M (A) + (B)	76.7	82.8	88.7	94.2	99.4	104.3	108.9	113.3	117.5	121.4	125.1	128.6	131.9

Table 7 - Revenue Requirement and Network Pool Rate Impact, page 1

St. Clair Transmission Line		Project YE	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec
		2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Calculation of Incremental Revenue Requirement (\$ millions)		1	2	3	4	5	6	7	8	9	10	11	12
In-service date	31-Dec-28												
Capital Cost	420.9												
Less: Capital Contribution Required	-												
Net Project Capital Cost	420.9												
Average Rate Base		206.3	406.3	399.9	391.5	383.1	374.7	366.3	357.9	349.5	341.1	332.7	324.2
Incremental OM&A Costs		0.1	0.1	0.1	0.1	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Grants in Lieu of Municipal tax		1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Depreciation		8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4
Interest and Return on Rate Base		13.1	25.9	25.4	24.8	24.3	23.8	23.2	22.7	22.2	21.6	21.1	20.6
Income Tax Provision		0.2	(2.3)	(1.6)	(0.9)	(0.3)	0.2	0.7	1.1	1.5	1.9	2.2	2.5
REVENUE REQUIREMENT PRE-TAX		23.1	33.6	33.7	33.8	33.8	34.0	34.0	33.9	33.7	33.6	33.3	33.1
Incremental Revenue		31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2
SUFFICIENCY (DEFICIENCY)		8.0	(2.3)	(2.6)	(2.6)	(2.6)	(2.8)	(2.8)	(2.7)	(2.6)	(2.4)	(2.1)	(1.9)
Network Pool Revenue Requirement including sufficiency/deficiency	Base Year 1,374	1,397	1,407	1,407	1,407	1,407	1,408	1,407	1,407	1,407	1,407	1,407	1,407
Network MW	238	243	243	243	243	243	243	243	243	243	243	243	243
Network Pool Rate (\$/kw/month)	5.78	5.74	5.79	5.79	5.79	5.79	5.79	5.79	5.79	5.79	5.79	5.78	5.78
Increase/(Decrease) in Network Pool Rate (\$/kw/month), relative to base year		(0.04)	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
RATE IMPACT relative to base year		-0.69%	0.17%	0.17%	0.17%	0.17%	0.17%	0.17%	0.17%	0.17%	0.17%	0.00%	0.00%
Assumptions													
Incremental OM&A		Transmission station and line system averages											
Grants in Lieu of Municipal tax	0.30%	Transmission system average											
Depreciation	2.00%	Reflects 50 year average service life for towers, conductors and station equipment, excluding land											
Interest and Return on Rate Base	6.34%	Includes OEB-approved ROE of 9.36%, 4.79% on ST debt, and 4.3% on LT debt. 40/4/56 equity/ST debt/ LT debt split											
Income Tax Provision	26.50%	2024 federal and provincial corporate income tax rate											
Capital Cost Allowance	8.00%	51.1% Class 47 assets except for Land											

1 **Table 8 - Revenue Requirement and Network Pool Rate Impact, page 2**

<u>St. Clair Transmission Line</u>		31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec
<i>Calculation of Incremental Revenue Requirement (\$ millions)</i>		2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053
		13	14	15	16	17	18	19	20	21	22	23	24	25
In service date	31-Dec-28													
Capital Cost	429.9													
Less: Capital Contribution Required														
Net Project Capital Cost	429.9													
Average Rate Base		315.8	307.4	299.0	290.6	282.2	273.8	265.4	257.0	248.6	240.2	231.8	223.4	215.0
Incremental OM&A Costs		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Grants in Lieu of Municipal tax		1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Depreciation		8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4	8.4
Interest and Return on Rate Base		29.0	19.5	19.0	18.4	17.9	17.4	16.8	16.3	15.8	15.2	14.7	14.2	13.6
Income Tax Provision		2.7	3.0	3.2	3.3	3.5	3.6	3.7	3.8	3.9	4.0	4.0	4.1	4.1
REVENUE REQUIREMENT (PRE TAX)		32.8	32.5	32.2	31.9	31.5	31.1	30.7	30.3	29.8	29.3	28.9	28.4	27.9
Incremental Revenue		31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2	31.2
SUFFICIENCY/(DEFICIENCY)		(1.6)	(1.3)	(1.0)	(0.7)	(0.3)	0.1	0.5	0.9	1.4	1.9	2.3	2.8	3.3
Network Pool Revenue Requirement including sufficiency/(deficiency)	Base Year: 1,374	1,406	1,406	1,406	1,405	1,405	1,405	1,404	1,404	1,403	1,403	1,402	1,402	1,401
Network MW	236	243	243	243	243	243	243	243	243	243	243	243	243	243
Network Pool Rate (\$/kw/month)	5.78	5.78	5.78	5.78	5.78	5.78	5.78	5.77	5.77	5.77	5.77	5.76	5.76	5.76
Increase/(Decrease) in Network Pool Rate (\$/kw/month), relative to base year		0.00	0.00	0.00	0.00	0.00	0.00	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	-0.02
RATE IMPACT relative to base year		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	-0.17%	-0.17%	-0.17%	-0.17%	-0.17%	-0.35%	-0.35%

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St. Clair Transmission Line		Project YE											
		31-Dec 2029	31-Dec 2030	31-Dec 2031	31-Dec 2032	31-Dec 2033	31-Dec 2034	31-Dec 2035	31-Dec 2036	31-Dec 2037	31-Dec 2038	31-Dec 2039	31-Dec 2040
Calculation of Incremental Revenue Requirement (\$ milions)		1	2	3	4	5	6	7	8	9	10	11	12
In-service date	31-Dec-28												
Capital Cost	2.2												
Less: Capital Contribution Required	-												
Net Project Capital Cost	2.2												
Average Rate Base		1.1	2.1	2.1	2.0	2.0	1.9	1.9	1.8	1.8	1.8	1.7	1.7
Incremental OM&A Costs		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grants in Lieu of Municipal tax		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Depreciation		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interest and Return on Rate Base		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Income Tax Provision		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	0.0	0.0	0.0	0.0	0.0	0.0
REVENUE REQUIREMENT PRE-TAX		0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Incremental Revenue		5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
SUFFICIENCY/(DEFICIENCY)		5.0	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
Line Pool Revenue Requirement including sufficiency/(deficiency)	Base Year 218	218	218	218	218	218	218	218	218	218	218	218	218
Line M/W	230	235	235	235	235	235	235	235	235	235	235	235	235
Line Pool Rate (\$/kw/month)	0.95	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Increase/(Decrease) in Line Pool Rate (\$/kw/month), relative to base year		(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
RATE IMPACT relative to base year		-2.11%	-2.11%	-2.11%	-2.11%	-2.11%	-2.11%	-2.11%	-2.11%	-2.11%	-2.11%	-2.11%	-2.11%
Assumptions													
Grants in Lieu of Municipal tax	0.33%	Transmission system average											
Depreciation	2.00%	Reflects 50 year average service life for towers, conductors and station equipment, excluding land											
Interest and Return on Rate Base	8.34%	Includes OES-approved ROE of 9.36%, 4.79% on ST debt, and 4.3% on LT debt. 40/4/56 equity/ST debt/ LT debt split											
Income Tax Provision	26.50%	2024 federal and provincial corporate income tax rate											
Capital Cost Allowance	8.00%	100% Class 47 assets											

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[illegible]

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St. Clair Transmission Line		Project Yr											
		31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec	31-Dec
		2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
		1	2	3	4	5	6	7	8	9	10	11	12
Calculation of Incremental Revenue Requirement (\$ mil/yr)													
In-service date	31-Dec-28												
Capital Cost	45.9												
Less: Capital Contribution Required	-												
Net Project Capital Cost	45.9												
Average Rate Base		22.5	44.5	43.6	42.7	41.8	40.8	39.9	39.0	38.1	37.2	36.3	35.3
Incremental O&M&A Costs		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grants in Lieu of Municipal tax		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Depreciation		0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Interest and Return on Rate Base		1.4	2.8	2.8	2.7	2.6	2.6	2.5	2.5	2.4	2.4	2.3	2.2
Income Tax Provision		(0.0)	(0.3)	(0.2)	(0.2)	(0.1)	(0.0)	0.0	0.1	0.1	0.2	0.2	0.3
REVENUE REQUIREMENT PRE-TAX		2.5	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
Incremental Revenue		17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
SUFFICIENCY/(DEFICIENCY)		14.8	13.8	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7
Transformation Pool Revenue Requirement including sufficiency/(deficiency)	Base Year 622	624	625	626	626	626	626	626	626	626	626	626	625
Transformation MW	194	199	199	199	199	199	199	199	199	199	199	199	199
Transformation Pool Rate (\$/kw/month)	3.21	3.13	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14
Increase/(Decrease) in Transformation Pool Rate (\$/kw/month), relative to base year		(0.08)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
RATE IMPACT relative to base year		-2.49%	-2.18%	-2.18%	-2.18%	-2.18%	-2.18%	-2.18%	-2.18%	-2.18%	-2.18%	-2.18%	-2.18%
Assumptions													
Grants in Lieu of Municipal tax	0.33%	Transmission system average											
Depreciation	2.00%	Reflects 50 year average service life for towers, conductors and station equipment, excluding land											
Interest and Return on Rate Base	6.34%	Includes OES-approved ROE of 9.36%, 4.79% on ST debt, and 4.3% on LT debt. 40/4/56 equity/ST debt/ LT debt split											
Income Tax Provision	26.50%	2024 federal and provincial corporate income tax rate											
Capital Cost Allowance	8.00%	89.8% Class 47 assets											

1

St. Clair Transmission Line		31-Dec-2041	31-Dec-2042	31-Dec-2043	31-Dec-2044	31-Dec-2045	31-Dec-2046	31-Dec-2047	31-Dec-2048	31-Dec-2049	31-Dec-2050	31-Dec-2051	31-Dec-2052	31-Dec-2053
Calculation of Incremental Revenue Requirement (\$ millions)														
In-service date	31-Dec-28													
Capital Cost	45.9													
Less: Capital Contribution Required	-													
Net Project Capital Cost	45.9													
Average Rate Base		34.4	33.5	32.6	31.7	30.7	29.8	28.9	28.0	27.1	26.2	25.2	24.3	23.4
Incremental O&M Costs		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Grants in Lieu of Municipal tax		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Depreciation		0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Interest and Return on Rate Base		2.2	2.1	2.1	2.0	2.0	1.9	1.8	1.8	1.7	1.7	1.6	1.5	1.5
Income Tax Provision		0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5
REVENUE REQUIREMENT PRE-TAX		3.5	3.5	3.5	3.4	3.4	3.4	3.3	3.3	3.2	3.2	3.1	3.1	3.0
Incremental Revenue		17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
SUFFICIENCY/(DEFICIENCY)		13.8	13.8	13.8	13.9	13.9	14.0	14.0	14.0	14.1	14.1	14.2	14.2	14.3
Transformation Pool Revenue Requirement including sufficiency/(deficiency)	Base Year 622	625	625	625	625	625	625	625	625	625	625	625	625	625
Transformation MW	199	199	199	199	199	199	199	199	199	199	199	199	199	199
Transformation Pool Rate (\$/kw/month)	3.21	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.13	3.13
Increase/(Decrease) in Transformation Pool Rate (\$/kw/month), relative to base year		(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.08)	(0.08)
RATE IMPACT relative to base year		-2.18%	-2.18%	-2.18%	-2.18%	-2.18%	-2.18%	-2.18%	-2.18%	-2.18%	-2.18%	-2.18%	-2.49%	-2.49%

1

Table 13 - DCF Assumptions

**Hydro One Networks -- Transmission Connection Economic Evaluation Model
2024 Parameters and Assumptions**

Transmission rates are based on current OEB-approved uniform provincial transmission rates.

Monthly Rate (\$ per kW)	
Network	5.78
Transformation	3.21
Line	0.95

Grants in lieu of Municipal tax (% of up-front capital expenditure, a proxy for property value):

0.33%

Based on Transmission system average

Income taxes:

Basic Federal Tax Rate -
% of taxable income:

2024 15.00%

Current rate

Ontario corporation income tax -
% of taxable income:

2024 11.50%

Current rate

Capital Cost Allowance Rate:

Class 47 costs
Easement rights
Decision Support defined costs (2)
Decision Support defined costs (3)

2024	8%
2024	5%
2024	0%
2024	0%

Current rate

After-tax Discount rate:

5.65%

Based on OEB-approved ROE of 9.36% on common equity and 4.79% on short-term debt, 4.3% forecast cost of long-term debt and 40/60 equity/debt split, and current enacted income tax rate of 26.5%

REVENUE REQUIREMENT INFORMATION AND DEFERRAL ACCOUNT REQUESTS

1.0 REVENUE REQUIREMENT AND TRANSMISSION SYSTEM PLAN INFORMATION

The need for the Project was identified in the TSP included in Hydro One's most recent revenue requirement application, EB-2022-0110 at Exhibit B, Tab 2, Schedule 1 Section 2.11 and more specifically discussed in ISD T-SS-09 for the West of London Transmission Reinforcement. For ease of reference, this document is provided as **Attachment 1 of this Schedule**.

Capital expenditures and in-service rate base additions for the terminal station modification work at Lambton TS and Chatham SS are included in Hydro One's OEB-approved 2023-27 transmission rate application (EB-2021-0110). However, as Hydro One disclosed in the ISD, the Project's new transmission line was expected to be owned by, and included in, the rate base of a new future OEB-transmission licensed partnership, a future partnership that as of the time of this Application has not yet been finalized.

The transmission line project costs (as outlined in Table 1 of **Exhibit B, Tab 7, Schedule 1**) will be tracked in Hydro One's OEB-approved ATP Account. The SCTL Project was explicitly identified in the Application to establish the ATP Account.¹

Hydro One recognizes that there is a cost difference between the forecast cost of \$76.8 million² for the terminal station modification work at Lambton TS and Chatham SS that underpinned the ISD and the cost to execute the Project (\$137.4 million) filed in this

¹ EB-2021-0169 – OEB Decision and Order – October 7, 2021

² The forecast cost of \$76.8 million represents Stage 1 of the West of London Transmission Reinforcement for the terminal station modification work at Lambton TS and Chatham SS as contemplated by this leave to construct application. Furthermore, this forecast cost is from the prefiled evidence in OEB docket EB-2021-0110 and does not consider the specific impacts of inflation increases and settlement reductions noted in the OEB-approved Hydro One JRAP Settlement Proposal.

1 Application at Table 2 of **Exhibit B, Tab 7, Schedule 1**. An explanation of this difference
2 is provided below.

3
4 The ISD, filed August 5, 2021 predated the Notice of Commencement of the Class EA
5 process by approximately six months. The Class EA was initiated in February of 2022.
6 Consequently, and as described in **Exhibit B, Tab 3, Schedule 1**, consultations with
7 impacted communities and that ultimately led to the selection of a preferred route for this
8 Project were not known at the time that the original ISD was filed. Selection of the
9 preferred route entails the repurposing the existing 115 kV transmission line corridor to
10 accommodate the proposed 230 kV double-circuit transmission, and conversion of
11 Wallaceburg TS from 115 kV to 230 kV, as documented in the Final ESR filed with the
12 MECP. As described in Table 5 of **Exhibit B, Tab 7, Schedule 1**, the Wallaceburg TS
13 station work totals \$48.9 million, which was not originally contemplated at the time of filing
14 the ISD.

15
16 The ISD for the Lambton TS and Chatham SS terminal station modification work was also
17 predicated upon a less defined project scope, as partly illustrated above through the pre-
18 Class EA scope. The ISD estimate at best reflects an AACE Class 4 estimate with an
19 upper range of +50%. Conversely, the current estimate for all Project station work is based
20 upon an AACE Class 3 estimate range of +30/-20% as described in **Exhibit B, Tab 7,**
21 **Schedule 1**.

22
23 The ISD forecast cost of \$76.8 million for the Lambton TS and Chatham SS terminal
24 station modification work also does not reflect the OEB-approved inflation increase, as
25 part of the Hydro One JRAP Settlement Proposal, related to the cost pressures that have
26 affected industry since the ISD forecast cost was developed.

27
28 Jointly, all the above items help describe why the forecast capital cost of the Project has
29 increased relative to the ISD.

1 With respect to revenue requirement, as more specifically discussed in **Exhibit B, Tab 9**,
2 **Schedule 1**, the effect of the overall forecast cost of the Project given the forecast load
3 the Project enables to connect to the system will be an overall reduction to the typical
4 residential customer's bill of 0.09%.

5

6 **2.0 DEFERRAL ACCOUNT REQUEST INFORMATION**

7 There are no new deferral or variance account requests being made as part of this
8 Application.

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Filed: 2021-08-05
EB-2021-0110
ISD T-SS-09
Page 1 of 8

T-SS-09	WEST OF LONDON TRANSMISSION REINFORCEMENT					
Primary Trigger:	Bulk Planning					
OEB RRF Outcomes:	Customer Focus, Operational Effectiveness					
Capital Expenditures:						
(\$ Millions)	2023	2024	2025	2026	2027	Total
Net Cost	4.2	4.2	18.7	60.9	54.8	142.8
Summary:						
<p>This investment involves constructing the necessary expansion and connection work at terminal networks stations to facilitate the connection of new 230kV double circuits to increase the transfer capability of the bulk transmission system east of Chatham and improve the deliverability of resources in the Lambton-Sarnia area for intra-zonal and provincial supply. The investment is expected to provide the required increase in supply capacity to support future load growth and maintain reliability for the Windsor-Essex region in the near and mid-term as identified by the IESO as part of bulk system planning. Hydro One is obligated to provide facilities required to maintain the reliability and integrity of its transmission system and reinforce or expand its transmission system as required to meet load growth in accordance with its Transmission License and the Transmission System Code.</p>						

Witness: REINMULLER Robert

A. NEED AND OUTCOME

A.1 INVESTMENT NEED

This investment is required to reinforce the transmission system supplying the Windsor – Essex region and ensure sufficient bulk transfer capability east of Chatham to supply the forecasted load in Windsor-Essex over the near- to mid-term. The west of London area encompasses a 230 kV and 115 kV high voltage network stretching from the western edge of the City of London, to Lambton-Sarnia in the northwest, and the City of Windsor in the west. This system interconnects large generators in the Lambton-Sarnia and Windsor areas with existing load centres, and encompasses the growing Kingsville-Leamington and Chatham-Kent areas. It provides four interconnection points with Michigan’s power system via Windsor and Lambton-Sarnia. The area also encompasses a connection to the 500 kV system at Longwood TS within the Municipality of Strathroy Caradoc, providing a strong path for supply to and from the region and the rest of the province.

There are two main pockets of load growth and economic development in the area west of London – in Kingsville and Leamington, and in the community of Dresden, located within the Municipality of Chatham-Kent. This growth is driven by the expansion of the agricultural sector, mainly in vegetable greenhouses, as well as in part, cannabis, specifically through the intensification of existing greenhouses switching to lit indoor facilities, expansion of greenhouse facilities, and supplemental load to support the agricultural sector.

In 2019, the IESO published a bulk transmission study for the area, *“Need for Bulk Transmission Reinforcement in the Windsor-Essex Region”*, which recommended transmission upgrades to supply this increased electricity demand in the region. The upgrades recommended in the 2019 study address bulk transmission system limitations west of Chatham between Chatham SS and the Kingsville-Leamington area. At that time, transmission system constraints east of Chatham were also identified and that additional assessments were required.

Witness: REINMULLER Robert

1 The IESO is currently conducting a bulk planning study for the west of London area targeted for
2 completion in Q3 2021. Preliminary findings indicate that to supply the forecasted electricity
3 demand beyond 2028 and to maintain the capability of the transmission system to deliver the
4 output of generation resources in the Lambton-Sarnia area, the area bulk transmission facilities
5 need to be reinforced. The IESO recommends as the first stage, a new 230 kV, double-circuit
6 transmission line be built between Lambton TS and Chatham SS. As indicated by the IESO, the
7 bulk planning report will also make additional recommendations, around further transmission or
8 resource solutions, as required, to continue meeting bulk system needs into the long-term.

9
10 Hydro One received formal direction from the IESO in a hand-off letter on March 26, 2021 to
11 proceed with the development of the new double circuit transmission line from Lambton TS to
12 Chatham SS and associated station expansions to facilitate connection.

13
14 Hydro One is obligated to provide facilities required to maintain the reliability and integrity of its
15 transmission system and reinforce or expand its transmission system as required to meet load
16 growth in accordance with its Transmission License and the Transmission System Code. Not
17 proceeding with this investment would result in Hydro One not meeting its obligation and not
18 addressing the need to provide adequate transmission capacity to supply load growth in the
19 west of Chatham. This investment is assigned a High Priority given the requirement to meet
20 system and customer needs in a timely manner.

21
22 **B. INVESTMENT DESCRIPTION**

23
24 The proposed investment involves constructing the necessary expansions at the terminal
25 stations, Lambton Transformer Station (TS) and Chatham Switching Station (SS) for Stage 1 to
26 facilitate the connection of the new 230kV double circuit line to increase the transfer capability
27 of the bulk transmission system east of Chatham and improve the deliverability of resources in
28 the Lambton-Sarnia area for intra-zonal and provincial supply. As indicated by the IESO,
29 subsequent reinforcement – Stage 2 - will be required to continue to meet bulk system needs
30 into the long-term. Consequently, based on preliminary discussions with the IESO, the proposed

Witness: REINMULLER Robert

1 investment also anticipates constructing the necessary expansions at the terminals stations,
2 Longwood TS and Chatham TS for Stage 2 to facilitate potential 230kV (or 500kV) lines between
3 London and Chatham. The planned in-service date of the project is Q3 2027 for Stage 1 with
4 Stage 2 following later in Q3 2028.

5
6 Hydro One proposes to execute the project in two stages. Stage 1 will address the station work
7 to connect the new double-circuit transmission line from Lambton TS to Chatham SS. Formal
8 hand-off from the IESO has been received on March 26, 2021 to initiate development. Stage 2,
9 whose scope is currently under assessment by the IESO and will be published as part of the bulk
10 planning study in Q3 2021, includes station work to connect a potential new double-circuit
11 transmission line between Longwood TS and Chatham SS.

12
13 Stage 1: Station Work – Lambton TS to Chatham SS (Planned In-Service Date: Q3 2027)

- 14 • Station expansion at terminal stations, Lambton TS and Chatham SS, including the
15 extension of existing high voltage busses, construction of new diameters and associated
16 high voltage breakers;
17 • Construction of new protection, control, and telecommunications systems for the new
18 double-circuit transmission line;
19 • Connection of new circuits into the respective terminal stations.

20
21 Stage 2: Station Work – Longwood TS to Chatham SS (Planned In-Service Date: Q3 2028)

- 22 • Station expansion at terminal stations, Longwood TS and Chatham SS, including the
23 construction of new high voltage breakers;
24 • Construction of new protection, control, and telecommunications systems for the new
25 double-circuit transmission line;
26 • Connection of new circuits into the respective terminal stations;
27 • Scope of Stage 2 is currently under assessment by the IESO and will be finalized as part
28 of the publication of the west of London bulk planning study in Q3 2021.

Witness: REINMULLER Robert

The new transmission circuits are expected to be owned by and included in the rate base of a newly licensed partnership(s). These assets will not form part of Hydro One's rate base and, as such, the associated capital expenditures have been excluded from the 2023-2027 forecast.

Hydro One submitted an application to the OEB to establish a Deferral Account for these Affiliate Transmission Projects and the approval for the account is pending (EB-2021-0169). Further information may be found in Exhibit A-03-01.

A map showing the project location is provided below.

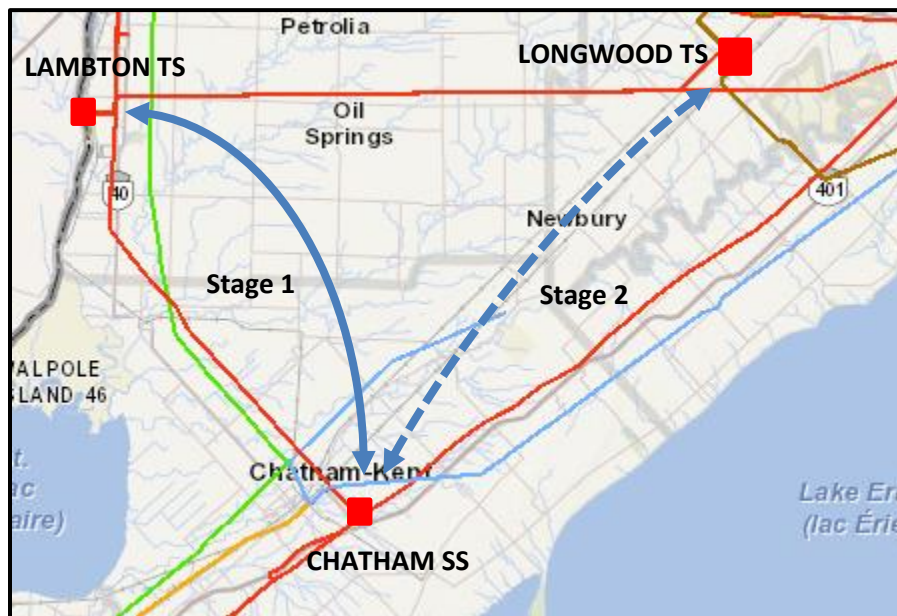


Figure 1: Map Showing Location of the New Facilities

Hydro One plans to initiate work under the Environmental Assessment process for Stage 1, as required under the Environmental Assessment Act, and approvals are expected to be obtained by Q4 2024.

Hydro One will apply for a "Leave to Construct" approval under Section 92 of the Ontario Energy Board Act in Q4 2024. A summary of the need, project description, risk, and costs have been presented herein; with specific details to be provided in the Section 92 application.

Witness: REINMULLER Robert

The timeline for Environmental Assessment and “Leave to Construct” approval for Stage 2 will be detailed following the release of the IESO’s bulk planning study for the west of London area in Q3 2021.

Hydro One studies show that the Stage 1 project will not adversely affect the reliability of the IESO-controlled grid or service to other transmission connected customers. The System Impact Assessment and Customer Impact Assessment will be undertaken to confirm the above prior to the submission of the Section 92 application.

C. OUTCOMES

This investment will provide the required increase in bulk transfer capability east of Chatham to supply the forecast load in the Windsor-Essex region and surrounding Chatham area in the near-to mid-term and improve the deliverability of resources in the Lambton-Sarnia area for intra-zonal and provincial supply

C.1 OEB RRF OUTCOMES

The following table presents anticipated benefits as a result of the Investment in accordance with the Ontario Energy Board’s (OEB) Renewed Regulatory Framework (RRF):

Table 1 - Outcomes Summary

Customer Focus	<ul style="list-style-type: none">• Ensure adequate supply capacity to support future load growth.
Operational Effectiveness	<ul style="list-style-type: none">• Increase supply reliability in the Windsor-Essex region• Permit resources and bulk facilities in the region to operate efficiently.

D. EXPENDITURE PLAN

This investment is non-discretionary. The project costs, as presented in the table below, will be recovered from the network rate pool as these 230kV facilities are network assets and no capital contributions are required from customers.

Witness: REINMULLER Robert

Table 2 below summarizes historical and projected spending on the aggregate investment level. The “Previous Years” costs are the direct investment costs for investments noted above that have incurred costs prior to the 2023 test year. Likewise, the costs noted in “Forecast 2028+” are investment costs forecast beyond 2028.

Table 2 - Total Investment Cost

(\$ Millions)	Prev. Years	2023	2024	2025	2026	2027	Forecast 2028+	Total
Gross Investment Cost	1.0	4.2	4.2	18.7	60.9	54.8	11.2	155.0
Less Removals	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital and Minor Fixed Assets	1.0	4.2	4.2	18.7	60.9	54.8	11.2	155.0
Less Capital Contributions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Net Investment Cost	1.0	4.2	4.2	18.7	60.9	54.8	11.2	155.0

E. ALTERNATIVES

Hydro One considered the following alternatives before selecting the preferred undertaking.

ALTERNATIVE 1: STATUS QUO

This investment is non-discretionary and is needed to ensure supply reliability for the customers in the Windsor-Essex region and support future load growth. The status quo will not satisfy the need for this investment and is therefore not a viable alternative.

ALTERNATIVE 2: CONNECT NEW 230KV TRANSMISSION LINES BETWEEN LAMBTON TS AND CHATHAM SS AND LONGWOOD TS AND CHATHAM SS

Connect the new 230kV double circuit line between Lambton TS and Chatham SS for Stage 1 and between Longwood TS and Chatham SS for Stage 2. This alternative provides higher capacity and maintains system reliability during the construction phase and will meet near and mid-term needs for the region. This alternative will ensure compliance with the IESO’s Ontario Resource and Transmission Assessment Criteria (ORTAC).

Witness: REINMULLER Robert

F. EXECUTION RISK AND MITIGATION

The risks with respect to the execution of this investment as planned would include, potential delays in securing the Section 92 and environmental assessment approvals. These risks will be mitigated by initiating the Section 92 application process and environmental assessment process in a timely manner.

Normal project risks that may also affect the timely completion of the investment include the availability of outages required for the work to be executed. These risks will be mitigated by setting a schedule that aligns with outage availability.

PROJECT SCHEDULE

TASK	START	FINISH
Section 92 Approval	May-2024	Dec-2024
LINES		
Receipt of Other Key Permits and Approvals	Dec-2023	Aug-2025
Voluntary Property Rights Acquisition ¹	Jun-2023	Mar-2025
Detailed Engineering	Jan-2024	Feb-2025
Procurement	Dec-2023	Aug-2026
Construction	Dec-2025	Sep-2028
Commissioning	Oct-2028	Dec-2028
In Service	N/A	Dec-2028
Site Remediation Completion	N/A	Feb-2029
STATIONS²		
Receipt of Other Key Permits and Approvals	Dec-2023	Feb-2025
Voluntary Property Rights Acquisition ¹	Jun-2024	Dec-2024
Detailed Engineering	Mar-2024	Oct-2024
Procurement	Mar-2024	Nov-2026
Construction	Mar-2025	Aug-2027
Commissioning	Mar-2026	Dec-2028
In Service	N/A	Dec-2028
Site Remediation Completion	N/A	Jan-2029

¹ Completion timing is dependent upon property owner-specific negotiations. The above schedule does not include the Section 99 if required.

² The proposed stations schedule reflects the key milestones for both the terminal station modifications at Lambton TS and Chatham SS, and the Wallaceburg TS conversion.

1 The table above outlines the forecast schedule for the Project and has been predicated
2 on Hydro One successfully securing leave to construct approval by December 2024, and
3 voluntary land right agreements by March 2025. Construction is set to commence in March
4 2025 and the cost evidence provided in **Exhibit B, Tab 7, Schedule 1** is underpinned by
5 this schedule. If Hydro One is unsuccessful in securing voluntary agreements, within a
6 short period following leave to construct approval, Hydro One intends to seek
7 expropriation authority from the OEB in accordance with section 99 of the *OEB Act, 1998*.
8 As identified in **Exhibit B, Tab 7, Schedule 1**, delays in regulatory approvals beyond
9 those contemplated in the project schedule documented above could materially impact
10 the cost of the Project. Contingency has been carried on the Project to account for minor
11 deviations to this schedule, however, material delays in securing approvals could have
12 significant impacts that have not been carried in contingency. Project timelines have been
13 based on recent OEB processing timelines and take into consideration the OEB's
14 Performance Standards for Processing Leave to Construct Applications.

DESCRIPTIONS OF THE PHYSICAL DESIGN

1.0 ROUTE DESCRIPTION

The proposed 230 kV double-circuit transmission line will be located in Southwestern Ontario in the Municipality of Chatham-Kent and Lambton County near the communities of Chatham-Kent and St. Clair. The line will run from Lambton TS connecting to Wallaceburg TS, and terminating at Chatham SS. The total line length of the Project is approximately 64 km and will utilize a 30 m to 46 m wide ROW.

1.1 ROUTE DETAILS

- i. The Project route starts at Lambton TS located approximately 4.5 km south of Courtright, ON. The line exits the station and heads east for approximately 7 km towards Kimball Junction on the existing 115 kV transmission line (N5K) corridor.
- ii. At Kimball Junction, the Project heads southeast for approximately 26 km towards Wallaceburg TS utilizing and replacing the existing 115 kV transmission line (N5K) corridor.
- iii. From the connection point at Wallaceburg TS, the Project will continue utilizing and replacing the existing 115 kV transmission line (N5K) corridor as it heads southeast for approximately 19.2 km towards Kent Junction located North of Gregory Line.
- iv. At Kent Junction, the Project then heads northeast for approximately 1.8 km before heading southeast paralleling the east side of Hwy 40 for approximately 10 km before entering Chatham SS located adjacent to Hwy 40, approximately 700 m north of Hwy 401.

A map showing the general route of the Project is provided as **Attachment 1 of Exhibit B, Tab 2, Schedule 1**.

2.0 LINE DESCRIPTION

The 230 kV transmission line will have two (2) circuits comprised of one 1443.7 kcmil ACSR/TW “Superior” conductor per phase, and two (2) OPGW, primarily supported on self-supporting lattice towers. Further, the transmission line will have the following attributes:

- i. The line will have a continuous ampacity of 1160A (summer 35C);
- ii. Glass insulators will be used for both suspension and tension applications in accordance with Hydro One standards;
- iii. Stockbridge-type vibration dampers to dampen the conductor in accordance with Hydro One standard, based on the final line configuration and per the manufacturer’s design;
- iv. Stockbridge-type vibration dampers to dampen the OPGW;
- v. Typical structure foundations will be Helical Pile type;
- vi. The line will make use of 226 self-supported lattice suspension towers with nominal spans of 350 m (refer to Figure 1). There will also be 19 crossing structures used to cross other transmission lines (refer to Figure 2); and
- vii. 230kV-rated XLPE underground cables and accessories, including new concrete-encased duct banks, will be used between the south gantry at Lambton TS and the first 230 kV double-circuit dead-end tower structure (approximately 400 m in length) due to clearance concerns with the overhead lines. To facilitate the connection between the overhead conductor and underground cable, transition terminals will be installed close to the first 230 kV double-circuit dead-end tower structure and the Lambton TS bus structure within the station.

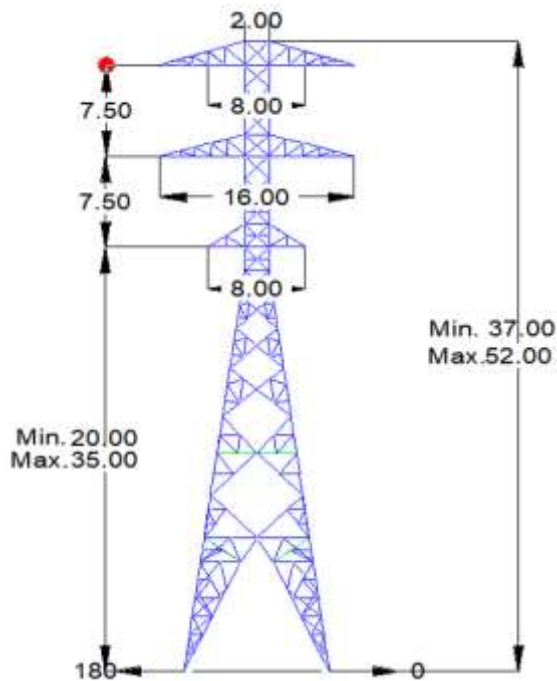


Figure 1: Suspension Tower

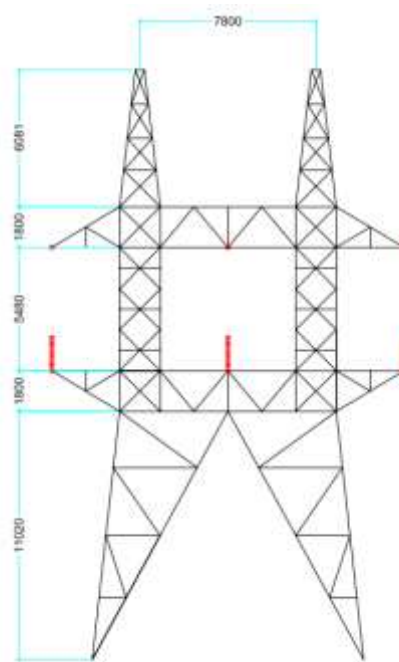


Figure 2: Crossing Structure

3.0 LINE REMOVAL

The Project will repurpose approximately 41 km of an existing 115 kV transmission line corridor, as part of the route defined through the completed Class EA process and will include the removal of sections of the existing 115kV single-circuit transmission line (N5K) including 148 transmission structures, conductor and associated components. The corridor will be widened, as required, to accommodate the proposed 230 kV double-circuit transmission line.

4.0 STATION WORK

The transmission station work will consist of terminal station modifications at Lambton TS and Chatham SS to accommodate the new transmission line, as well as the conversion of Wallaceburg TS to enable the new transmission line to repurpose its existing 115 kV transmission supply line corridor. The following outlines the specific work required at each of the stations:

Lambton TS

- Expand the existing station to facilitate the connection of the new 230 kV transmission line:
 - Install two (2) new 230 kV diameters with four (4) new 230 kV circuit breakers, eight (8) new 230 kV breaker disconnect switches, and two (2) new 230 kV line disconnect switches;
 - Install new bus work, ground switches, protection control and telecommunications, and operational metering, including one new relay building; and
 - Expand the station property on north and south ends to accommodate the two new diameters, and construct a new access road from Oil Springs Line to south of station as part of the expansion.

Chatham SS

- Expand the existing station to facilitate the connection of the new 230 kV transmission line:
 - Install one (1) new 230 kV diameter with two (2) new 230 kV circuit breakers, and install three (3) new 230 kV circuit breakers on the existing station bus/diameter;
 - Install ten (10) new 230 kV breaker disconnect switches and two (2) new 230 kV line disconnect switches; and
 - Install new bus work, extension of existing main bus, ground switches, protection control and telecommunications, and operational metering.

Wallaceburg TS

- Conversion of the existing station from 115 kV to 230 kV to enable connection to the new 230 kV transmission line:
 - Install two (2) new line entrance gantry structures, including twelve (12) mid-span openers, in order to receive the 230 kV transmission line that will be routed from Lambton TS to Chatham SS via Wallaceburg TS;

- 1 ○ Install new 230 kV bus work to connect to the 230 kV transmission line, two (2)
2 new disconnect switch with ground switches, and new protection control and
3 telecommunications within the existing relay building;
- 4 ○ Install two (2) new 50/67/83 MVA, 230/27.6 kV transformers and associated
5 equipment, including new transformer pads and containment pits;
- 6 ○ Expand the station property fence line, including grounding grid and station
7 drainage systems; and
- 8 ○ Removal of two (2) existing 25/33/42 MVA, 115/27.6 kV transformers, the
9 115 kV line taps and 115 kV structures, all associated 115 kV equipment, and
10 the existing control and microwave building to allow for the new transformer
11 area.

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OPERATIONAL DETAILS

The proposed facilities will be part of the Southwestern Ontario bulk transmission system and is a critical section of the electrical system that allows management of flows into the Chatham-Kent and Windsor-Essex areas. Hydro One protection, control and telecom facilities installed as part of the Project will protect the proposed 230 kV double-circuit transmission line by detecting faults and isolating faulted elements. The proposed facilities will be operated by Hydro One's ISOC as directed by the IESO. The terminal stations for the proposed 230 kV double-circuit transmission line will be Lambton TS and Chatham SS, with Wallaceburg TS connected to the line as it passes through this station, as aforementioned in the Application.

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LAND MATTERS

1.0 THE ROUTE

The proposed transmission line will be sited within a corridor varying from 30 m to 46 m in width. The corridor will make use of approximately 13 km of Bill 58 corridor lands (i.e., land owned by the Province with Hydro One holding a statutory easement on these lands). The balance of the transmission line corridor will be on privately owned lands. However, on approximately 41 km of the privately owned lands (i.e., over 60% of the route), an existing 115 kV single-circuit transmission line (N5K) will be decommissioned, removed, and replaced, with the proposed 230 kV double-circuit transmission line.

The new transmission corridor passes through primarily agricultural lands. A portion of the new transmission corridor is either sited alongside an existing Hydro One transmission corridor or will be using the aforementioned Bill 58 corridor lands for approximately 20% of the route. Utilizing existing infrastructure and facilities is consistent with the *Ministry of Municipal Affairs and Housing Provincial Policy Statement, 2020*¹ under the *Planning Act*, more specifically by utilizing existing utility ROW where achievable.

2.0 DESCRIPTION OF LAND RIGHTS

The Project will require Hydro One to acquire land rights from 103 directly impacted properties, consisting of 95 privately held properties, 2 provincially held properties owned by OPG and 6 railway crossings. The majority of properties will require Hydro One to acquire easement or fee simple interests, at the property owner's election. A small number of properties have dwellings and/or agricultural outbuildings within the new transmission corridor. Hydro One is working with directly impacted property owners to negotiate amicable voluntary agreements, which may include full property buyouts, at the property owner's election.

¹ Sections 1.6.8.4 and 1.6.8.5

The relative area proportions specific to the properties affected requiring permanent land rights are as follows:

Table 1 - Summary of Property Types and Sized Required

Land Ownership Type	Area (Hectares)	Proportion of Route (%)
Private Lands	230.03	93.80%
Provincial Lands (OPG)	14.53	5.93%
Railway Lands	0.67	0.27%

3.0 MAPS OF THE PROJECT AREA

At **Exhibit B, Tab 2, Schedule 1, Attachment 1**, Hydro One has provided a map with the intention it be used as the Application's *Notice Map* should the OEB determine that a hearing is required. **Attachment 1 of this Schedule** provides a more detailed route map that illustrates, as appropriate, properties along line route sections with lot and concession numbers of the land over, under, on or adjacent to which the line runs.

4.0 DESCRIPTION OF NEW LAND RIGHTS REQUIRED

The Project corridor will include a combination of the following land rights requirements:

- Hydro One statutory easements on Provincially owned (Bill 58) lands (no new land rights required);
- Easement or fee simple rights on private and provincial (OPG) properties (new land rights required);
- Rail crossing agreements (new land rights required); and
- Temporary access and/or construction rights on provincially owned and private properties for access roads, temporary work headquarters, laydown areas, and material storage facilities (new land rights required).

Hydro One will document all required new land rights to construct, operate and maintain the transmission line in several agreements. On affected properties, the following land rights agreements are or may be required:

- Early Access Agreement;
- Option to Purchase a Limited Interest – Easement;
- Compensation and Incentive Agreement – Easement;
- Option to Purchase – Fee Simple;
- Compensation and Incentive Agreement – Fee Simple;
- Rail Crossing Agreement (provided by rail company at a later date);
- Encroachment Permit (provided by Ministry of Transportation at a later date);
- Agreement for Temporary Rights;
- Off Corridor Access;
- Crop Land Out of Production Agreement; and
- Damage Claim Agreement/Waiver.

Where crossings of public roads and highways are contemplated and indicated in **Attachment 1 of this Schedule**, Hydro One will rely on the land rights afforded by section 41 of the *Electricity Act* (where applicable). Hydro One will notify and work with impacted road authorities, including municipalities and ministries, and obtain all required permits and/or agreements, including where agreements are required for the placement of infrastructure per section 41(9) of the *Electricity Act*. All road crossings will be designed to meet or exceed CSA vertical clearance standards. Structures shall be located so that tower legs and guy wire anchor locations (above ground) are at least 20 m from the edge of parallel or crossing roads.

Hydro One expects that permits/agreements for all required crossings will be acquired either prior to the start of construction or on an as needed basis.

Temporary rights may be required across private lands to facilitate construction of the Project. These rights will be negotiated and acquired as and when needed.

5.0 EARLY ACCESS TO LAND

Hydro One requires early access to the corridor to perform various activities/studies associated with the Project which include specific environmental studies, engineering and

1 design studies, and property specific land valuations/studies. In order to facilitate the
2 required access to the properties affected by the corridor in advance of Leave to Construct
3 approval, Hydro One has been and will continue to be entering into early access
4 agreements with affected land owners. As of May 1, 2024, Hydro One has achieved
5 voluntary early access agreements on approximately 95% of the properties that require
6 new land rights.

7 8 **6.0 LAND ACQUISITION PROCESS**

9 Hydro One is seeking voluntary property rights agreements with affected property owners
10 based on its project-specific LACP. The principles are founded upon Hydro One's past
11 experience pertaining to land acquisition matters for new transmission projects, and act
12 as a roadmap for affected property owners to understand Hydro One's acquisition
13 process. Hydro One's central consideration is the need for affected property owners to
14 have flexibility and choice while balancing Hydro One's desire to achieve timely acquisition
15 of land interests and its obligation to ensure that expenditures are fair and reasonable to
16 Ontario transmission ratepayers.

17
18 Hydro One's Real Estate Representatives have been meeting with affected property
19 owners since June 2023. The objective of these meetings has been to introduce Hydro
20 One's voluntary land acquisition process. Independent site-specific property appraisals
21 are on-going, and Hydro One is preparing voluntary property settlement offers based on
22 the site-specific appraisals and Hydro One's LACP. Hydro One began providing offers to
23 affected property owners in April 2024. As of May 1, 2024, 11 voluntary property
24 settlement offers have been made, and 2 offers have been accepted. All remaining offers
25 will be extended to affected property owners on an as-ready basis. All offers that have
26 been extended to date are being reviewed by property owners and/or their legal counsel.
27 To that end, it should be noted that during property acquisition discussions, affected
28 property owners will be advised that they have the option to receive independent legal
29 advice and that Hydro One is committed to reimbursing affected property owners for
30 reasonably incurred legal fees associated with the review and execution of the necessary
31 land rights agreements. Hydro One Real Estate Representatives will continue working

with each property owner with the objective of reaching voluntary property rights settlements.

All voluntary property rights agreements will be in the form of an option agreement. Hydro One will exercise these options and conclude the land rights agreements once it has received the OEB's Leave to Construct approval of the Project. Once the option agreements are exercised, Hydro One will register easements on title for properties, or Hydro One will acquire the fee simple interest in the properties as required.

All other applicable agreements (e.g. rail crossing agreements, temporary rights agreements, etc.) will be utilized as part of the land acquisition process as required. A summary of all land negotiations to date, including their status, is summarized in Table 2 below. Further details on the properties and permits associated with the Project route are provided in **Attachment 2 of this Schedule**.

Table 2 - Land Acquisition Status (As of May 1, 2024)

Property Type	Number of Properties	Early Access Agreement Offered	Early Access Agreement Achieved	Voluntary Settlement Agreements Offered	Voluntary Settlement Agreements Achieved	Issues	Resolution Approach
Private Lands	95	100%	95%	11	2	- Routing - Design components / tower placements - Impact to agricultural lands during construction	- Continued engagement - Accommodate minor design requests where feasible
Provincial Lands (OPG)	2	100%	100%	Pending	Pending	None to date	N/A
Railway Lands	6	N/A	N/A	Pending	Pending	None to date	N/A

7.0 LAND-RELATED FORMS

Provided as **Attachments 3 through 12 of this Schedule**, are the land rights agreements that Hydro One intends to utilize to obtain the required new land rights for the Project and

for related Project activities. Table 3 below indicates the proceeding where the form of these agreements were previously approved and there are no substantive changes.

Table 3 - Forms of Agreement Remaining Unchanged

Form of Agreement	Attachment in this Schedule	Previous OEB Docket
Option to Purchase a Limited Interest – Easement	4	EB-2022-0140, Exhibit E, Tab 1, Schedule 1, Attachment 4
Option to Purchase – Fee Simple	6	EB-2022-0140, Exhibit E, Tab 1, Schedule 1, Attachment 6
Option to Purchase a Limited Interest – Easement with a Voluntary Buyout Offer	8	EB-2022-0140, Exhibit E, Tab 1, Schedule 1, Attachment 10
Agreement for Temporary Rights	9	EB-2022-0140, Exhibit E, Tab 1, Schedule 1, Attachment 2
Off Corridor Access	10	EB-2022-0140, Exhibit E, Tab 1, Schedule 1, Attachment 8
Crop Land Out of Production Agreement	11	EB-2022-0140, Exhibit E, Tab 1, Schedule 1, Attachment 9
Damage Claim Agreement/Waiver	12	EB-2022-0140, Exhibit E, Tab 1, Schedule 1, Attachment 3

Table 4 below indicates the proceeding where the form of these agreements is similar to what was previously approved; except for the changes noted below.

Table 4 - Forms of Agreement Remaining Materially Unchanged

Form of Agreement	Attachment to this Schedule	Previous OEB Docket
Early Access Agreement	3	EB-2022-0140, Exhibit E, Tab 1, Schedule 1, Attachment 1
Compensation and Incentive Agreement – Easement	5	EB-2022-0140, Exhibit E, Tab 1, Schedule 1, Attachment 5
Compensation and Incentive Agreement – Fee Simple	7	EB-2022-0140, Exhibit E, Tab 1, Schedule 1, Attachment 7

The change to the Early Access Agreement is found in clause 2 where Hydro One is offering the property owner a choice in the Initial Term becoming effective upon

1 Agreement execution or becoming effective on December 1, 2023. This update was made
2 to provide property owners greater choice and in recognition of property owner's
3 agricultural practices that could be impacted if Hydro One was to access before December
4 1, 2023 (i.e., pre-harvest).

5
6 The Compensation and Incentive Agreements, for both Easement and Fee Simple, have
7 received updates within clause 1 and clause 2. Clause 1 has been updated in section (c)
8 to specify the compensation components that may be adjusted upward following the
9 corridor area being confirmed by legal survey. Clause 2 has been updated to include
10 section (d) which identifies the "Woodlot Compensation" that is payable by Hydro One to
11 the property owner for woodlot/merchantable timber that is impacted by the Project. The
12 "Woodlot Compensation" was a compensable component in the previous proceeding EB-
13 2022-0140 but was compensable via a Damage Claim Agreement/Waiver and not
14 previously identified within the Compensation and Incentive Agreement.

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St. Clair - Section 92

Transformer Station (TS)

115 kV Transmission Line

230 kV Transmission Line

St Clair Centerline

ROW

Railway

Highway / Major Road

Watercourse

Waterbody

Provincial Land (Bill 58)

Municipal Boundary - Lower Tier

Municipal Boundary - Upper Tier

Right-of-Way

Hydro One Land Ownership

Hydro One Land Easement


1:20,000


0

0.25

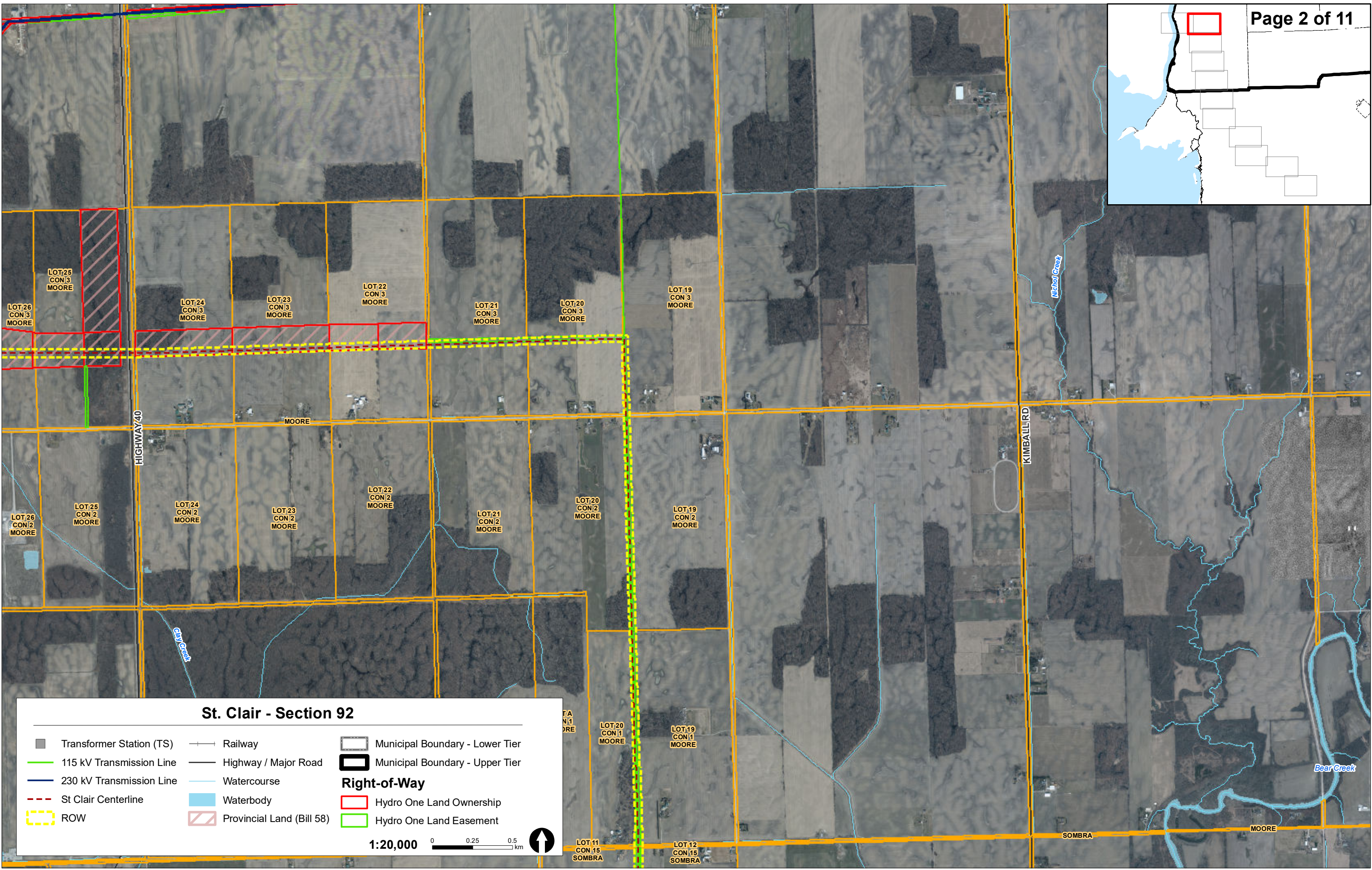
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km



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Date: Apr 4, 2024
Map24-014_SCTL_Section92_Tile

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St. Clair - Section 92

- | | | |
|--------------------------|---------------------------|---------------------------------|
| Transformer Station (TS) | Railway | Municipal Boundary - Lower Tier |
| 115 kV Transmission Line | Highway / Major Road | Municipal Boundary - Upper Tier |
| 230 kV Transmission Line | Watercourse | Right-of-Way |
| St Clair Centerline | Waterbody | Hydro One Land Ownership |
| ROW | Provincial Land (Bill 58) | Hydro One Land Easement |

1:20,000

0 0.25 0.5 km



St. Clair - Section 92

- Transformer Station (TS)

115 kV Transmission Line

230 kV Transmission Line

St Clair Centerline

ROW
- Railway

Highway / Major Road

Watercourse

Waterbody

Provincial Land (Bill 58)
- Municipal Boundary - Lower Tier

Municipal Boundary - Upper Tier

Right-of-Way

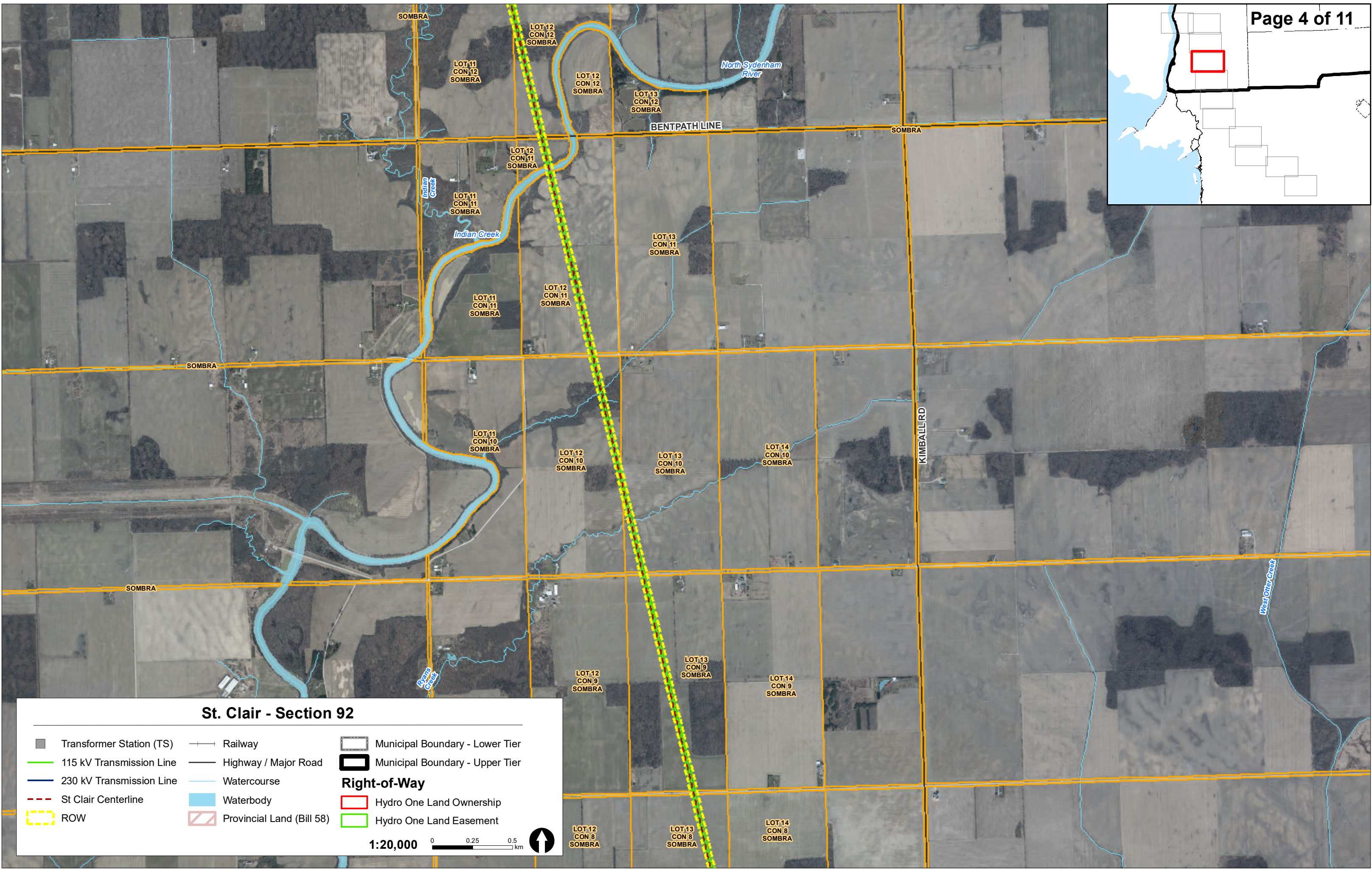
Hydro One Land Ownership

Hydro One Land Easement

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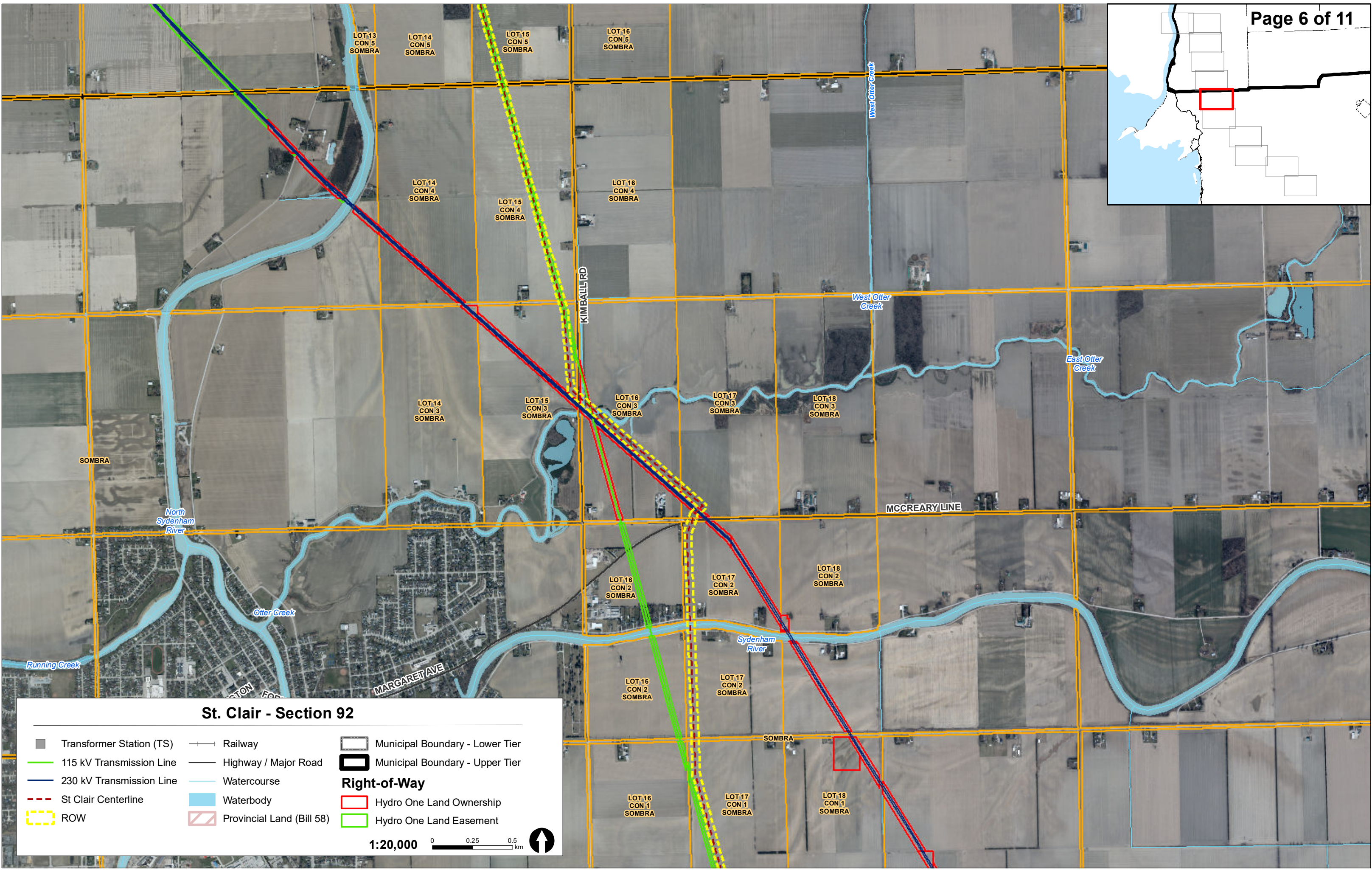


St. Clair - Section 92

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|--------------------------|---------------------------|---------------------------------|
| Transformer Station (TS) | Railway | Municipal Boundary - Lower Tier |
| 115 kV Transmission Line | Highway / Major Road | Municipal Boundary - Upper Tier |
| 230 kV Transmission Line | Watercourse | Right-of-Way |
| St. Clair Centerline | Waterbody | Hydro One Land Ownership |
| ROW | Provincial Land (Bill 58) | Hydro One Land Easement |

1:20,000 0 0.25 0.5 km



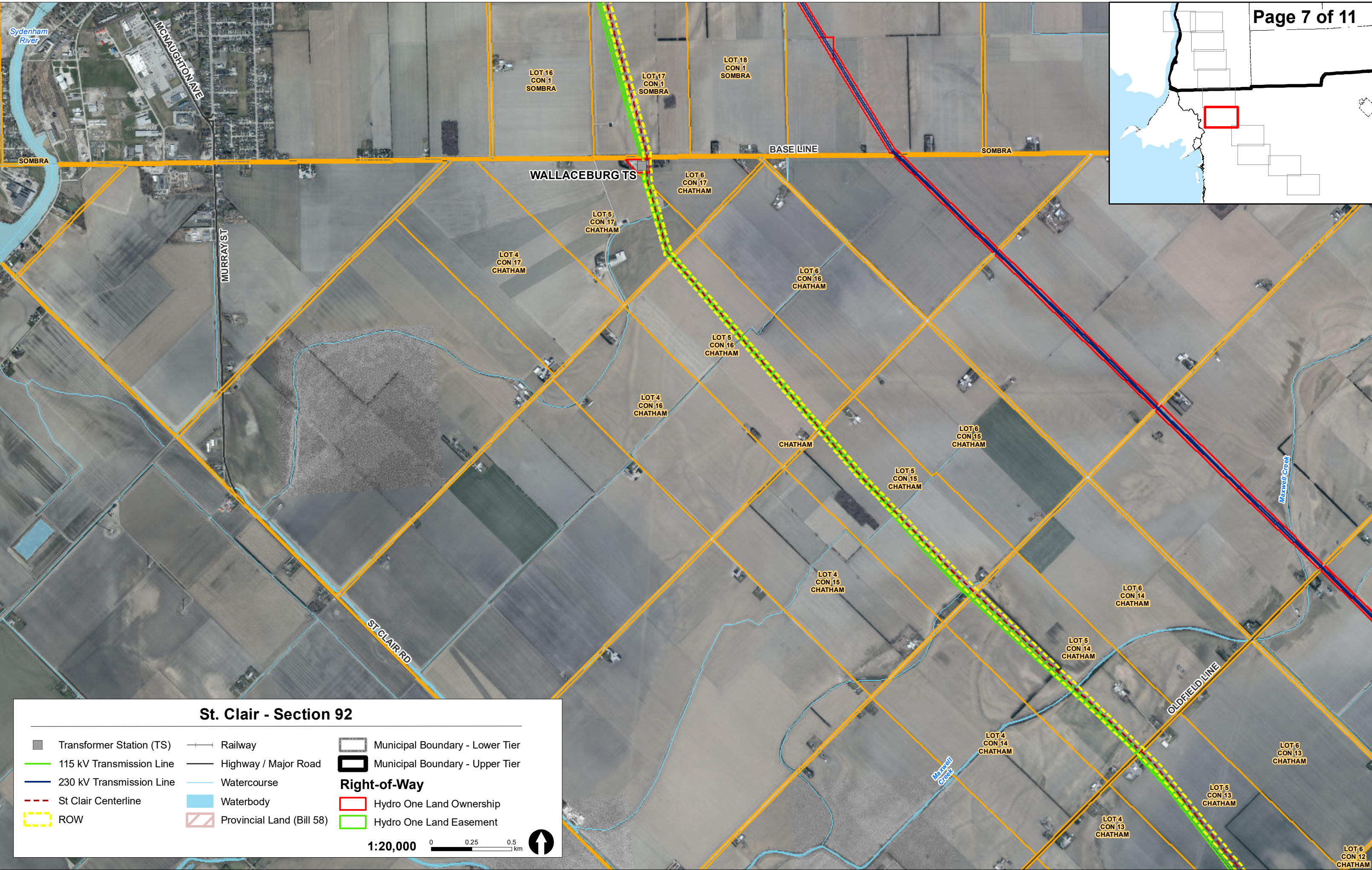


St. Clair - Section 92

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|--------------------------|---------------------------|---------------------------------|
| Transformer Station (TS) | Railway | Municipal Boundary - Lower Tier |
| 115 kV Transmission Line | Highway / Major Road | Municipal Boundary - Upper Tier |
| 230 kV Transmission Line | Watercourse | Right-of-Way |
| St Clair Centerline | Waterbody | Hydro One Land Ownership |
| ROW | Provincial Land (Bill 58) | Hydro One Land Easement |

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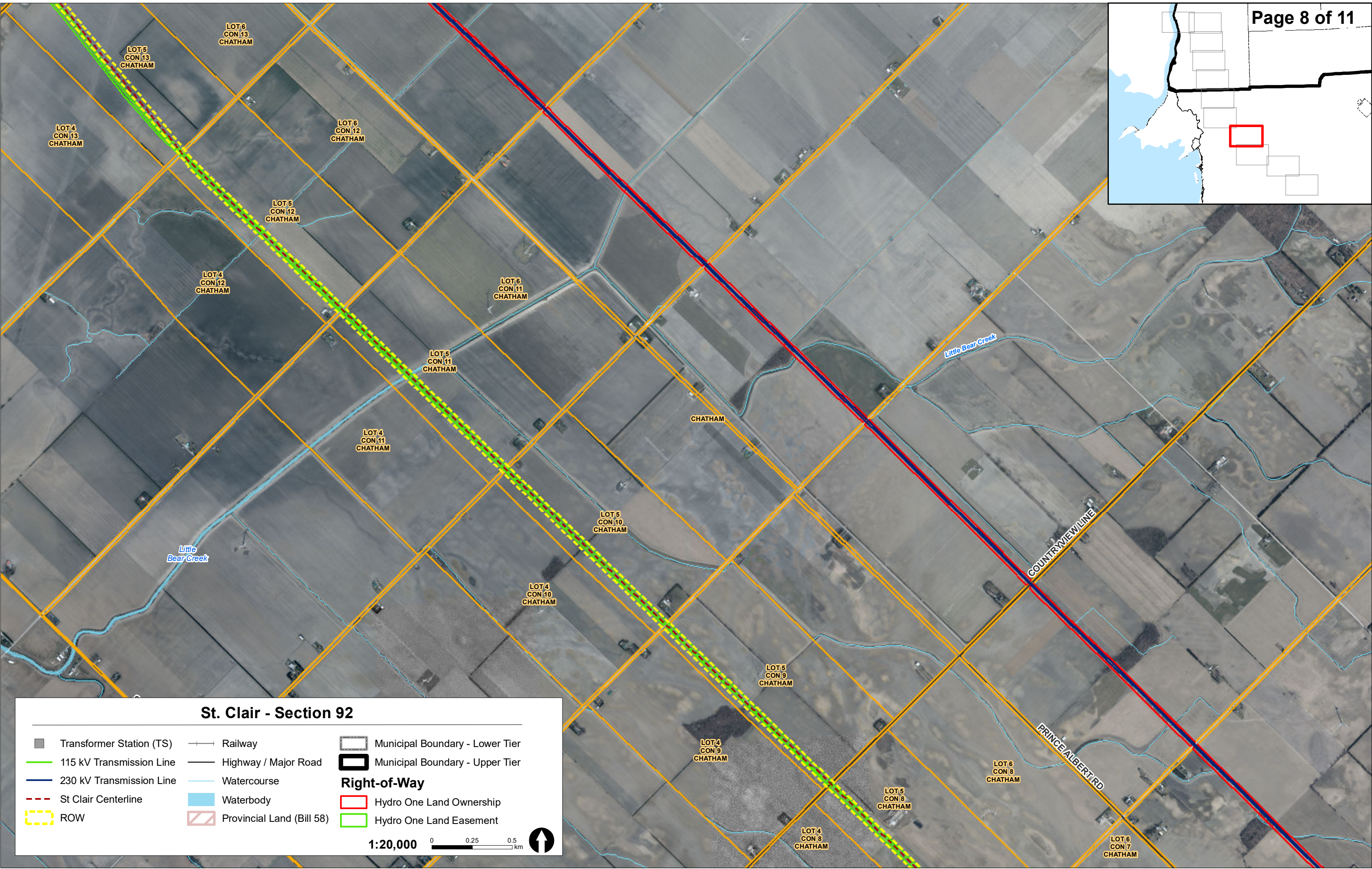
St. Clair - Section 92

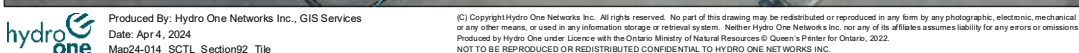
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|--------------------------|---------------------------|---------------------------------|
| Transformer Station (TS) | Railway | Municipal Boundary - Lower Tier |
| 115 kV Transmission Line | Highway / Major Road | Municipal Boundary - Upper Tier |
| 230 kV Transmission Line | Watercourse | Right-of-Way |
| St Clair Centerline | Waterbody | Hydro One Land Ownership |
| ROW | Provincial Land (Bill 58) | Hydro One Land Easement |

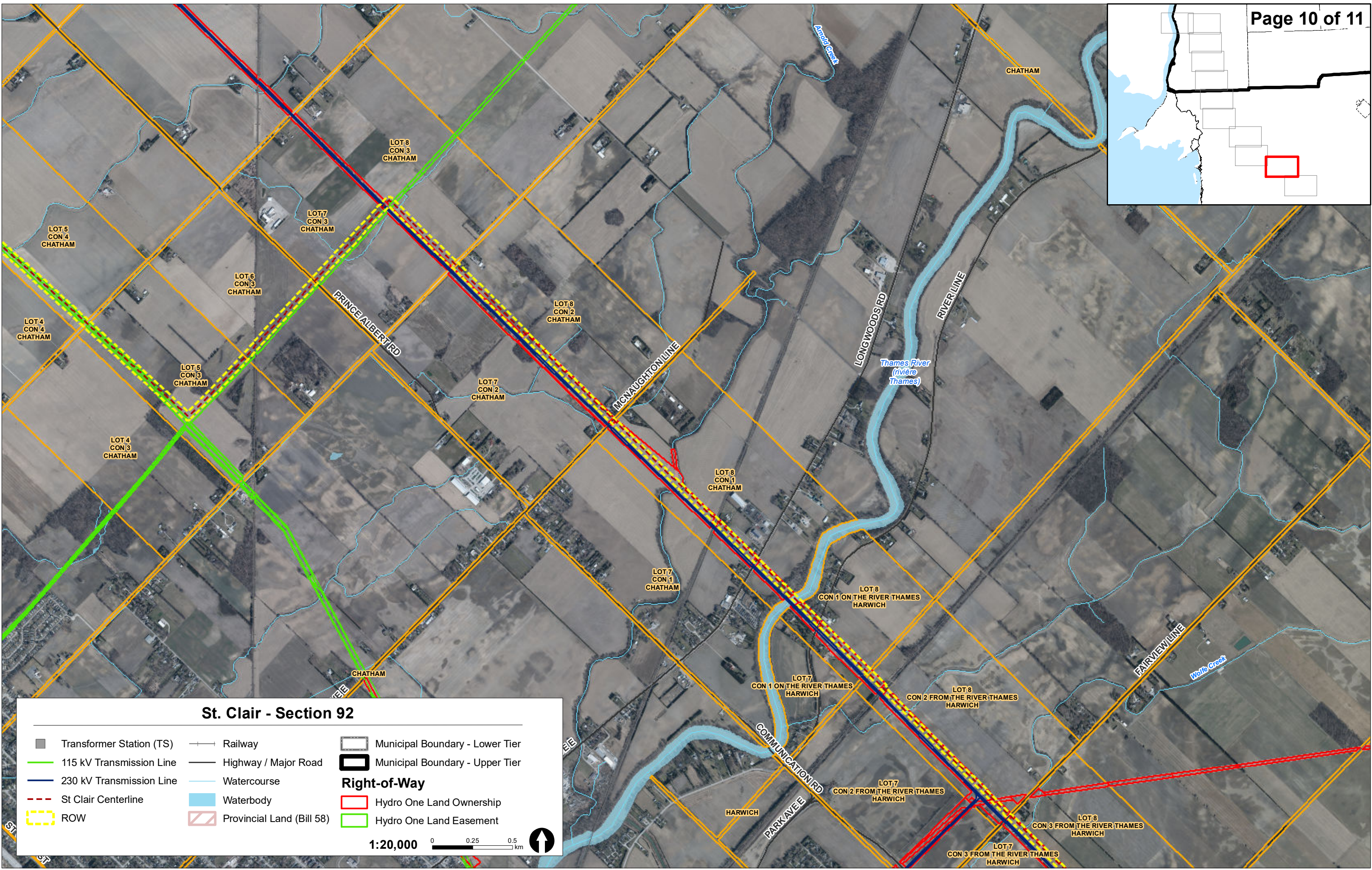
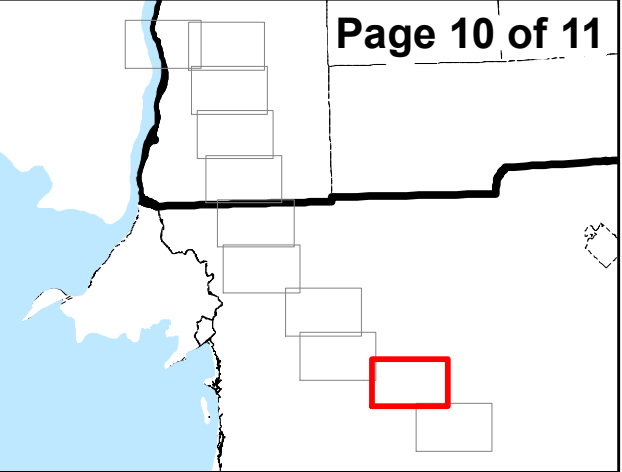
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St. Clair - Section 92

Transformer Station (TS)	Railway	Municipal Boundary - Lower Tier
115 kV Transmission Line	Highway / Major Road	Municipal Boundary - Upper Tier
230 kV Transmission Line	Watercourse	Right-of-Way
St Clair Centerline	Waterbody	Hydro One Land Ownership
ROW	Provincial Land (Bill 58)	Hydro One Land Easement

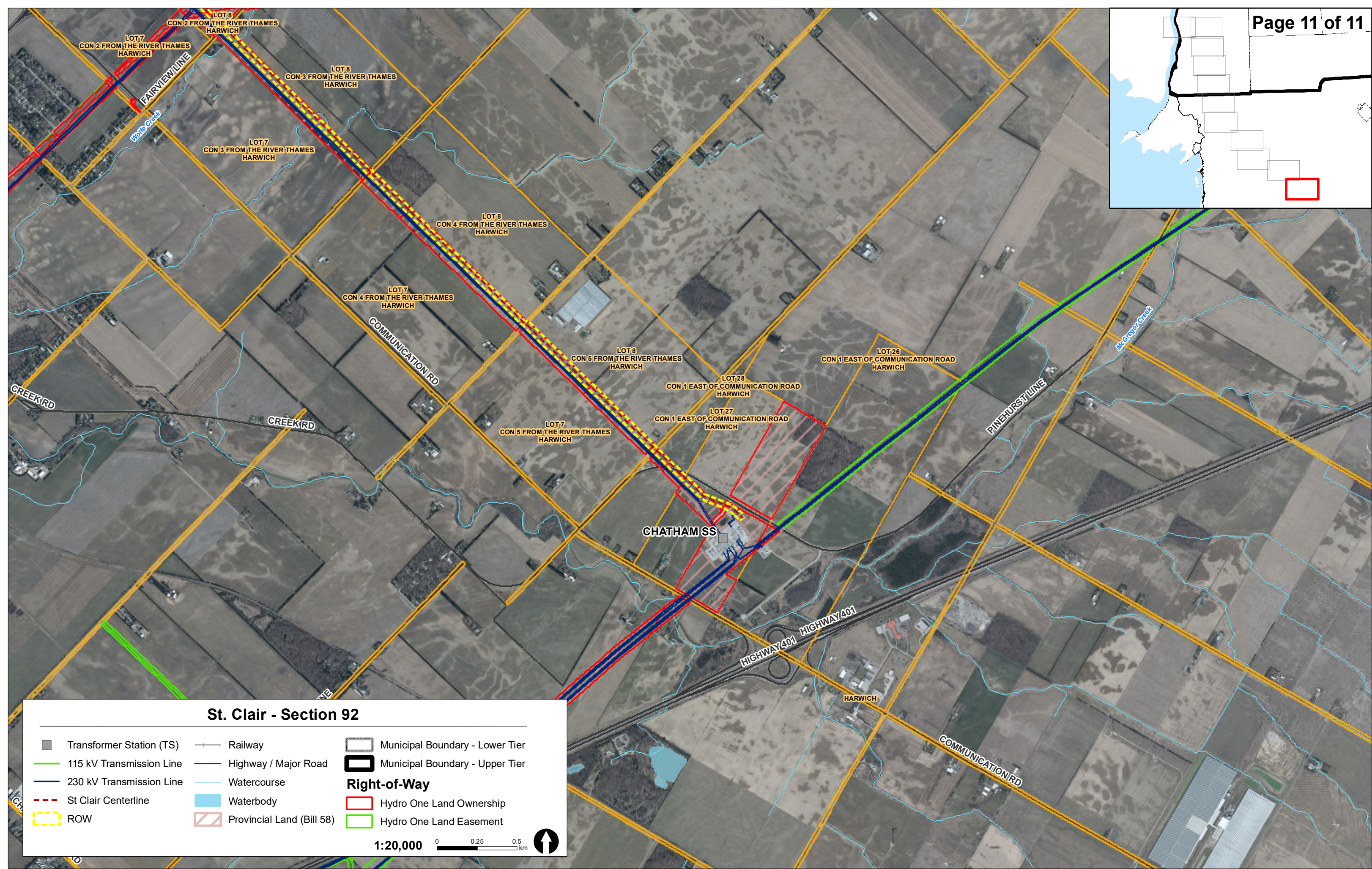
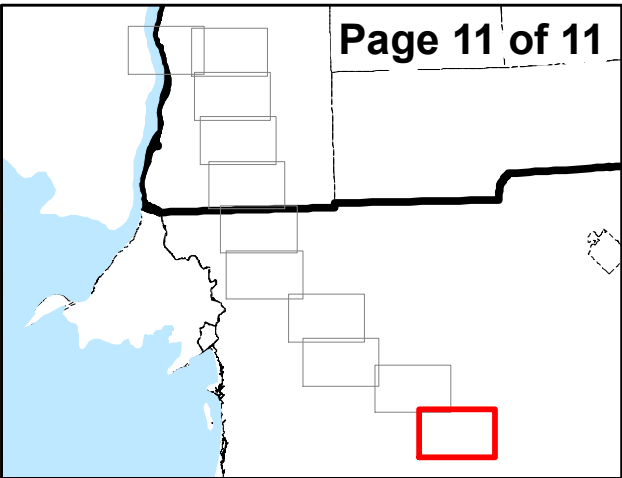
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St. Clair - Section 92

Transformer Station (TS)	Railway	Municipal Boundary - Lower Tier
115 kV Transmission Line	Highway / Major Road	Municipal Boundary - Upper Tier
230 kV Transmission Line	Watercourse	Right-of-Way
St. Clair Centerline	Waterbody	Hydro One Land Ownership
ROW	Provincial Land (Bill 58)	Hydro One Land Easement

1:20,000

0 0.25 0.5 km



	PIN (Property Identification Number)	LEGAL DESCRIPTION	TYPE OF PROPERTY (Municipal, Private, Etc.)	Does Hydro One Require New or Updated Land Rights	RIGHTS REQUIRED	Where Agreement is Outstanding - Summary of Negotiations to Date	Owner(s)
LAND RIGHTS ACQUISITIONS							
CK01	008980189	PART LOT 27, CONCESSION 1, EAST COMMUNICATION ROAD, GEOGRAPHIC TOWNSHIP OF HARWICH, DESIGNATED AS PART 31, 24R9566 TOGETHER WITH AN EASEMENT AS IN 180564 MUNICIPALITY CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK04	007360151	PT LT 8 CON 2 CHATHAM AS IN 595556; S/T CH37428; CHATHAM-KENT	Private	Yes	Permanent Easement	Land Rights Acquired	
CK05	007380079	PT LT 8 CON 3 CHATHAM AS IN 172642 EXCEPT D1200 & 24R5678; T/W 208218; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK06	007380010	PT LT 7 CON 3 CHATHAM AS IN 475256; S/T 571011, CH34832; CHATHAM-KENT TOGETHER WITH AN EASEMENT AS IN CK168086	Private	Yes	Permanent Easement	Offer Pending	
CK07	007380078	PT LT 7 CON 3 CHATHAM AS IN 158939 & 216661 EXCEPT 540180; DESCRIPTION MAY NOT BE ACCEPTABLE IN FUTURE AS IN 158939 & 216661; S/T 571820, CH34814; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK08	007370241	PT LT 6 CON 3 CHATHAM AS IN 158939 EXCEPT PT 1, 2 & 3, 24R4969 & PT 1, 24R240; S/T 571823, CH34701; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK09	007370252	PT LT 6 CON 3 CHATHAM PT 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 & 13, 24R7159; S/T 619101; S/T 572353, CH34731; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK11	007370243	PT LT 5-6 CON 3 CHATHAM AS IN 654286, EXCEPT PT 1, 24R4899; S/T INTEREST IN 647793; S/T CH34701, CH34882, CH34893; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK12	007370115	PT LT 5 CON 3 CHATHAM AS IN 631856; S/T 631856; S/T 134855, CH34730, CH38241, CH44270; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK13	007370120	PT LT 5 CON 3 CHATHAM AS IN 603836; S/T & T/W 603836; S/T CH38242; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK14	007370537	PT LT 5 CON 4 CHATHAM AS IN 439434, EXCEPT 125510; S/T 80475, CH33251, CH38243; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK15	007370536	PART LOT 5 CONCESSION 4 CHATHAM, PARTS 1, 2 AND 3 24R10965 SUBJECT TO AN EASEMENT OVER PART 2 24R10965 AS IN CH38243 SUBJECT TO AN EASEMENT OVER PARTS 1, 2 AND 3 24R10965 AS IN CH33251 MUNICIPALITY CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK16	007370119	PT LT 5 CON 4 CHATHAM AS IN 573527; S/T CH38243; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK17	007410020	SW 1/2 LT 5 CON 5 CHATHAM; S/T 283248, CH38244; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK18	007410036	PT LT 5-6 CON 6 CHATHAM AS IN 652350 DESCRIPTION MAY NOT BE ACCEPTABLE IN FUTURE AS IN 652350; S/T CH33262, CH38264; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK19	007450020	PT LT 5 CON 7 CHATHAM AS IN 609567; S/T CH38265 MUNICIPALITY CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK20	007450075	PT LT 4-5 CON 7 CHATHAM AS IN 573331 EXCEPT PT 1 24R8512; S/T CH38445; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK21	007450050	LT 5 CON 8 CHATHAM EXCEPT D1247; S/T CH35724, CH38266; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK22	007490027	PT LT 5 CON 9 CHATHAM AS IN 574608, EXCEPT PT 20 D1247; S/T CH38267; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK23	007490028	PT LT 5 CON 9 CHATHAM AS IN 578231; S/T CH38268; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK24	007490057	PT LT 5 CON 10 CHATHAM AS IN 180523 & 101227; S/T CH38269, CH39945, CH40103; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK25	007490056	PT LT 4-5 CON 10 CHATHAM AS IN 296084; S/T CH38820; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK26	007530118	PART OF LOT 5, CONCESSION 11, GEOGRAPHIC TOWNSHIP OF CHATHAM, DESIGNATED AS PARTS 1, 2 & 3, 24R7979 EXCEPT PARTS 1, 2 & 3, 24R9324 TOGETHER WITH AN EASEMENT OVER PART OF LOT 5, CON. 11, CHATHAM, DESIGNATED AS PART 2, 24R9324 AS IN CK66670 MUNICIPALITY CH	Private	Yes	Permanent Easement	Offer Pending	
CK27	007530016	PT LT 5 CON 11 CHATHAM AS IN 559371; S/T CH38270; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK28	007530030	PT LT 5 CON 12 CHATHAM AS IN 225023; S/T CH38271; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK29	007530032	PT LT 5 CON 12 CHATHAM AS IN 342902; S/T CH38302; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK30	007560048	SW 1/4 LT 5 CON 13 CHATHAM ; S/T CH42151 PARTIALLY SURRENDERED BY 205554; S/T 194769, CH38302; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	

	PIN (Property Identification Number)	LEGAL DESCRIPTION	TYPE OF PROPERTY (Municipal, Private, Etc.)	Does Hydro One Require New or Updated Land Rights	RIGHTS REQUIRED	Where Agreement is Outstanding - Summary of Negotiations to Date	Owner(s)
CK31	007560053	SW1/2 OF NW1/2 LT 5 CON 13 CHATHAM EXCEPT PT 1, 2, 3 24R5193 AND PT 1 24R5357; S/T CH42208 PARTIALLY SURRENDERED BY 205554; S/T 194769, CH38287; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK32	007560039	PT LT 4-5 CON 14 CHATHAM PT 4, 5, 6 24R3400; S/T CH38288; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK33	007560040	PT LT 4-5 CON 14 CHATHAM PT 1, 2, 3 24R3400; S/T CH38289; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK34	007580024	PT LT 5 CON 15 CHATHAM PT 1, 2 & 3, 24R1731; S/T CH38397; CHATHAM-KENT	Private	Yes	Permanent Easement	Land Rights Acquired	
CK35	007580025	PT LT 4-5 CON 15 CHATHAM AS IN 400497, 400495; S/T CH38397; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK36	007580026	PART OF LOT 5 CON 15 CHATHAM AS IN 242423; S/T CH38290, CH43080 MUNICIPALITY CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK37	007580126	PT LT 5 CON 16 CHATHAM AS IN 549579; S/T 267003, CH38291; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK38	007600024	PT LT 5 CON 17 CHATHAM AS IN 361516 LYING E OF FORCED RD; S/T 184381, 263025, CH20401, CH20402, CH38292; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK39	007600025	PT LT 5 CON 17 CHATHAM AS IN 230586 LYING E OF FORCED RD; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK40	007600030	PT LT 6 CON 17 CHATHAM AS IN 577356; S/T 184383, 264366, CH38293; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK41	007600026	PT LT 5 CON 17 CHATHAM AS IN 458733; S/T 184384, CH39252; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK42	005900280	PART OF LOT 17, CONCESSION 1, GORE OF THE GEOGRAPHIC TOWNSHIP OF CHATHAM, DESIGNATED AS PARTS 1, 2, 3, 4, 5, 6, 7, 8, 9 & 16, 24R10065 SUBJECT TO AN EASEMENT IN GROSS OVER PARTS 2, 6, 8 & 16, 24R10065 AS IN CH38312 SUBJECT TO AN EASEMENT IN GROSS OVER PA	Private	Yes	Permanent Easement	Offer Pending	
CK43	005900016	PT LT 17 CON 1 CHATHAM GORE AS IN 634893; S/T CH38313, CH39251; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK44	005900281	PART OF LOT 17, CONCESSION 1, GORE OF THE GEOGRAPHIC TOWNSHIP OF CHATHAM, DESIGNATED AS PARTS 10, 11 & 12, 24R10065 SUBJECT TO AN EASEMENT IN GROSS OVER PART 11, 24R10065 AS IN CH38312 SUBJECT TO AN EASEMENT IN FAVOUR OF PART OF LOT 17, CON. 1, CHATHAM G	Private	Yes	Permanent Easement	Offer Pending	
CK46	005900075	PT LT 17 CON 2 CHATHAM GORE AS IN 599257 S OF RIVER RD; S/T INTEREST IN 599257; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK47	005900088	PT LT 17 CON 2 CHATHAM GORE AS IN 599257 N OF RIVER RD AND W OF 423394; S/T INTEREST IN 599257; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK48	005900089	W1/2 OF N1/2 LT 17 CON 2 CHATHAM GORE BTN RIVER RD N & THE E BRANCH OF SYDENHAM RIVER; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK49	005900079	W1/2 OF N1/2 LT 17 CON 2 CHATHAM GORE SW OF PT 1, D1214, N OF RIVER RD N OF EAST BRANCH OF SYDENHAM RIVER EXCEPT 599766; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK50	005910012	E1/2 LT 16 CON 3 CHATHAM GORE; W1/2 LT 17 CON 3 CHATHAM GORE LYING S OF D1216 EXCEPT PT 11, PLAN P-2863-14 IN 599766; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK51	005910058	PT LT 16-17 CON 3 CHATHAM GORE AS IN 587706 LYING N OF D1216 EXCEPT PT 11, PLAN P-2863-14 IN 599766; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK52	5910051	PT LT 16 CON 3 CHATHAM GORE AS IN 400447 LYING N OF 192662; T/W 192662; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK53	005910007	PT LT 16 CON 3 CHATHAM GORE AS IN 389059 EXCEPT THE EASEMENT THEREIN; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK54	005880065	PT LT 15 CON 3 CHATHAM GORE AS IN 349613 N OF 192172; S/T 349613; T/W 349613; S/T 576500; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK55	005880343	PART OF LOT 15, CONCESSION 3, GORE OF THE GEOGRAPHIC TOWNSHIP OF CHATHAM SUBJECT TO AN EASEMENT AS IN CH32340 SUBJECT TO AN EASEMENT AS IN CH38317 MUNICIPALITY CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK56	005880346	PT LT 15 CON 4 CHATHAM GORE AS IN 296748; EXCEPT PT 1, 24R4320, PT 1-3, 24R8373; EXCEPT PT 9, 10, 24R3431; S/T CH43807 PARTIALLY RELEASED BY 296432; S/T 296748; S/T 558637 SUBJECT TO AN EASEMENT OVER PART 1, 24R9855 IN FAVOUR OF PART OF LOT 15, CON. 4, C	Private	Yes	Permanent Easement	Offer Pending	

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CK57	005880107	N1/2 LT 15 CON 4 CHATHAM GORE EXCEPT PT 11, 24R3431; S/T CH38324; S/T EXECUTION 09-0000494, IF ENFORCEABLE; CHATHAM-KENT	Private	Yes	Permanent Easement	Offer Pending	
CK58	433970134	PT LT 14-15 CON 5 SOMBRA AS IN L501860 EXCEPT PT 13, 25R1837; S/T SO27530; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
CK59	433970132	PT LT 15 CON 5 SOMBRA AS IN SO28195 EXCEPT L324651 & PT 12, 25R1837; S/T SO27798; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
CK60	433970164	PT LT 15 CON 5 (SOMBRA), PARTS 4 & 5, PLAN 25R10417; SUBJECT TO L210372 & SO27589 TOWNSHIP OF ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
CK61	433970126	PT LT 13-14 CON 5 SOMBRA AS IN L912501 S/T DEBTS IN L912501; S/T SO27683; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
CK62	433970124	PT LT 13-14 CON 5 SOMBRA AS IN L746992 LYING E OF EAST RIVER RD; S/T SO27532; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
CK63	433970123	PT LT 13-14 CON 5 SOMBRA AS IN L491213; S/T SO27590; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
CK64	433970075	S1/2 LT 14 CON 6 SOMBRA; S/T SO27558; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
CK65	433970073	PT LT 13-14 CON 6 SOMBRA AS IN L648841 S/T DEBTS IN L648841; S/T SO27599; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
CK66	433970074	NE1/4 LT 14 CON 6 SOMBRA EXCEPT PT 5 TO 7, 25R2968 TOWNSHIP OF ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC01	433980100	PT LT 14 CON 7 SOMBRA AS IN L932702; S/T SO27529; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC02	433980099	PT LT 14 CON 7 SOMBRA AS IN L404944; S/T SO27528; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC03	433980081	SW1/4 LT 14 CON 8 SOMBRA; S/T SO28113; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC04	433980079	S1/2 LT 13 CON 8 SOMBRA; S/T SO27679; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC05	433980077	PT LT 12-13 CON 8 SOMBRA AS IN L830196, L830197 & L830222; S/T SO27680; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC06	433980063	ELY 2/3 OF S1/2 LT 13 CON 9 SOMBRA; S/T SO27527; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC07	433980057	PT LT 12-13 CON 9 SOMBRA AS IN L783167; S/T SO27526; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC08	434030118	PT LT 12-13 CON 10 SOMBRA AS IN L776935; S/T SO27681; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC09	434030142	N1/2 LT 12 CON 10 SOMBRA; S/T L508092, SO27682; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC10	434030120	PT LT 13-14 CON 10 SOMBRA AS IN L595949 & L693496 S/T L208823; S/T L508092; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC11	434030095	S1/2 LT 12 CON 11 SOMBRA; S/T SO27591; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC12	434030094	PT LT 12 CON 11 SOMBRA AS IN L712055 EXCEPT PT 5, 25R5527 S/T L105048; S/T L508093, L556207, L735516, PP1267, PP1268, SO27592; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC13	434030093	PT LT 11-12 CON 11 SOMBRA AS IN L655652 EXCEPT PT 7, 25R5527 S/T L105232; S/T L309814, L508093, L556207, L735518; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC14	434040078	LT 11-12 CON 12 SOMBRA EXCEPT L712055, PARTS 34, 36 & 37, PP977, PT 1, PP1037, PARTS 1 TO 4, 25R5527 AND PARTS 1 TO 4, 25R6303; S/T L508094, L508096, SO27594; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC15	434040083	SE1/4 LT 11 CON 13 SOMBRA; SW1/4 LT 12 CON 13 SOMBRA; S/T SO27525; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC16	434040082	NE1/4 LT 11 CON 13 SOMBRA; S/T SO28216; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC17	434040085	NW1/4 LT 12 CON 13 SOMBRA S/T BENEFICIARIES INTEREST IN L813413; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC18	434040142	SE1/4 LT 11 CON 14 SOMBRA; S1/2 LT 12 CON 14 SOMBRA; SW1/4 LT 13 CON 14 SOMBRA EXCEPT PARTS 1 & 2, 25R1062 AND PT 1, 25R7872; T/W RIGHT IN L785669; S/T L818489 PARTIALLY RELEASED BY L818490; S/T SO27560; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC19	434040146	E1/2 OF N1/2 LT 11 CON 14 SOMBRA; S/T SO27561; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	
SC20	434040153	E1/2 OF S1/2 LT 11 CON 15 SOMBRA; S/T SO26061, SO27586; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending	

	PIN (Property Identification Number)	LEGAL DESCRIPTION	TYPE OF PROPERTY (Municipal, Private, Etc.)	Does Hydro One Require New or Updated Land Rights	RIGHTS REQUIRED	Where Agreement is Outstanding - Summary of Negotiations to Date	Owner(s)	
SC21	434040155	E1/2 OF N1/2 LT 11 CON 15 SOMBRA; S/T L241797, L822225, L841501, SO27585; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending		
SC22	434040156	W1/2 OF NW1/4 LT 12 CON 15 SOMBRA; S/T L242624, L819873, L841502, SO27700; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending		
SC23	433090093	PT LT 20 CON 1 MOORE PT 1, 25R3794; S/T MO26916; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending		
SC24	433090092	SW 1/4 LT 19 CON 1 MOORE; S/T MO26916, MO26991; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending		
SC25	433090090	PT LT 19-20 CON 1 MOORE AS IN L821676; S/T INTEREST IN L821676; S/T L820065, MO26915, MO26916, MO26991; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending		
SC26	433090065	E 1/4 LT 20 CON 2 MOORE; S/T MO26930; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending		
SC27	433090066	PT LT 19 CON 2 MOORE AS IN L748574 (SECONDLY B); S/T MO26878; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending		
SC28	433100096	W1/2 LT 19 CON 3 MOORE; S/T MO26895; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending		
SC29	433100095	PT LT 20 CON 3 MOORE AS IN L629755; S/T L223457, MO27012; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending		
SC30	433100094	PT LT 20 CON 3 MOORE AS IN L793097; S/T L223456; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending		
SC31	433100093	PT LT 21 CON 3 MOORE AS IN L840562; S/T L223459; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending		
SC32	433100092	PT LT 21 CON 3 MOORE AS IN L290291; S/T L223459; ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending		
SC33	433100106	WEST 1/2 LOT 21 CONCESSION 3 MOORE EXCEPT PART 1 25R11312; S/T L223458 TOWNSHIP OF ST. CLAIR	Private	Yes	Permanent Easement	Offer Pending		
SC34	433070089	LT 29 CON 3 MOORE; PT LT 13-22 CON FRONT MOORE; PT LT 28 CON 3 MOORE; PT LT 29 CON 4 MOORE PT 1 - 9, 25R7727 T/W ROW IN L311096; S/T L887981, L957841; ST. CLAIR	Provincial Lands (OPG)	Yes	Permanent Easement	Offer Pending		
SC36	433070132	PT LT 13-19 CON FRONT MOORE PT 6 TO 57, 25R7728 T/W PT 1, 25R811 AS IN L352815; LT 12-46, B PL 29 MOORE; PT LT 5-11 PL 29 MOORE; PT PARK ST, JENKYN ST PL 29 MOORE AS IN L910132; S/T L689642, L689643, L887981 SUBJECT TO AN EASEMENT IN GROSS OVER PART 3, 25R5668 AS IN LA113826 SUBJECT TO AN EASEMENT OVER PART LOTS 13,14,15 CONCESSION FRONT, MOORE, PARTS 1 TO 10 PLAN 25R10268 IN FAVOUR OF PART LOT 26 CONCESSION 2, MOORE, PART LOT 26 PLAN 24, MOORE, PART ROAD ALLOWANCE BETWEEN LOT 26 CONCESSION 1 AND LOT 26 PLAN 24, MOORE, PARTS 1 TO 10 PLAN 25R1585 (CLOSED BY MO28032) AS IN LA169120 TOWNSHIP OF ST. CLAIR	Provincial Lands (OPG)	Yes	Permanent Easement	Offer Pending		
NO/LIMITED RIGHTS REQUIRED								
	008980212	PART LOT 27 CONCESSION 1 EAST COMMUNICATION ROAD HARWICH PART 33 PLAN 24R9566 SUBJECT TO AN EASEMENT IN GROSS OVER PART 4 PLAN 24R9583 UNTIL 2063/02/21 AS IN CK81145 SUBJECT TO AN EASEMENT IN GROSS OVER PART 33 PLAN 24R9566 UNTIL 2063/02/21 AS IN CK81149 MUNICIPALITY CHATHAM-KENT	Owned	No	Owned by Hydro One	N/A		
	007600145	PT LT 6 CON 17 CHATHAM AS IN 631493 EXCEPT CH44779; CHATHAM-KENT	Owned	No	Owned by Hydro One	N/A		
	008980217	PART OF LOTS 27 AND 28, CONCESSION 1, EAST COMMUNICATION ROAD, GEOGRAPHIC TOWNSHIP OF HARWICH, DESIGNATED AS PARTS 1, 2, 3, 4, 5, 6 & 7, 24R7490 EXCEPT PARTS 8, 9, 10, 11 AND 12, 24R9566; SUBJECT TO R.O.W. AS IN 180564 OVER PART OF LOT 27, CON 1, ECR, HARWICH, DESIGNATED AS PART 4, 247490, SUBJECT TO R.O.W. AS IN 183648 OVER PART OF LOT 28, CON 1, ECR, HARWICH, DESIGNATED AS PART 1, 24R7490 SUBJECT TO AN EASEMENT IN GROSS OVER PART OF LOT 27, CON. 1, ECR, HARWICH DESIGNATED AS PARTS 2 & 3, 24R9583 UNTIL 2063/02/21 AS IN CK81147 TOGETHER WITH AN EASEMENT OVER PART OF LOT 7, CON. 13, CHATHAM, DESIGNATED AS PARTS 1, 2 & 3, 24R9572 AS IN CK82571 TOGETHER WITH AN EASEMENT OVER PART OF LOT 26, CON. 1, ECR, HARWICH, DESIGNATED AS PARTS 1 & 2, 24R9571 AS IN CK82578 MUNICIPALITY CHATHAM-KENT	Owned	No	Owned by Hydro One	N/A		

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	008860003	PT LT 7-11 CON 1 RIVER THAMES SURVEY HARWICH; PT LT 12 CON 3 RIVER THAMES SURVEY HARWICH AS IN HA82, HA83, HA84, HA86, HA121, HA131, HA135, HA139, HA145, HA161, HA172, HA189, HA190, HA288, HA310, HA337, HA2224, HA2225, HA2475, HA2476, HA2724, HA2755 & HA	Railway Crossing	No	Crossing Permit	N/A	
	007360005	LT 41 RCP 777; PT LT 8-9 CON 1 CHATHAM AS IN CH10256, CH10364, CH10365, CH10380, CH10401, CH10445 & CH10808; CHATHAM-KENT	Railway Crossing	No	Crossing Permit	N/A	
	007370284	PART LOTS 5,6 CONCESSION 3 CHATHAM, PARTS 4,5,6,7 24R9606 TOGETHER WITH AN EASEMENT AS IN CK168086 TOGETHER WITH AN EASEMENT AS IN CK168085 TOGETHER WITH AN EASEMENT AS IN CK168087 MUNICIPALITY CHATHAM-KENT	Railway Crossing	No	Crossing Permit	N/A	
	005900011	PART OF LOTS 16, 17, 18, 19 & 20, CONCESSION 2, GORE OF THE GEOGRAPHIC TOWNSHIP OF CHATHAM, DESIGNATED AS PARTS 1 & 2, 24R9678 AND PARTS 2, 3, 4, 5, 6, 7, 8, 9 & 10, 24R9719 SUBJECT TO AN EASEMENT IN GROSS AS IN R670762 MUNICIPALITY CHATHAM-KENT	Railway Crossing	No	Crossing Permit	N/A	
	433070140	PT LT 13-24 CON FRONT MOORE AS IN MO9450, MO9451, MO9452, MO9454, MO9626, MO9707, MO9725, MO9726, MO9727, MO9799, MO9805, MO10285, MO10343, MO10528, MO16159, L164165, & L772589 PT 2, 25R5906, S/T L164165; ST. CLAIR	Railway Crossing	No	Crossing Permit	N/A	
	433070188	PT LT 26 CON 3 MOORE; PT LT 26 CON 4 MOORE; PT RDAL BTN CON 2 AND CON 3 MOORE AS IN MO3359, MO3390, MO3391, L223775, L224794, L224796 & PP933; ST. CLAIR	Railway Crossing	No	Crossing Permit	N/A	
	008980208	PART OF LOTS 27 & 28, CONCESSION 1, EAST COMMUNICATION ROAD, GEOGRAPHIC TOWNSHIP OF HARWICH DESIGNATED AS PARTS 18, 20, 21, 22 & 32, 24R9566 SUBJECT TO AN EASEMENT AS IN 180564 MUNICIPALITY CHATHAM-KENT	Bill 58	No	Rights in Place (Bill 58)	N/A	
	007380017	PT LT 7-8 CON 3 CHATHAM AS IN D1199 & D1200; S/T 208218; CHATHAM-KENT	Bill 58	No	Rights in Place (Bill 58)	N/A	
	433100082	PT LT 22-24 CON 3 MOORE AS IN L216953, L216952, L216961 & L216951, EXCEPT MRO IN L657778 & L676550, S/T L302887, L302889, L275865 & L275866, ST. CLAIR	Bill 58	No	Rights in Place (Bill 58)	N/A	
	008980211	PART OF LOTS 26 & 27, CONCESSION 1, EAST COMMUNICATION ROAD, GEOGRAPHIC TOWNSHIP OF HARWICH AS IN 176936 LYING SOUTHWEST OF PARTS 34 & 35, 24R9566 EXCEPT PART 4, 24R8472, PARTS 6, 7 & 8, 24R7490 AND PARTS 32 & 33, 24R9566 SUBJECT TO AN EASEMENT IN GROSS OVER PART 1, 24R9542 UNTIL 2061/11/30 AS IN CK78621 SUBJECT TO AN EASEMENT IN GROSS OVER PART OF LOT 27, CON. 1, ECR, HARWICH DESIGNATED AS PARTS 5 & 6, 24R9583 UNTIL 2063/02/21 AS IN CK81145 SUBJECT TO AN EASEMENT IN GROSS OVER PART OF LOT 27, CON. 1, ECR, HARWICH DESIGNATED AS PART 8, 24R9583 UNTIL 2063/02/21 AS IN CK81148 SUBJECT TO AN EASEMENT IN GROSS OVER PART OF LOT 27, CON. 1, ECR, HARWICH DESIGNATED AS PARTS 6 & 7, 24R9583 UNTIL 2063/02/21 AS IN CK81149 MUNICIPALITY CHATHAM-KENT	Bill 58	No	Rights in Place (Bill 58)	N/A	
	007360197	PT LT 8 CON 1 CHATHAM AS IN 192473; S/T 192473; CHATHAM-KENT	Bill 58	No	Rights in Place (Bill 58)	N/A	
	008860030	PT LT 8 CON 1 RIVER THAMES SURVEY HARWICH AS IN 180902; S/T 180902; CHATHAM-KENT	Bill 58	No	Rights in Place (Bill 58)	N/A	
	007360085	PT LT 8 CON 1 CHATHAM AS IN D1217 & 263415; CHATHAM-KENT	Bill 58	No	Rights in Place (Bill 58)	N/A	
	007360095	PT LT 8 CON 1 CHATHAM AS IN 192893 & 192896; S/T 192893; CHATHAM-KENT	Bill 58	No	Rights in Place (Bill 58)	N/A	
	008940066	PT LT 7-8 CON 6 RIVER THAMES SURVEY HARWICH AS IN 180778, 181044, 181978 & 184275; EXCEPT PT 2 24R1350; CHATHAM-KENT	Bill 58	No	Rights in Place (Bill 58)	N/A	
	008860136	PT 1 FT RESERVE PL 597 AS IN 180048; CHATHAM-KENT	Bill 58	No	Rights in Place (Bill 58)	N/A	
	005910008	PT LT 16-17 CON 3 CHATHAM GORE AS IN D1216, 192662 AND 195765, EXCEPT PT 11, 599766; S/T 192662; CHATHAM-KENT	Bill 58	No	Rights in Place (Bill 58)	N/A	
	008940013	PT LT 8 CON 4 RIVER THAMES SURVEY HARWICH; PT LT 8 CON 5 RIVER THAMES SURVEY HARWICH; PT RDAL BTN CON 4 AND CON 5 RIVER THAMES SURVEY HARWICH CLOSED BY 78347; AS IN 179696, 180129, & 180775 EXCEPT PT 26 24R3092; S/T 180129; CHATHAM-KENT	Bill 58	No	Rights in Place (Bill 58)	N/A	
	007600146	PT LT 6 CON 17 CHATHAM AS IN 184334; CHATHAM-KENT	Bill 58	No	Rights in Place (Bill 58)	N/A	
	005880063	PT LT 14-15 CON 3 CHATHAM GORE AS IN 190786, 191696, 192172; S/T INTEREST IN 558991; S/T 191696, 192172; CHATHAM-KENT	Bill 58	No	Rights in Place (Bill 58)	N/A	

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	008860252	PART OF LOTS 7 & 8, CONCESSION 1, RIVER THAMES SURVEY, GEOGRAPHIC TOWNSHIP OF HARWICH, LOTS 1, 2 & 3, PLAN 597, PART OF LOT 4, PLAN 597 AND PART OF BLOCK B, PLAN 597 AS IN 180048, 183209, 194756, HA19300, HA19560, HA19353; S/T HA19300, HA19353, 180048, 1	Bill 58	No	Rights in Place (Bill 58)	N/A	
	007360150	PT LT 8 CON 2 CHATHAM AS IN D1198, 195803 & 209524; CHATHAM-KENT	Bill 58	No	Rights in Place (Bill 58)	N/A	
	433070174	PT LT 25-26 CON 3 MOORE; PT LT 26 CON 4 MOORE AS IN L216955, L216956, L274537 & PP1113 S/T L274537 PARTIALLY RELEASED BY L883999 S/T L289520, L302888; S/T L223452, L288176, L305643, L886547; ST. CLAIR	Bill 58	No	Rights in Place (Bill 58)	N/A	
	008860039	PT LT 8 CON 1 RIVER THAMES SURVEY HARWICH AS IN 180034; CHATHAM-KENT	Bill 58	No	Rights in Place (Bill 58)	N/A	
	433070170	PT LT 26-27 CON 3 MOORE; PT LT 26 CON 4 MOORE AS IN L289260, L218803, L216963, L216964 & L216962 LYING S OF FORMER RAILWAY LANDS; S/T L288176, L711351, L925086; ST. CLAIR	Bill 58	No	Rights in Place (Bill 58)	N/A	
	433100051	FIRSTLY RDAL BTN LT 24 AND LT 25 CON 3 MOORE; RDAL BTN LT 24 AND LT 25 CON 4 MOORE PT LT 25 CON 4 MOORE AS IN PP898 AMENDED BY PP1024; PT LT 25 CON 3 MOORE AS IN PP1074; SECONDLY PT LT 25 CON 4 MOORE PT LT 25 CON 3 MOORE AS IN MO23913, MO23910 & MO23900;	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	005900004	RDAL BTN CON 1 AND CON 2 CHATHAM GORE IN FRONT OF LT 16-20; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	433090052	FIRSTLY: RDAL BTN TWP OF SOMBRA AND TWP OF MOORE; SECONDLY: PT LT 6 CON 15 SOMBRA; PT LT 7 CON 15 SOMBRA AS IN L241419 & L241420 (AKA BICKFORD LINE) FROM THE E LIMIT OF HWY 40 TO THE RDAL BTN LT 15 & 16 CON 1; ST. CLAIR	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	005880011	RDAL BTN TWP OF SOMBRA AND TWP OF CHATHAM GORE S OF CENTRE LINE FROM SYDENHAM RIVER TO RDAL BTN LT 15 AND LT 16; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007490064	RDAL BTN CON 9 AND CON 10 CHATHAM LYING BTN 389934 AND PRINCE ALBERT SIDEROAD; AKA CEDAR HEDGE LINE; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	008940004	FIRSTLY RDAL BTN CON 6 RIVER THAMES SURVEY AND CON 1 EAST COMMUNICATION RD HARWICH; RDAL BTN CON 6 RIVER THAMES SURVEY AND CON 2 EAST COMMUNICATION RD HARWICH; RDAL BTN CON 6 RIVER THAMES SURVEY AND CON 3 EAST COMMUNICATION RD HARWICH ABUTTING LT 7 THROU	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	005910053	PT RDAL BTN CON 2 AND CON 3 CHATHAM GORE; PT LT 17-20 CON 2 CHATHAM GORE; PT LT 17-20 CON 3 CHATHAM GORE PARTS 11, 12 & 13, PLAN P-2863-14 IN 599766; KNOWN AS PT OF MCCREARY LINE (FORMERLY PT OF KING'S HWY NO. 78); CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	434040052	FIRSTLY: RDAL BTN CON 11 AND 12 SOMBRA; PT LT 11-15 CON 11 SOMBRA; PT LT 11-13, 15 CON 12 SOMBRA PARTS 34 TO 43, PP977, PARTS 1 & 2, PP1037, PARTS 1 TO 7, 25R5527 & PARTS 1 & 2, 25R7570; SECONDLY: PT LT 13 CON 12 SOMBRA AS IN L274117; BEING COUNTY ROAD N	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	434040150	RDAL BTN CON 14 AND 15 SOMBRA BEING, STANLEY LINE, BTN INDIAN CREEK RD & KIMBALL RD; ST. CLAIR	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	005900006	PT LT 16-20 CON 2 CHATHAM GORE AS IN CH5728, CH5725 AND FORCED RD S OF THE E BRANCH OF SYDENHAM RIVER AKA RIVER ROAD, SOUTH RIVER RD, MCGREGOR LINE; S/T THE RIGHTS OF OWNERS OF ADJOINING PARCELS, IF ANY UNDER 145598, 265100, 663238 (FOURTHLY); S/T 263829	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	008860138	BLK A PL 597; SERVICE RD PL 597; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007410059	RDAL BTN CON 4 AND CON 5 CHATHAM BTN PT 2, 389934 AND THE RDAL BTN LOTS 6 & 7 CON 5; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007490034	FIRSTLY, RDAL BTN CON 8 AND CON 9 CHATHAM; PT RDAL BTN LT 6 AND LT 7 CON 9 CHATHAM; PT LT 1-2, 5-6 CON 8 CHATHAM; PT LT 1-7 CON 9 CHATHAM PT 1, 2, 3, 4, 5, 6, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22 D1247 SECONDLY PT LT 1 CON 9 CHATHAM AS IN 22820	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	008860004	FIRSTLY RDAL BTN CON 1 AND CON 4 RIVER THAMES SURVEY HARWICH; RDAL BTN CON 3 AND CON 4 RIVER THAMES SURVEY HARWICH; PT LT 7-11 CON 1 RIVER THAMES SURVEY HARWICH; PT LT 12 CON 3 RIVER THAMES SURVEY HARWICH; PT LT 7-12 CON 4 RIVER THAMES SURVEY HARWICH PT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	

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	007380068	FIRSTLY: RDAL BTN LT 6 AND LT 7 CON 3 CHATHAM; RDAL BTN LT 6 AND LT 7 CON 4 CHATHAM; PT LT 7, 6 CON 4 CHATHAM PT 1, 24R4552, PT 9 & 10, 24R4323; SECONDLY: PT LT 6 CON 4 CHATHAM AS IN 137062 AKA COUNTY ROAD 30, AKA PRINCE ALBERT ROAD; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007450030	RDAL BTN CON 7 AND CON 8 CHATHAM ABUTTING LT 1 THROUGH LT 6; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	005910002	RDAL BTN CON 2 AND CON 3 CHATHAM GORE , ABUTTING LOTS 16 AND 17, CON 3 LYING W OF PT 11, PLAN P-2863-14 IN 599766; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	433980085	RDAL BTN CON 7 AND CON 8 SOMBRA LYING BTN LT 11 TO 15; KNOWN AS KERR LINE; ST. CLAIR	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	433970052	RDAL BTN TWP OF GORE OF CHATHAM AND TWP OF SOMBRA BEING KENT LINE BTN FORHAN RD & PRETTY RD N OF CENTRE LINE; ST. CLAIR	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007450001	RDAL BTN CON 6 AND CON 7 CHATHAM ABUTTING LT 1 THROUGH 6; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007370003	FIRSTLY: RDAL BTN CON 3 AND CON 4 CHATHAM ABUTTING LT 1 - 6 CON 3 CHATHAM; SECONDLY: PT LT 1-6 CON 4 CHATHAM AS IN 125544, 125548, 125521, 125519, 125517, 125515, 125513, 125510, 125507, 125505; AKA PIONEER LINE; S/T CH38243; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007380001	RDAL BTN CON 2 AND CON 3 CHATHAM; RDAL BTN CON 1 AND CON 3 CHATHAM LYING BTN COUNTY RD 28 AND COUNTY RD 30 AKA GREGORY LINE; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007580002	RDAL BTN CON 14 AND CON 15 CHATHAM ABUTTING LOTS 1 TO 6; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	433980052	FIRSTLY: RDAL BTN CON 6 AND CON 7 SOMBRA; PT LT 11-13 CON 7 SOMBRA; PT LT 11-14 CON 6 SOMBRA PT 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19, 25R2968, AS IN L501086, L359969; SECONDLY: PT LT 12 & PT LT 13 CON 7 AS IN L359968; BTN FORHAN RD & COUNTY	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	433100101	RDAL BTN LT 21 AND LT 22 CON 3 MOORE; RDAL BTN LT 21 AND LT 22 CON 4 MOORE; ST. CLAIR	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	008860128	FIRSTLY PT LT 7 CON 1 RIVER THAMES SURVEY HARWICH; PT LT 9-10, 12 CON 1 RIVER THAMES SURVEY HARWICH AS IN HA18812, PT 8, 11, 12, 14 & 17, 24R141, PT 23, 24, 25 & 27, 24R239, PT 3, 24R811, PT 6, 24R1758, PT 3 & 6, 24R3594; EXCEPT PT 1, 24R4839 & PT 3 & 5,	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007410058	RDAL BTN CON 5 AND CON 6 CHATHAM BTN THE RDAL BTN THE TWP OF CHATHAM & TWP OF DOVER AND THE RDAL BTN LOTS 6 & 7 CON 6; PT LT 1-5 CON 6 CHATHAM AS IN 113837, 113838, 114024, 114387, 115250, 115251, 116446, 129523 (AKA COUNTY ROAD 35); S/T CH38264; CHATHAM	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	005900010	FIRSTLY: PT LT 16 CON 2 CHATHAM GORE AS IN 200421, 200422, 200423, PT 1-12 D1262; SECONDLY: PT LT 17 CON 2 CHATHAM GORE; PT LT 18-20 CON 2 CHATHAM GORE FORCED RD N OF THE EAST BRANCH OF SYDENHAM RIVER AKA RIVER RD AKA N RIVER LINE; S/T THE RIGHTS OF OWNE	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007360265	FIRSTLY: PT LT 44 RCP 777; PT LT 8-12 CON 1 CHATHAM PT 5 601816; SECONDLY: PT LT 12 CON 1 CHATHAM BEING FORCED RD THROUGH AKA LONGWOODS RD; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	434030137	FIRSTLY: PT RDAL BTN CON 10 AND CON 11 SOMBRA SECONDLY; PT LT 11 CON 10 SOMBRA; PT LT 11 CON 11 SOMBRA PT 3 & 5, 25R3144 AKA SMITH LINE BTN DUTHILL RD & KIMBALL RD; ST. CLAIR	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	005880008	RDAL BTN CON 3 AND CON 4 CHATHAM GORE FROM SYDENHAM RIVER ELY TO RDAL BTN LT 15 & LT 16; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007530026	FIRSTLY RDAL BTN CON 11 AND CON 12 CHATHAM ABUTTING LT 1, 2, 3, 4, 5 & 6; SECONDLY PT LT 6 CON 11 CHATHAM AS IN 97787; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007560003	RDAL BTN CON 13 AND CON 14 CHATHAM; PT LT 4 CON 13 CHATHAM; PT LT 4-5 CON 14 CHATHAM PT 1 24R2162, PT 7, 8, 9 & 10 24R3400 AKA COUNTY RD NO. 42 BTN HWY 40 AND PRINCE ALBERT SIDEROAD; S/T CH38288; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	008940003	RDAL BTN CON 5 AND CON 6 RIVER THAMES SURVEY HARWICH ABUTTING LT 7 THROUGH 12; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	

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	005910052	FIRSTLY : RDAL BTN LT 15 AND LT 16 CON 3 CHATHAM GORE; RDAL BTN LT 15 AND LT 16 CON 4 CHATHAM GORE; PT LT 15 CON 3 CHATHAM GORE; PT LT 15 CON 4 CHATHAM GORE PARTS 3 TO 11, 24R3431; SECONDLY : PT LT 15 CON 3 CHATHAM GORE PARTS 1, 2 & 4, 24R231; KNOWN AS,	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	433980073	RDAL BTN CON 8 AND CON 9 SOMBRA LYING BTN LT 11 TO LT 15; KNOWN AS TULLOCH LINE; ST. CLAIR	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007600002	RDAL BTN CON 16 AND CON 17 CHATHAM LYING NE OF 389934; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	433100052	RDAL BTN CON 2 AND CON 3 MOORE AKA OIL SPRINGS LINE; BTN HIGHWAY #40 & TECUMSEH ROAD; ST. CLAIR	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007580003	RDAL BTN CON 15 AND CON 16 CHATHAM ABUTTING LOTS 1 TO 6; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007360003	FIRSTLY: RDAL BTN CON 1 AND CON 2 CHATHAM BTN PT 2 24R4715 AND PT 8 24R8082; SECONDLY: PT LT 9 CON 2 CHATHAM BEING FORCED RD THROUGH PT 10 24R8082 AKA MCNAUGHTON AV; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	434040080	RDAL BTN CON 12 AND 13 SOMBRA , BEING, WILKESPORT LINE, AKA MAIN ST, BTN INDIAN CREEK RD & KIMBALL RD; ST. CLAIR	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	434030136	PT RDAL BTN CON 9 AND CON 10 SOMBRA AKA HOLT LINE BTN DUTHILL RD & KIMBALL RD; ST. CLAIR	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	005900001	FIRSTLY: RDAL BTN TWP OF CHATHAM AND TWP OF CHATHAM GORE; SECONDLY PT LT 7 CON 16 CHATHAM; PT LT 6, 4-5 CON 17 CHATHAM AS IN 86569, CH44779 IN FRONT OF LOTS 16, 17, 18, 19 & 20, CON 1 AND FORCED RD AKA BASELINE RD; S/T CH38293, CH39217; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007560002	RDAL BTN CON 12 AND CON 13 CHATHAM ABUTTING LT 1 TO 6; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	005900009	PT RDAL BTN LT 15 AND LT 16 CON 2 CHATHAM GORE; PT LT 16 CON 2 CHATHAM GORE PT 14, 599766 AKA KING'S HWY 78; S/T CH38315; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	433070150	RDAL BTN LT 27 AND LT 28 CON 3 MOORE; PT RDAL BTN LT 27 AND LT 28 CON 4 MOORE LYING S OF FORMER RAILWAY LANDS AKA GREENFIELD RD; ST. CLAIR	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	434040124	RDAL BTN CON 13 AND 14 SOMBRA BEING, WHITE LINE, BTN INDIAN CREEK RD & BEAR CREEK; ST. CLAIR	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007530011	RDAL BTN CON 10 AND CON 11 CHATHAM ABUTTING LT 1, 2, 3, 4, 5, 6 & 7; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	008980206	PART OF LOT 28, CONCESSION 1, EAST COMMUNICATION ROAD, GEOGRAPHIC TOWNSHIP OF HARWICH DESIGNATED AS PARTS 16 & 17, 24R9566 SUBJECT TO AN EASEMENT AS IN 183648 MUNICIPALITY CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007560051	PT LT 5 CON 13 CHATHAM PT 1, 2, 3 24R5193; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	008980207	PART OF LOT 28, CONCESSION 1, EAST COMMUNICATION ROAD, GEOGRAPHIC TOWNSHIP OF HARWICH DESIGNATED AS PART 19, 24R9566 MUNICIPALITY CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	433970151	RDAL BTN CON 5 AND CON 6 SOMBRA; PT LT 13 CON 6 SOMBRA PT 1 & 2, 25R8719 BEING CHARLEMONT LINE LYING BTN SYDENHAM RIVER AND PRETTY RD S/T INTEREST IN L910064; ST. CLAIR	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007370240	PT LT 6 CON 3 CHATHAM PT 3, 24R4969; BEING COUNTY RD 30; AKA PRINCE ALBERT RD; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	
	007380075	PT LT 7 CON 3 CHATHAM PT 4, 24R4969; CHATHAM-KENT	Road Allowance	No	Rely on S.41(1) of the Electricity Act	N/A	

THIS AGREEMENT made in duplicate the _____ day of _____ 202__

Between:

INSERT NAME

(hereinafter referred to as the “Grantor”)

OF THE FIRST PART

--- and ---

HYDRO ONE NETWORKS INC.

(hereinafter referred to “HONI”)

OF THE SECOND PART

WHEREAS the Grantor is the owner in fee simple and in possession of certain lands legally described as [INSERT LEGAL DESCRIPTION] as in PIN XXXXX-XXXX (LT), (the “Lands”).

WHEREAS HONI in connection with the St. Clair Transmission Line Project (the “Project”) desires the right to enter onto a portion of the Lands in order to carry out all necessary real estate, environmental and engineering studies and testing including but not limited to borehole testing, archaeological studies, soil assessments, property appraisals and surveys on, over and upon the Lands associated with the Project.

WHEREAS the Grantor is agreeable in allowing HONI to enter onto a portion of the Lands for the purpose of all necessary studies and testing on, over and upon the Lands, subject to the terms and conditions contained herein.

NOW THEREFORE THIS AGREEMENT WITNESSETH that in consideration of the sum of TWO DOLLARS (\$2.00) now paid by HONI to the Grantor, and the mutual covenants herein contained and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree as follows:

1. The Grantor hereby grants, conveys and transfers to HONI in, over, along and upon that part of the Lands highlighted in green as shown in Schedule “A” attached hereto (the “Preferred Route”), the rights and privileges as follows:
 - (a) for the servants, agents, contractors and workmen of HONI at all times with all necessary vehicles and equipment to pass and repass over the Preferred Route for the purpose of real estate, environment and engineering studies and testing associated with the Project, subject to payment of compensation for damages including payment for crop land out of production caused thereby;
 - (b) to cut and remove all trees, brush and other obstructions made necessary by the exercise of the rights granted hereunder with prior consent of the Grantor, subject to payment of compensation for damages.
2. The term of this Agreement and the permission granted herein shall be two (2) years (the “Initial Term”) commencing in accordance with the option selected by the Grantor below:
 - (i) The Initial Term commences on the Agreement date written above.Grantor Initials for Option 2(i): _____
 - (ii) The Initial Term commences on December 1, 2023 or earlier as agreed upon between HONI and Grantor.

Grantor Initials for Option 2(ii): _____

3. Upon execution of this Agreement by all parties, HONI shall pay to the Grantor the amount of XXXX DOLLARS (\$XXXX.00), which is compensation for the permission granted herein for the Initial Term.
4. HONI may, in its sole discretion, and upon 5 days prior written notice to the Grantor, extend the Initial Term for an additional term of one (1) year on the same terms and conditions contained herein save for this right to extend and section 3 herein (the “Extended Term”).
5. In the event that HONI exercises its right to extend the Initial Term, HONI shall pay to the Grantor the amount of XXXX DOLLARS (\$XXXX.00), which is compensation for the permission granted herein for the Extended Term.
6. Upon the expiry of the Term or any extension thereof, HONI shall repair any physical damage to the Preferred Route and/or Lands resulting from HONI’s use of the Preferred Route and the permission granted herein; and, shall restore the Preferred Route to its original condition so far as possible and practicable.
7. All agents, representatives, officers, directors, employees and contractors and property of HONI located at any time on the Preferred Route shall be at the sole risk of HONI and the Grantor shall not be liable for any loss or damage or injury (including loss of life) to them or it however occurring except and to the extent to which such loss, damage or injury is caused by the negligence or willful misconduct of the Grantor.
8. HONI agrees that it shall indemnify and save harmless the Grantor from and against all claims, demands, costs, damages, expenses and liabilities (collectively the “Costs”) whatsoever arising out of HONI’s presence on the Preferred Route or of its activities on or in connection with the Preferred Route arising out of the permission granted herein except to the extent any of such Costs arise out of or are contributed to by the negligence or willful misconduct by the Grantor.
9. Notices to be given to either party shall be in writing, personally delivered or sent by registered mail (except during a postal disruption or threatened postal disruption), telegram, electronic facsimile to the applicable address set forth below (or to such other address as such party may from time to time designate in such manner):

TO HONI:

Hydro One Networks Inc.
Real Estate Services
1800 Main Street East
Milton, Ontario L9T 7S3

Attention: Real Estate Acquisitions
Tel: 905-875-2508
Fax: 905-878-8356

TO GRANTOR:

Name:
Address:

Attention:
Tel:

Notices personally delivered shall be deemed to have been validly and effectively given on the day of such delivery. Any notice sent by registered mail shall be deemed to have been validly and effectively given on the fifth (5th) business day following the date on which it was sent. Any notice sent by telegram, electronic facsimile or shall be deemed to have been validly and effectively given on the

Business Day next following the day on which it was sent. “Business Day” shall mean any day which is not a Saturday or Sunday or a statutory holiday in the Province of Ontario.

- 10.** This Agreement shall be governed by and construed in accordance with the laws of the Province of Ontario and the laws of Canada applicable herein. The parties hereto submit themselves to the exclusive jurisdiction of the Courts of the Province of Ontario.
- 11.** Any amendments, modifications or supplements to this Agreement or any part thereof shall not be valid or binding unless set out in writing and executed by the parties with the same degree of formality as the execution of this Agreement.
- 12.** The burden and benefit of this Agreement shall run with the Lands and everything herein contained shall operate to the benefit of, and be binding upon, the respective heirs; successors, permitted assigns and other legal representatives, as the case may be, or each of the Parties hereto.

IN WITNESS WHEREOF the parties hereto have caused this Agreement to be executed by their duly authorized representatives as of the day and year first above written.

SIGNED, SEALED AND DELIVERED

In the presence of

)
)
)
)
)
)

(seal)

Print Name of Witness

[INSERT NAME]

HYDRO ONE NETWORKS INC.

Per:

Name:

Title:

I have authority to bind the Corporation

SCHEDULE “A”

PROPERTY SKETCH

Conceptual sketch only.

[INSERT PROPERTY MAP]

OPTION AGREEMENT - EASEMENT

THIS OPTION AGREEMENT made as of the _____ day of _____, 20__
(the “**Agreement Date**”).

B E T W E E N:

«OWNER_1_NAME_FOR_LETTERS» & «OWNER_2_NAME_FOR_LETTERS» &
«OWNER_3_NAME_FOR_LETTERS»

(hereinafter collectively called the “**Owner**”)

OF THE FIRST PART

- and -

HYDRO ONE NETWORKS INC.

(hereinafter called “**Hydro One**”)

OF THE SECOND PART

- and -

SPOUSE NAME

(hereinafter collectively called the “**Spouse**”) This section is only filled if
the spouse is not on title

OF THE THIRD PART

RECITALS:

- A. The Owner is the owner of the lands and premises described in Schedule “A” (the “**Lands**”);
- B. The Owner has agreed to grant to Hydro One for the consideration and on the terms and conditions set out herein and attached hereto as Schedule “B” (the “**Standard Terms and Conditions**”) an option to purchase a right-of-way and easement in, on, over, under, across and through (the “**Easement**”) that portion of the Lands described and shown on Schedule “A-1” attached hereto (the “**Easement Lands**”), the terms of which are more particularly set out in the Transfer and Grant of Easement (the “**Easement Agreement**”) attached hereto as Schedule “C”.
- C. Hydro One has entered into an agreement with the Owner having a date the same as this Option Agreement (the “**Compensation and Incentive Agreement**”) whereby Hydro One has offered to compensate the Owner for injurious affection damages in accordance with the terms and conditions contained therein.

NOW THEREFORE, the parties hereby agree as follows:

1. **GRANT OF OPTION**

In consideration of the sum of **XXXXX (\$XXXXX)** of lawful money of Canada paid by Hydro One to the Owner, the receipt and sufficiency of which is hereby acknowledged by the Owner, (the “**Option Payment**”) the Owner hereby grants to Hydro One an irrevocable option (the “**Option**”), to purchase the Easement upon and subject to the terms and conditions set out herein, the Standard Terms and Conditions and the Schedules hereto.

2. **PURCHASE PRICE**

In accordance with the terms and conditions set out herein, the Standard Terms and Conditions and the Schedules hereto, Hydro One agrees to pay to or to the order of the Owner the amount of **XXXX Dollars (\$ ●)** for the Easement Lands (the “**Purchase Price**”) on the Closing Date.

IN WITNESS WHEREOF the parties hereto have duly executed this Option Agreement as of the Agreement Date.

WITNESS:

OWNER:

<hr/>	<hr/>
Name: «Real_Estate_Representative»	Name: «Owner_1_name_for_letters»
Address: 1800 Main Street East	
Milton, ON L9T 7S3	

<hr/>	<hr/>
Name: «Real_Estate_Representative»	Name: «Owner_2_name_for_letters»
Address: 1800 Main Street East	
Milton, ON L9T 7S3	

<hr/>	<hr/>
Name: «Real_Estate_Representative»	Name: «Owner_3_name_for_letters»
Address: 1800 Main Street East	
Milton, ON L9T 7S3	

WITNESS:

The spouse of the Owner hereby consents to this Agreement

SPOUSE OF OWNER:

<hr/>	<hr/>
Name: Real Estate Representative	Name: Property Owner Spouse Name
Address: 1800 Main Street East	
Milton, ON L9T 7S3	

HYDRO ONE NETWORKS INC.

HYDRO ONE
HST 870865821RT0001

Per: _____
Name:
Title:

I have authority to bind the Corporation

**SCHEDULE “A”
LEGAL DESCRIPTION**

«LEGAL_DESCRIPTION»

**SCHEDULE “A-1”
EASEMENT LANDS**

Legal description to be determined by deposited Reference Plan; Easement Lands shown outlined in green.

****NOTE – Sketch shall be replaced by servient lands description once applicable Reference Plan is deposited.**

Screenshot of ortho map with tower placements here

**SCHEDULE “B”
STANDARD TERMS AND CONDITIONS**

1. EXERCISE OF OPTION

The Option shall be open for exercise at any time from the Agreement Date until the 2nd anniversary of the Agreement Date, as same may have been extended in accordance with the terms hereof, (the “**Option Term**”), by providing written notice to the Owner (the “**Exercise Notice**”), after which time, subject to Section 2, this Option Agreement shall be null and void and no longer binding upon either of the parties. If the Option is exercised within the Option Term, then this Option Agreement shall become a binding agreement for the purchase and sale of the Easement and this Option Agreement shall be completed on the terms set out herein.

2. EXTENSION OF OPTION TERM

At any time during the Option Term, Hydro One may, by written notice delivered to the Owner prior to the expiration of the Option Term, as same may have been extended, extend the Option Term with respect to the Lands for one (1) additional period of one (1) year, provided that upon such election, Hydro One pays to the Owner the amount of \$XXXXX in consideration for the extension of the Option Term.

3. PURCHASE PRICE

(a) Hydro One shall pay the Purchase Price to or to the order of the Owner by way of a single payment by uncertified cheque or electronic funds transfer on the Closing Date (as hereinafter defined).

(b) The Owner acknowledges receipt of an appraisal report commissioned by Hydro One and, prepared by an external, independent appraiser with the Accredited Appraiser Canadian Institute (“AACI”) designation, (the “**HONI Appraisal**”).

(c) The parties acknowledge that the Purchase Price is based on a purchase price per acre as set out in Schedule “B” of the Compensation and Incentive Agreement and the actual area of the Easement Lands shall be confirmed by a survey to be prepared by Hydro One in accordance with section 9 herein, and in the event the surveyed area of the Easement Lands is greater than as provided for in Schedule “B” of the Compensation and Incentive Agreement, and Purchase Price shall be adjusted accordingly.

4. CLOSING

The transaction of purchase and sale contemplated by this Option Agreement shall, subject to resolution of any title issues identified by Hydro One, be completed on the date that is ninety (90) days after Hydro One delivers the Exercise Notice to the Owner or on such earlier date as Hydro One, through its solicitors, may elect (the “**Closing Date**”). If the Closing Date is a date on which the Land Registry Office (the “**Land Registry Office**”) in which the Lands are registered is closed, the Closing Date shall be on the next following day when such Land Registry Office is open. In the event that there is a delay in the completion of the transaction beyond the Closing Date as established by Hydro One upon delivery of the Exercise Notice that arises through no fault of Hydro One, then Hydro One shall not be responsible for any resulting delay in the Closing Date.

5. ACKNOWLEDGEMENT AND DIRECTION

The Owner and, if applicable, the Spouse, acknowledges and agrees that execution of the Option Agreement shall constitute execution of the Acknowledgement and Direction attached as Schedule “D” to the Option Agreement (the “**Acknowledgement and Direction**”) authorizing Hydro One and its solicitors to register the Option and subsequent Easement on title to the Lands. Hydro One covenants and agrees to hold the Acknowledgement and Direction in escrow until Hydro One has paid the Purchase Price at which time the executed Acknowledgement and Direction and Option shall be released from escrow and may be acted upon by Hydro One.

6. REGISTRATION OF EASEMENT

The Owner acknowledges and agrees that Hydro One will register the Easement on title to the Lands on the Closing Date pursuant hereto and the Acknowledgement and Direction. Hydro

One will provide notice to the Owner within a reasonable period of time after the Closing Date of the registration particulars of the Easement.

7. **RIGHT TO TRANSFER**

The Owner covenants and agrees with Hydro One that it has the right to grant the Easement without restriction and that Hydro One will quietly possess and enjoy the Easement Lands.

8. **INSPECTION PERIOD AND EARLY ACCESS PERIOD**

(a) The Owner agrees and consents to Hydro One, its respective officers, employees, agents, contractors, sub-contractors, surveyors, workers and permittees or any of them entering on, exiting and passing and repassing in, on, over, along, upon, across, through and under the Easement Lands and so much of the Lands as may be reasonably necessary at all reasonable times from the Agreement Date until the later of the expiration of the Option Term (as same may be extended) and the Closing Date, with or without all plant, machinery, material, supplies, vehicles, and equipment, for all purposes necessary or convenient to conduct such inspections, tests, audits, reports as Hydro One sees fit in connection with the acquisition, exercise or enjoyment of the Easement. Hydro One shall restore the Lands to their prior condition so far as reasonably possible following such inspections, tests, audits and reports.

(b) The Owner agrees and consents to Hydro One, its respective officers, employees, agents, contractors, sub-contractors, surveyors, workers and permittees or any of them entering on, exiting and passing and repassing in, on, over, along, upon, across, through and under the Easement Lands and so much of the Lands as may be as reasonably necessary at all reasonable times from date Hydro One delivers the Exercise Notice to commence construction activities on the Easement Lands. Hydro One shall restore the Lands to their prior condition so far as reasonably possible in the event that the purchase transaction contemplated by this Option Agreement is not completed as contemplated herein.

9. **SURVEY/REFERENCE PLAN**

Hydro One agrees to obtain and register, at its sole expense, any new Reference Plan with respect to the Easement Lands that may be required by Hydro One for completion of this Option Agreement.

10. **INCOME TAX ACT**

The Owner represents and warrants and covenants that the Owner is not now and on Closing will not be a non-resident of Canada within the meaning of the *Income Tax Act (Canada)*.

11. **HARMONIZED SALES TAX**

The Owner and Hydro One acknowledge and agree that the grant of easement which is proposed under this Option Agreement constitutes a purchase and sale transaction of an interest in real property, and therefore, in conformance with subsections 221(2) and 228(4) of the *Excise Tax Act* R.S.C. 1985, c E-15, as amended (“the Act”), Hydro One shall report and pay to the Receiver General for Canada the Harmonized Sales Tax (“HST”) applicable to the purchase and sale of the Easement. For the purposes of this section 11, Hydro One shall warrants that it is an HST registrant in good standing under the Act, that its HST registration number is 870865821RT0001, and that it is acquiring the Easement for use primarily in the course of its commercial activities.

12. **NOTICE OF OPTION**

Hydro One may, in its sole discretion and at its sole expense register this Option Agreement or notice thereof on title to the Lands.

13. **NO OTHER RIGHTS**

The Owner covenants and agrees with Hydro One that the Owner shall not grant, create or transfer any easement, right, covenant, restriction, privilege, permission, or other agreement in, through, under, over or in respect of the Easement Lands prior to the registration of the Easement without the prior written consent of Hydro One.

14. **PRIOR ENCUMBRANCES**

The Owner hereby grants Hydro One permission, should Hydro One elect in its sole discretion, to approach any encumbrancer having an interest in the Easement Lands in priority to the Easement Agreement and to obtain (in registrable form) and register all necessary consents, postponements or subordinations from all current and future encumbrancers having an interest in the Easement Lands in priority to the Easement Agreement or this Option Agreement consenting, postponing or subordinating such encumbrance and their respective rights, title and interest to the Easement and this Option Agreement or to place the Easement Agreement and this Option Agreement in first priority on title to the Easement Lands.

15. **TIME OF ESSENCE**

Time shall in all respects be of the essence hereof; provided, however, that the time for doing or completing any matter provided for herein may be extended or abridged by an agreement in writing between the parties or their respective counsel.

16. **NOTICES**

Notices to be given to either party shall be in writing, and will be sent via electronic mail (“email”), personally delivered or sent by registered mail (except during a postal disruption or threatened postal disruption), telegram, electronic facsimile or other similar means of prepaid recorded communication to the applicable address set forth below (or to such other address as such party may from time to time designate in such manner):

HYDRO ONE:	with a copy to its solicitors,
Hydro One Networks Inc. Facilities and Real Estate P.O. Box 4300 Markham, Ontario L2R 5Z5	Barriston LLP 90 Mulcaster Street Barrie, ON L4M 4Y5
185 Clegg Road Markham, Ontario L3G 1B7	Attention: Jim McIntosh Fax: 705-721-4025
Attention:	
Fax: (905) 946-6242	

OWNER: with a copy to their solicitors,

«Owner_1_name_for_letters»	Solicitors Name
«Owner_2_name_for_letters»	Solicitors Address 1
«Owner_3_name_for_letters»	Solicitors Address 2
«STREET_NUM» «STREET_NAME1»	Solicitors Address 3
«MUNICIPALITY», «PROVINCE»	
«POSTAL_CODE»	
«SAP_Phone_Number»	
«SAP_email_address»	

Notices personally delivered shall be deemed to have been validly and effectively given on the day of such delivery. Any notice sent by registered mail shall be deemed to have been validly and effectively given on the fifth (5th) Business Day following the date on which it was sent. Any notice sent by email, telegram, electronic facsimile or other similar means of prepaid recorded communication shall be deemed to have been validly and effectively given on the Business Day next following the day on which it was sent. “Business Day” shall mean any day which is not a Saturday or Sunday or a statutory holiday in the Province of Ontario.

17. **ASSIGNMENT OF OPTION BY HYDRO ONE**

Hydro One shall have the right to assign all or any part of its interest in this Option Agreement and any or all rights, privileges and benefits accruing to Hydro One hereunder without the consent of the Owner prior to or on the Closing Date. Upon and to the extent of such assignment, this Option Agreement shall thenceforth be construed as if originally made with such assignee or assignees instead of Hydro One and Hydro One shall, to the extent of such

assignment, thereupon be relieved of all liabilities and obligations whatsoever arising out of this Option Agreement.

18. **SURVIVAL OF REPRESENTATIONS**

The parties hereto agree that any representations or covenants contained in this Option Agreement shall not merge on closing, but survive and continue in full force and effect thereafter, but only as to the accuracy of the representation or covenant as at the date of completion of this Option Agreement.

19. **ENTIRE AGREEMENT**

The parties acknowledge that there are no covenants, representations, warranties, agreements or conditions, express or implied, collateral or otherwise, forming part of or in any way affecting or relating to this Option Agreement save as expressly set out in this Option Agreement and that this Option Agreement and all Schedules hereto constitute the entire agreement between the parties and may not be modified except as expressly agreed between the Owner and Hydro One in writing.

20. **SEVERABILITY**

Any provision or provisions of this Option Agreement is declared illegal or unenforceable, it or they shall be considered separate and severable from the Option Agreement and the remaining provisions shall remain in force and be binding upon the parties hereto as though the said provision or provisions had never been included.

21. **GOVERNING LAW**

This Option Agreement shall be governed by and construed in accordance with the laws of the Province of Ontario.

22. **SUCCESSORS AND ASSIGNS**

This Option Agreement shall enure to the benefit of and be binding upon the parties hereto and their respective heirs, attorneys, guardians, estate trustees, executors, trustees, successors and permitted assigns.

23. **EXECUTION AND DELIVERY**

This Option Agreement may be executed in any number of counterparts, each of which is deemed to be an original and all of which taken together constitutes one agreement. To evidence the fact that it has executed this Option Agreement, a party may send a copy of its executed counterpart to all other parties by a delivery method set out in Section 16 herein (the "Transmission") and the signature transmitted by such Transmission is deemed to be its original signature for all purposes.

24. **PLANNING ACT**

This Option Agreement is subject to the express condition that it is to be effective only if the provisions of the *Planning Act*, R.S.O. 1990, c. P.13 and amendments thereto are complied with.

25. **FURTHER ASSURANCES**

The Owner covenants and agrees to execute if necessary, at no further cost or condition to Hydro One such other instruments, plans and documents as may reasonably be required by Hydro One to effect the registration of the Easement or notice of this Option Agreement on title to the Lands.

26. **SPOUSAL CONSENT**

The Owner represents that, except to the extent such consent has been obtained, spousal consent to this transaction is not necessary and on closing will not be necessary under the provisions of the *Family Law Act*, R.S.O. 1990, c. F.3.

27. **AGE**

The Owner represents that the Owner is at least 18 years of age.

**SCHEDULE “C”
TRANSFER AND GRANT OF EASEMENT**

«Owner 1 name for letters» & «Owner 2 name for letters» & «Owner 3 name for letters» (the “**Transferor**”) is the owner in fee simple and in possession of the certain lands legally described as «Legal_Description» (the “**Lands**”).

Hydro One Networks Inc. (the “**Transferee**”) has erected, or is about to erect, certain Works (as more particularly described in paragraph 1(a) hereof) in, through, under, over, across, along and upon the Lands.

1. The Transferor hereby grants and conveys to the Transferee, its successors and assigns the rights and easement, free from all encumbrances and restrictions, the following unobstructed rights, easements, rights-of-way, covenants, agreements and privileges in perpetuity (the “**Rights**”) in, through, under, over, across, along and upon that portion of the Lands of the Transferor described herein as ● and described as Part ● on Reference Plan ● hereto annexed (the “**Strip**”), for the following purposes:

- (a) To enter and lay down, install, construct, erect, maintain, open, inspect, add to, enlarge, alter, repair and keep in good condition, move, remove, replace, reinstall, reconstruct, relocate, supplement and operate and maintain at all times in, through, under, over, across, along and upon the Strip an electrical transmission systems and telecommunications systems consisting in both instances of pole structures, steel towers, anchors, guys and braces and all such aboveground or underground lines, wires, cables, telecommunications cables, grounding electrodes, conductors, apparatus, works, accessories, associated material and equipment, and appurtenances pertaining to or required by either such system (all or any of which are herein individually or collectively called the (“**Works**”)) as in the opinion of the Transferee are necessary or convenient thereto for use as required by Transferee in its undertaking from time to time, or a related business venture.
- (b) To enter on and selectively cut or prune, and to clear and keep clear, and remove all trees, branches, bush and shrubs and other obstructions and materials in, over or upon the Strip, and without limitation, to cut and remove all leaning or decayed trees located on the Lands whose proximity to the Works renders them liable to fall and come in contact with the Works or which may in any way interfere with the safe, efficient or serviceable operation of the Works or this easement by the Transferee.
- (c) To conduct all engineering, legal surveys, and make soil tests, soil compaction and environmental studies and audits in, under, on and over the Strip as the Transferee in its discretion considers requisite.
- (d) To erect, install, construct, maintain, repair and keep in good condition, move, remove, replace and use bridges and such gates in all fences which are now or may hereafter be on the Strip as the Transferee may from time to time consider necessary.
- (e) Except for fences and permitted paragraph 2(a) installations, to clear the Strip and keep it clear of all buildings, structures, erections, installations, or other obstructions of any nature (hereinafter collectively called the “**obstruction**”) whether above or below ground, including removal of any materials and equipment or plants and natural growth, which in the opinion of the Transferee, endanger its Works or any person or property or which may be likely to become a hazard to any Works of the Transferee or to any persons or property or which do or may in any way interfere with the safe, efficient or serviceable operation of the Works or this easement by the Transferee.
- (f) To enter on and exit by the Transferor’s access routes and to pass and repass at all times in, over, along, upon and across the Strip and so much of the Lands as is reasonably required, for the Transferee, its employees, agents, contractors, subcontractors, workmen and permittees with or without all plant machinery, material, supplies, vehicles and equipment for all purposes necessary or

convenient to the exercise and enjoyment of this easement, subject to compensation afterwards for any crop or other physical damage only to the Lands or permitted structures sustained by the Transferor caused by the exercise of this right of entry and passageway.

- (g) To remove, relocate and reconstruct the line on or under the Strip subject to payment by the Transferee of additional compensation for any damage caused thereby.

2. The Transferor agrees that:

- (a) It will not interfere with any Works established on or in the Strip and shall not, without the Transferee's consent in writing erect or cause to be erected or permit in, under or upon the Strip any obstruction or plant or permit any trees, bush, shrubs, plants or natural growth which does or may interfere with the Rights granted herein. The Transferor agrees it shall not, without the Transferee's consent in writing, change or permit the existing configuration, grade or elevation of the Strip to be changed and the Transferor further agrees that no excavation or opening or work which may disturb or interfere with the existing surface of the Strip shall be done or made unless consent therefore in writing has been obtained from Transferee, provided however, that the Transferor shall not be required to obtain such permission in case of emergency. Notwithstanding the foregoing, in cases where in the reasonable discretion of the Transferee, there is no danger or likelihood of danger to the Works of the Transferee or to any persons or property and the safe or serviceable operation of this easement by the Transferee is not interfered with, the Transferor may at its expense and with the prior written approval of the Transferee, construct and maintain roads, lanes walks, drains, sewers water pipes, oil and gas pipelines, fences (not to exceed 2 metres in height) and service cables on or under the Strip (the "Installation") or any portion thereof; provided that prior to commencing such Installation, the transferor shall give to the Transferee thirty (30) days notice in writing thereof to enable the Transferee to have a representative present to inspect the proposed Installation during the performance of such work, and provided further that Transferor comply with all instructions given by such representative and that all such work shall be done to the reasonable satisfaction of such representative. In the event of any unauthorised interference aforesaid or contravention of this paragraph, or if any authorised interference, obstruction or Installation is not maintained in accordance with the Transferee's instructions or in the Transferee's reasonable opinion, may subsequently interfere with the Rights granted herein, the Transferee may at the Transferor's expense, forthwith remove, relocate, clear or correct the offending interference, obstruction, Installation or contravention complained of from the Strip, without being liable for any damages cause thereby.
- (b) Notwithstanding any rule of law or equity, the Works installed by the Transferee shall at all times remain the property of the Transferee, notwithstanding that such Works are or may become annexed or affixed to the Strip and shall at anytime and from time to time be removable in whole or in part by the Transferee.
- (c) No other easement or permission will be transferred or granted and no encumbrances will be created over or in respect to the Strip, prior to the registration of a Transfer of this grant of Rights.
- (d) The Transferor will execute such further assurances of the Rights in respect of this grant of easement as may be requisite.
- (e) The Rights hereby granted:
 - (i) shall be of the same force and effect to all intents and purposes as a covenant running with the Strip.
 - (ii) is declared hereby to be appurtenant to and for the benefit of the Works and undertaking of the Transferee described in paragraph 1(a).

3. Provided that the lands are used for agricultural purposes, the Transferee hereby releases and forever discharges the Transferor from and against any and all action, causes of action, costs,

claims, demands, expenses and liability for upon or by reason of any damage to the Works (collectively the "Claims") which may arise from, be sustained, suffered or incurred in consequence of the Transferor using the lands for agricultural purposes save and except for any Claims resulting from or arising out of the Transferor's negligence or willful misconduct.

4. The Transferor agrees that the Transferee may, at the Transferee's sole discretion, obtain at the Transferee's sole cost and expense all necessary postponements and subordinations (in registrable form) from all current and future prior encumbrancers, postponing their respective rights, title and interests to the Transfer of Easement herein so as to place such Rights and easement in first priority on title to the Lands.

5. There are no representations, covenants, agreements, warranties and conditions in any way relating to the subject matter of this grant of Rights whether expressed or implied collateral or otherwise except those set forth herein.

6. No waiver of a breach or any of the covenants of this grant of Rights shall be construed to be a waiver of any succeeding breach of the same or any other covenant.

7. The burden and benefit of this transfer of Rights shall run with the Strip and the Works and undertaking of the Transferee and shall extend to, be binding upon and enure to the benefit of the parties hereto and their respective heirs, executors, administrators, successors and assigns.

SCHEDULE “D”
ACKNOWLEDGEMENT AND DIRECTION

TO: Hydro One Networks Inc. (“**Hydro One**”) and its solicitors, Barriston LLP

AND TO: Any and all designees of the above

RE: Option Agreement dated _____, 20____, (the “Option Agreement”) and the Transfer and Grant of Easement in substantially the form attached [**as Schedule “C” to the Option Agreement or hereto**] (the “Easement Agreement”)

This will confirm that:

- Hydro One and the Owner have reviewed the information set out in the Option Agreement and the draft document(s) attached to the Option Agreement, and that this information is accurate;
- You are authorized and directed to sign and register electronically on behalf of the undersigned the Option Agreement and the Easement Agreement as well as any other document(s) required to complete the transaction described above;
- You are authorized to amend the Option Agreement and the Easement Agreement as may be required to effect registration of such document including the insertion of a registerable legal description to describe the lands subject to the easement being granted pursuant to the Easement Agreement in the event one is not available at the time of execution of the Option Agreement; provided such amendments are non-material to the terms of the Option Agreement and the Easement Agreement and do not expand the description of the Easement Lands as described and/or illustrated in the Option Agreement in any material manner;
- The effect of the electronic documents described in this Acknowledgement and Direction has been fully explained to the Owner and Hydro One, and the Owner and Hydro One understand that each are parties to and bound by the terms and provisions of these electronic document(s) to the same extent as if each had signed these documents;
- You are directed to insert the names set forth in the signatory section of the Option Agreement as persons authorized (or other authorized signing officers of Hydro One) to act on behalf of Hydro One and the Owner, as applicable;
- The Owner acknowledges that Barriston LLP has not met with them nor been engaged by them, is not entering into a solicitor-client relationship with them and is not representing them solely or jointly with Hydro One for the purposes of the preparation, negotiation, completion or registration of the Option Agreement or the Easement Agreement. Barriston LLP will act in a limited capacity as agent for the undersigned for the purposes of registering the Option Agreement and the Easement Agreement; and
- Hydro One and the Owner are in fact the parties named in the electronic documents described in this Acknowledgement and Direction and each has not misrepresented the identity of same to you.

Dated _____, 20__.

WITNESS:

OWNER:

<hr/> <p>Name: «Real_Estate_Representative»</p> <p>Address: 1800 Main Street East Milton, ON L9T 7S3</p>	<hr/> <p style="text-align: right;">1/s</p> <p>Name: «Owner_1_name_for_letters»</p>
 <hr/> <p>Name: «Real_Estate_Representative»</p> <p>Address: 1800 Main Street East Milton, ON L9T 7S3</p>	 <hr/> <p style="text-align: right;">1/s</p> <p>Name: «Owner_2_name_for_letters»</p> <hr/>
 <hr/> <p>Name: «Real_Estate_Representative»</p> <p>Address: 1800 Main Street East Milton, ON L9T 7S3</p>	 <hr/> <p style="text-align: right;">1/s</p> <p>Name: «Owner_3_name_for_letters»</p>

WITNESS:

The spouse of the Owner hereby consents to this Acknowledgement and Direction

SPOUSE OF OWNER:

Name: Real Estate Representative
Address: 1800 Main Street East
Milton, ON L9T 7S3

l/s

Name: **Property Owner Spouse Name**

«OWNER_1_NAME_FOR_LETTERS»

Per:

Name:

Title:

We/I have authority to bind the Corporation

COMPENSATION AND INCENTIVE AGREEMENT - EASEMENT

THIS COMPENSATION AND INCENTIVE AGREEMENT made as of the _____ day of _____, 20____ (the “**Agreement Date**”).

B E T W E E N:

«OWNER 1 NAME FOR LETTERS» & «OWNER 2 NAME FOR LETTERS» & «OWNER 3 NAME FOR LETTERS»

(hereinafter **collectively** called the “**Owner**”)

OF THE FIRST PART

- and -

HYDRO ONE NETWORKS INC.

(hereinafter called “**Hydro One**”)

OF THE SECOND PART

- and -

SPOUSE NAME

(hereinafter **collectively** called the “**Spouse**”) **This section is only filled out if the spouse is not on title**

OF THE THIRD PART

RECITALS:

- A. The Owner is the owner of the lands and premises described in Schedule “A” attached hereto (the “**Lands**”).
- B. Hydro One desires to purchase a right of way and easement, in, on, over, under, across and through that portion of the Lands, as more particularly described in an Option Agreement between the parties hereto and having a date the same as this Compensation and Incentive Agreement (the “**Option Agreement**”) (the “**Easement Lands**”), upon the terms and conditions set out in the Option Agreement (the “**Easement**”).
- C. Hydro One has offered to pay the Option Payment to the Owner upon execution of the Option Agreement and upon closing to purchase the Easement from the Owner for the Purchase Price.
- D. Hydro One has offered, on the terms and conditions set out herein, to compensate the Owner for injurious affection damages, if applicable (the “**IA Compensation**”) in respect of that portion of the Lands which are not part of the Easement Lands. Such injurious affection damages are calculated as shown on the calculation sheet attached hereto as Schedule “B” (the “**Calculation Sheet**”).
- E. To achieve a timely resolution of its land acquisition arrangements, Hydro One has also offered to pay certain incentives to the Owner on the terms and conditions set out in this Compensation and Incentive Agreement and as shown on the Calculation Sheet.
- F. Any capitalized terms not defined in this Compensation and Incentive Agreement shall have the meaning ascribed to them in the Option Agreement.

NOW THEREFORE, the parties agree as follows:

1. VALUATION

- (a) Hydro One has retained an external, independent AACI designated appraiser to determine the fair market value of the Easement Lands and any applicable amount of IA Compensation, if any, as of October 1st, 2021 and to prepare a report in respect thereof (the “**HONI Appraisal**”). The Owner acknowledges receiving a copy of the HONI Appraisal, and agrees to accept the amounts set out in the HONI Appraisal as a fair evaluation of the market value of the Owner’s fee simple interest in the Easement Lands as of the date of the HONI Appraisal.
- (b) In recognition of a dynamic real estate market and that the effective date of HONI’s appraised values in the HONI Appraisal are only relevant for a limited period of time, Hydro One shall provide a market value top-up where the passage of time between the effective date of the HONI Appraisal and the date Hydro One receives project approval pursuant to section 92 of the *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15, Sched. B. (the “Section 92 Approval”) warrants such top-up (the “Top-Up”).

Provided that the Owner and Hydro One have entered into an Option Agreement prior to Hydro One receiving the Section 92 Approval, the Owner shall be entitled to the Top-Up, if applicable. The amount of the Top-Up is the difference between the HONI Appraisal, and the market value as of the date of the Section 92 Approval (if such market value is greater than the amount in the HONI Appraisal), adjusted for time only (change in market conditions) and based on an independent land rate study considering this singular factor. The land rate study will be prepared by an independent third party appraiser with an Accredited Appraiser Canadian Institute designation from the Appraisal Institute of Canada.

The Top-Up amounts will be paid by Hydro One to the Owner by adding the applicable amounts to the Purchase Price, Premium Above Fair Market Value, and the IA Compensation, if applicable.

- (c) The actual area of the Easement Lands will be confirmed by a survey to be prepared by Hydro One and in the event the surveyed area of the Easement Lands is greater than as provided for in the Calculation Sheet, the Purchase Price, Premium Above Fair Market Value, and the IA compensation, if applicable will be adjusted accordingly.

2. INCENTIVE PAYMENTS

- (a) Upon execution of the Option Agreement and this Compensation and Incentive Agreement by all parties thereto, Hydro One shall pay to or to the order of the Owner the Option Payment in the amount of **XXXXXX (\$XXXXX)** as set out on the Calculation Sheet.
- (b) On the Closing Date, Hydro One shall make a further incentive payment to or to the order of the Owner in the amount of **XXXXXX (\$XX)**, (the “**Acceptance of the Hydro One Offer**”) as set out on the Calculation Sheet.
- (c) On the Closing Date, Hydro One shall make a further incentive payment to or to the order of the Owner in the amount of **XXXXXX (\$XX)**, (the “**Premium Above Fair Market Value**”) such amount being equal to XX% of the appraised fair market value of the Owner’s fee simple interest in the Easement Lands as set out on the Calculation Sheet.
- (d) On the Closing Date, Hydro One shall make a further incentive payment to or to the order of the Owner in the amount of **XXXXXX (\$XX)**, (the “**Woodlot Compensation**”) as set out on the Calculation Sheet.

3. WAIVER

The Owner waives the right to be reimbursed by Hydro One for the reasonable costs the Owner incurs for a third party independent appraisal report and/or legal review of the HONI Appraisal, the Option Agreement and this Compensation and Incentive Agreement, up to the amount of

Seven Thousand Five Hundred Dollars (\$7,500.00) and hereby accepts the Acceptance of the Hydro One Offer as defined in 2(b) above.

4. **IA COMPENSATION**

Hydro One agrees to pay to or to the order of the Owner on the Closing Date the IA Compensation, if applicable, in the amount of **XXXXXX (\$XX)** as set out on the Calculation Sheet.

5. **CONVEYANCING**

Hydro One agrees to reimburse the Owner for reasonably incurred legal fees, if any, associated with the review of applicable conveyancing documents.

6. **TENANTS**

The Owner agrees to indemnify and save harmless Hydro One from all actions, suits, costs, losses, charges, demands, claims and expenses for and in respect of any claims any person having a possessory interest in the Easement Lands.

7. **NOTICES**

Notices to be given to either party shall be in writing, and will be sent via electronic mail (“email”), personally delivered or sent by registered mail (except during a postal disruption or threatened postal disruption), telegram, electronic facsimile or other similar means of prepaid recorded communication to the applicable address set forth below (or to such other address as such party may from time to time designate in such manner):

HYDRO ONE:	with a copy to its solicitors,
Hydro One Networks Inc. Facilities and Real Estate P.O. Box 4300 Markham, Ontario L2R 5Z5	Barriston LLP 90 Mulcaster Street Barrie, ON L4M 4Y5
185 Clegg Road Markham, Ontario L3G 1B7	Attention: Jim McIntosh Fax: 705-721-4025
Attention:	
Fax: (905) 946-6242	

OWNER:	with a copy to their solicitors,
«Owner_1_name_for_letters» & «Owner_2_name_for_letters» & «Owner_3_name_for_letters» «STREET_NUM» «STREET_NAME1» «MUNICIPALITY», «PROVINCE» «POSTAL_CODE»	Solicitors Name Solicitors Address 1 Solicitors Address 2 Solicitors Address 3
«SAP_Phone_Number» «SAP_email_address»	

Notices personally delivered shall be deemed to have been validly and effectively given on the day of such delivery. Any notice sent by registered mail shall be deemed to have been validly and effectively given on the fifth (5th) business day following the date on which it was sent. Any notice sent by telegram, email, electronic facsimile or other similar means of prepaid recorded communication shall be deemed to have been validly and effectively given on the Business Day next following the day on which it was sent. “Business Day” shall mean any day which is not a Saturday or Sunday or a statutory holiday in the Province of Ontario.

8. **ASSIGNMENT OF AGREEMENT BY OWNER**

The Owner shall not assign all or any part of its interest in this Compensation and Incentive Agreement or any of the rights, privileges and benefits accruing to the Owner hereunder without the consent of the Hydro One, which consent may not be unreasonably withheld or delayed.

Upon and to the extent of such assignment, this Compensation and Incentive Agreement shall thenceforth be construed as if originally made with such assignee or assignees instead of the Owner and the Owner shall, to the extent of such assignment, thereupon be relieved of all liabilities and obligations whatsoever arising out of this Compensation and Incentive Agreement.

The Owner and, if applicable, the Spouse, each covenant and agree that if they transfer, assign, charge, lease or otherwise dispose of all or any part of their interest in the Lands (collectively, a “**Transfer**”) they will obtain an agreement from such Transferee assuming and agreeing to be bound by all of the terms of this Compensation and Incentive Agreement as if the Transferee had been an original signatory to this Compensation and Incentive Agreement.

9. NOTICE OF AGREEMENT

Hydro One may, in its sole discretion and at its sole expense register this Compensation and Incentive Agreement or notice thereof on title to the Lands.

10. NO MERGER

The parties hereto agree that any representations or covenants contained in this Compensation and Incentive Agreement shall not merge on closing, but survive and continue in full force and effect thereafter, but only as to the accuracy of the representation or covenant as at the date of completion of this Compensation and Incentive Agreement.

11. ENTIRE AGREEMENT

The parties hereto acknowledge that there are no covenants, representations, warranties, agreements or conditions, express or implied, collateral or otherwise, forming part of or in any way affecting or relating to this Compensation and Incentive Agreement save as expressly set out in this Compensation and Incentive Agreement and that this Compensation and Incentive Agreement and all Schedules hereto constitute the entire agreement between the parties and may not be modified except as expressly agreed between the parties in writing.

12. SEVERABILITY

Any provision or provisions of this Compensation and Incentive Agreement is declared illegal or unenforceable, it or they shall be considered separate and severable from this Compensation and Incentive Agreement and the remaining provisions shall remain in force and be binding upon the parties hereto as though the said provision or provisions had never been included.

13. GOVERNING LAW

This Compensation and Incentive Agreement shall be governed by and construed in accordance with the laws of the Province of Ontario.

14. SPOUSAL CONSENT

The Owner represents that, except to the extent such consent has been obtained, spousal consent to this transaction is not necessary under the provision of the *Family Law Act*, R.S.O. 1990, c. F.3.

15. SUCCESSORS AND ASSIGNS

This Compensation and Incentive Agreement shall enure to the benefit of and be binding upon the parties hereto and their respective heirs, attorneys, guardians, estate trustees, executors, trustees, successors and permitted assigns.

16. EXECUTION AND DELIVERY

This Compensation and Incentive Agreement may be executed in any number of counterparts, each of which is deemed to be an original and all of which taken together constitutes one agreement. To evidence the fact that it has executed this Compensation and Incentive Agreement, a party may send a copy of its executed counterpart to all other parties by a delivery method set out in Section 7 herein (the “**Transmission**”) and the signature transmitted by such Transmission is deemed to be its original signature for all purposes.

17. FURTHER ASSURANCES

The parties hereto agree to do, make and execute, if necessary, at no further cost or condition to the other except payment of reasonable out-of-pocket costs, such other instruments, plans, documents, acts, matters and things and take such further action as may reasonably be required

by the other party in order to effectively carry out the true intent of this Compensation and Incentive Agreement.

18. AGE

The Owner represents that the Owner is at least 18 years of age.

IN WITNESS WHEREOF the parties hereto have duly executed this Compensation and Incentive Agreement as of the Agreement Date.

WITNESS:

OWNER:

Name: «Real_Estate_Representative»

Address: 1800 Main Street East
Milton, ON L9T 7S3

Name: «Owner_1_name_for_letters»
1/s

Name: «Real_Estate_Representative»

Address: 1800 Main Street East
Milton, ON L9T 7S3

Name: «Owner_2_name_for_letters»
1/s

Name: «Real_Estate_Representative»

Address: 1800 Main Street East
Milton, ON L9T 7S3

Name: «Owner_3_name_for_letters»
1/s

WITNESS:

The spouse of the Owner hereby consents to this Compensation and Incentive Agreement

SPOUSE OF OWNER:

Name: «Real_Estate_Representative»

Address: 1800 Main Street East
Milton, ON L9T 7S3

Name: **Property Owner Spouse Name**
1/s

HYDRO ONE
HST 870865821RT0001

HYDRO ONE NETWORKS INC.

Per: _____
Name:
Title:

I have authority to bind the Corporation

SCHEDULE “A”
LANDS

«LEGAL_DESCRIPTION»

SCHEDULE “B”
CALCULATION SHEET

OPTION AGREEMENT - FEE SIMPLE CORRIDOR

THIS OPTION AGREEMENT made as of the _____ day of _____, 202____
(the “**Agreement Date**”).

B E T W E E N:

«OWNER_1_NAME_FOR_LETTERS» & «OWNER_2_NAME_FOR_LETTERS» &
«OWNER_3_NAME_FOR_LETTERS»

(hereinafter collectively called the “**Owner**”)

OF THE FIRST PART

- and -

HYDRO ONE NETWORKS INC.

(hereinafter called “**Hydro One**”)

OF THE SECOND PART

- and -

SPOUSE NAME

(hereinafter collectively called the “**Spouse**”) This section is only filled if
the spouse is not on title

OF THE THIRD PART

RECITALS:

- A. The Owner is the owner of the lands and premises described in Schedule “A” attached hereto (the “**Lands**”);
- B. The Owner has agreed to grant to Hydro One for the consideration and on the terms and conditions set out herein and attached hereto as Schedule “B” (the “**Standard Terms and Conditions**”) an option to purchase that portion of the Lands described on Schedule “A-1” attached hereto (the “**Corridor Lands**”) on the terms and conditions set out herein and attached hereto as Schedule “C” (the “**Agreement of Purchase and Sale**”).
- C. Hydro One has entered into an agreement with the Owner having a date the same as this Option Agreement (the “**Compensation and Incentive Agreement**”) whereby Hydro One has offered to compensate the Owner for injurious affection damages in accordance with the terms and conditions contained therein.

NOW THEREFORE, the parties hereby agree as follows:

1. GRANT OF OPTION

In consideration of the sum of **XXX (\$XXX)** of lawful money of Canada paid by Hydro One to the Owner, the receipt and sufficiency of which is hereby acknowledged by the Owner, (the “**Option Payment**”) the Owner hereby grants to Hydro One the an irrevocable option (the “**Option**”), to purchase the Owner’s fee simple interest in the Corridor Lands upon and subject to the terms and conditions set out herein, the Standard Terms and Conditions and the Schedules hereto.

2. PURCHASE PRICE

In accordance with the terms and conditions set out herein, the Standard Terms and Conditions and the Schedules hereto, Hydro One agrees to pay to or to the order of the Owner the amount of **XXXX Dollars (\$ ●)** for the Corridor Lands (the “**Purchase Price**”) on the Closing Date.

IN WITNESS WHEREOF the parties hereto have duly executed this Option Agreement as of the Agreement Date.

WITNESS:

OWNER:

Name: «Real_Estate_Representative»

Address: 1800 Main Street East
Milton, ON L9T 7S3

Name: «Owner_1_name_for_letters»
1/s

Name: «Real_Estate_Representative»

Address: 1800 Main Street East
Milton, ON L9T 7S3

Name: «Owner_2_name_for_letters»
1/s

Name: «Real_Estate_Representative»

Address: 1800 Main Street East
Milton, ON L9T 7S3

Name: «Owner_3_name_for_letters»
1/s

WITNESS:

The spouse of the Owner hereby consents to this Agreement

SPOUSE OF OWNER:

Name: Real Estate Representative

Address: 1800 Main Street East
Milton, ON L9T 7S3

Name: **Property Owner Spouse Name**
1/s

HYDRO ONE NETWORKS INC.

HYDRO ONE
HST 870865821RT0001

Per: _____
Name:
Title:

I have authority to bind the Corporation

**SCHEDULE “A”
LEGAL DESCRIPTION**

«LEGAL_DESCRIPTION»

**SCHEDULE “A-1”
CORRIDOR LANDS**

Legal description to be determined by deposited Reference Plan; Corridor Lands shown outlined in green.

****NOTE – Sketch shall be replaced by Corridor Lands description once applicable Reference Plan is deposited.**

Screenshot of ortho map with tower placements here

SCHEDULE “B” STANDARD TERMS AND CONDITIONS

1. EXERCISE OF OPTION

The Option shall be open for exercise at any time from the Agreement Date until the 2nd anniversary of the Agreement Date, as same may have been extended in accordance with the terms hereof, (the “**Option Term**”), by providing written notice to the Owner (the “**Exercise Notice**”), after which time, subject to Section 2, this Option Agreement shall be null and void and no longer binding upon either of the parties. If the Option is exercised within the Option Term, then this Option Agreement shall become a binding agreement for the purchase and sale of the Corridor Lands and this Option Agreement shall be completed on the terms set out herein.

2. EXTENSION OF OPTION TERM

At any time during the Option Term, Hydro One may, by written notice delivered to the Owner prior to the expiration of the Option Term, as same may have been extended, extend the Option Term with respect to the Lands for one (1) additional period of one (1) year, provided that upon such election, Hydro One pays to the Owner the amount of \$XXXXX in consideration for the extension of the Option Term.

3. PURCHASE PRICE

Hydro One shall pay the Purchase Price to or to the order of the Owner by way of a single payment by uncertified cheque or electronic funds transfer on the Closing Date (as hereinafter defined).

The Owner acknowledges receipt of an appraisal report commissioned by Hydro One and, prepared by an external, independent appraiser with the Accredited Appraiser Canadian Institute (“AACI”) designation, (the “**HONI Appraisal**”).

4. CLOSING

The transaction of purchase and sale contemplated by this Option Agreement and the Agreement of Purchase and Sale shall, subject to resolution of any title issues identified pursuant to Article 5 of the Agreement of Purchase and Sale, be completed on the date that is ninety (90) days after Hydro One delivers the Exercise Notice to the Owner or on such earlier date as Hydro One, through its solicitors, may elect (the “**Closing Date**”). If the Closing Date is a date on which the Land Registry Office (the “**Land Registry Office**”) in which the Lands are registered is closed, the Closing Date shall be on the next following day when such Land Registry Office is open. In the event that there is a delay in the completion of the transaction beyond the Closing Date as established by Hydro One upon delivery of the Exercise Notice that arises through no fault of Hydro One, then Hydro One shall not be responsible for any resulting delay in the Closing Date.

5. AGREEMENT OF PURCHASE AND SALE

The Owner and, if applicable, the Spouse, acknowledge and agree that execution of this Option Agreement shall constitute execution of the Agreement of Purchase and Sale attached as Schedule “C” to this Option Agreement.

6. RIGHT TO TRANSFER AND TITLE

The Owner covenants and agrees with Hydro One that it has good and marketable title to the Corridor Lands and has the full and exclusive power to convey the fee simple interest in the Corridor Lands to Hydro One free and clear of any financial encumbrances, and that Hydro One will quietly possess and enjoy the Corridor Lands.

7. INSPECTION PERIOD AND EARLY ACCESS PERIOD

- (a) The Owner agrees and consents to Hydro One, its respective officers, employees, agents, contractors, sub-contractors, surveyors, workers and permittees or any of them entering on, exiting and passing and repassing in, on, over, along, upon, across, through and under the Corridor Lands and so much of the Lands as may be reasonably necessary at all reasonable times from the Agreement Date until the later of the expiration of the Option Term (as same may be extended) and the Closing Date, with or without all plant,

machinery, material, supplies, vehicles, and equipment, for all purposes necessary or convenient to conduct such inspections, tests, audits, reports as Hydro One sees fit in connection with the acquisition, exercise or enjoyment of the Corridor Lands. Hydro One shall restore the Lands to their prior condition so far as reasonably possible following such inspections, tests, audits and reports.

- (b) The Owner agrees and consents to Hydro One, its respective officers, employees, agents, contractors, sub-contractors, surveyors, workers and permittees or any of them entering on, exiting and passing and repassing in, on, over, along, upon, across, through and under the Corridor Lands and so much of the Lands as may be reasonably necessary at all reasonable times from date Hydro One delivers the Exercise Notice to commence construction activities on the Corridor Lands. Hydro One shall restore the Lands to their prior condition so far as reasonably possible in the event that the purchase transaction contemplated by this Option Agreement is not completed as contemplated herein.

8. SURVEY/REFERENCE PLAN

Hydro One agrees to obtain and register, at its sole expense, any new Reference Plan with respect to the Corridor Lands that may be required by Hydro One for completion of this Option Agreement.

9. INCOME TAX ACT

The Owner represents and warrants and covenants that the Owner is not now and on Closing will not be a non-resident of Canada within the meaning of the *Income Tax Act (Canada)*.

10. HARMONIZED SALES TAX

The Owner and Hydro One acknowledge and agree that the transfer of the fee simple of the Corridor Lands which is proposed under this Option Agreement constitutes a purchase and sale transaction of an interest in real property, and therefore, in conformance with subsections 221(2) and 228(4) of the *Excise Tax Act* R.S.C. 1985, c E-15, as amended ("the Act"), Hydro One shall report and pay to the Receiver General for Canada the Harmonized Sales Tax ("HST") applicable to the purchase and sale of the Corridor Lands. For the purposes of this section 11, Hydro One shall warrants that it is an HST registrant in good standing under the Act, that its HST registration number is 870865821RT0001, and that it is acquiring the Corridor Lands for use primarily in the course of its commercial activities.

11. NOTICE OF OPTION

Hydro One may, in its sole discretion and at its sole expense register this Option Agreement or notice thereof on title to the Lands.

12. NO OTHER RIGHTS

The Owner covenants and agrees with Hydro One that the Owner shall not grant, create or transfer any easement, right, covenant, restriction, privilege, permission, or other agreement in, through, under, over or in respect of the Corridor Lands prior to the registration of the Closing of the transaction contemplated herein without the prior written consent of Hydro One.

13. PRIOR ENCUMBRANCES

The Owner hereby grants Hydro One permission, should Hydro One elect in its sole discretion, to approach any encumbrancer having an interest in the Corridor Lands in priority to the Option Agreement and to obtain (in registrable form) and register all necessary consents, postponements or subordinations from all current and future encumbrancers having an interest in the Corridor Lands in priority this Option Agreement consenting, postponing or subordinating such encumbrance and their respective rights, title and interest to the Corridor Lands and this Option Agreement or to place the this Option Agreement in first priority on title to the Corridor Lands.

14. TIME OF ESSENCE

Time shall in all respects be of the essence hereof; provided, however, that the time for doing or completing any matter provided for herein may be extended or abridged by an agreement in writing between the parties or their respective counsel.

15. NOTICES

Notices to be given to either party shall be in writing, and will be sent via electronic mail (“email”), personally delivered or sent by registered mail (except during a postal disruption or threatened postal disruption), telegram, electronic facsimile or other similar means of prepaid recorded communication to the applicable address set forth below (or to such other address as such party may from time to time designate in such manner):

HYDRO ONE:

with a copy to its solicitors,

Hydro One Networks Inc.
Facilities and Real Estate
P.O. Box 4300
Markham, Ontario
L2R 5Z5

Barriston LLP
90 Mulcaster Street
Barrie, ON L4M 4Y5

185 Clegg Road
Markham, Ontario
L3G 1B7

Attention: Jim McIntosh
Fax: (705)-721-4025

Attention:

Fax: (905) 946-6242

OWNER:

with a copy to their solicitors,

«Owner_1_name_for_letters»
«Owner_2_name_for_letters»
«Owner_3_name_for_letters»
«STREET_NUM» «STREET_NAME1»
«MUNICIPALITY», «PROVINCE»
«POSTAL_CODE»

Solicitors Name
Solicitors Address 1
Solicitors Address 2
Solicitors Address 3

«SAP_Phone_Number»
«SAP_email_address»

Notices personally delivered shall be deemed to have been validly and effectively given on the day of such delivery. Any notice sent by registered mail shall be deemed to have been validly and effectively given on the fifth (5th) Business Day following the date on which it was sent. Any notice sent by email, telegram, electronic facsimile or other similar means of prepaid recorded communication shall be deemed to have been validly and effectively given on the Business Day next following the day on which it was sent. “Business Day” shall mean any day which is not a Saturday or Sunday or a statutory holiday in the Province of Ontario.

16. ASSIGNMENT OF OPTION BY HYDRO ONE

Hydro One shall have the right to assign all or any part of its interest in this Option Agreement and any or all rights, privileges and benefits accruing to Hydro One hereunder without the consent of the Owner prior to or on the Closing Date. Upon and to the extent of such assignment, this Option Agreement shall thenceforth be construed as if originally made with such assignee or assignees instead of Hydro One and Hydro One shall, to the extent of such assignment, thereupon be relieved of all liabilities and obligations whatsoever arising out of this Option Agreement.

17. SURVIVAL OF REPRESENTATIONS

The parties hereto agree that any representations or covenants contained in this Option Agreement shall not merge on closing, but survive and continue in full force and effect thereafter, but only as to the accuracy of the representation or covenant as at the date of completion of this Option Agreement.

18. ENTIRE AGREEMENT

The parties acknowledge that there are no covenants, representations, warranties, agreements or conditions, express or implied, collateral or otherwise, forming part of or in any way affecting or relating to this Option Agreement save as expressly set out in this Option Agreement and that this Option Agreement and all Schedules hereto constitute the entire agreement between the parties and may not be modified except as expressly agreed between the Owner and Hydro One in writing.

19. SEVERABILITY

Any provision or provisions of this Option Agreement is declared illegal or unenforceable, it or they shall be considered separate and severable from the Option Agreement and the remaining provisions shall remain in force and be binding upon the parties hereto as though the said provision or provisions had never been included.

20. GOVERNING LAW

This Option Agreement shall be governed by and construed in accordance with the laws of the Province of Ontario.

21. SUCCESSORS AND ASSIGNS

This Option Agreement shall enure to the benefit of and be binding upon the parties hereto and their respective heirs, attorneys, guardians, estate trustees, executors, trustees, successors and permitted assigns.

22. EXECUTION AND DELIVERY

This Option Agreement may be executed in any number of counterparts, each of which is deemed to be an original and all of which taken together constitutes one agreement. To evidence the fact that it has executed this Option Agreement, a party may send a copy of its executed counterpart to all other parties by a delivery method set out in Section 15 herein (the "Transmission") and the signature transmitted by such Transmission is deemed to be its original signature for all purposes.

23. PLANNING ACT

This Option Agreement is subject to the express condition that it is to be effective only if the provisions of the *Planning Act*, R.S.O. 1990, c. P.13 and amendments thereto are complied with.

24. FURTHER ASSURANCES

The Owner covenants and agrees to execute if necessary, at no further cost or condition to Hydro One such other instruments, plans and documents as may reasonably be required by Hydro One to effect the registration of the transfer of the Corridor Lands or notice of this Option Agreement on title to the Lands.

25. SPOUSAL CONSENT

The Owner represents that, except to the extent such consent has been obtained, spousal consent to this transaction is not necessary and on closing will not be necessary under the provisions of the *Family Law Act*, R.S.O. 1990, c. F.3.

26. AGE

The Owner represents that the Owner is at least 18 years of age.

**SCHEDULE “C”
AGREEMENT OF PURCHASE AND SALE**

THIS AGREEMENT made as of the _____ day of _____, 20____ (the “**Agreement Date**”).

B E T W E E N:

**«OWNER_1_NAME_FOR_LETTERS» & «OWNER_2_NAME_FOR_LETTERS» &
«OWNER_3_NAME_FOR_LETTERS»**

(hereinafter **collectively** called the “**Owner**”)

OF THE FIRST PART

- and -

HYDRO ONE NETWORKS INC.

(hereinafter called “**Hydro One**”)

OF THE SECOND PART

- and -

SPOUSE NAME

(hereinafter **collectively** called the “**Spouse**”) **This section is only filled if
the spouse is not on title**

OF THE THIRD PART

WITNESSETH THAT in consideration of the mutual covenants, agreements and payments herein provided, the parties hereto covenant and agree as follows:

**ARTICLE 1
OFFER**

- 1.1** The Vendor, being the owner of the lands and premises more particularly described in Schedule “A” (the “**Lands**”) hereby agrees to sell to the Purchaser and the Purchaser agrees to purchase from the Vendor, on the terms and conditions set out in this Agreement, a portion of the Lands more particularly described on Schedule “A-1” attached hereto (the “**Property**”) upon and subject to the terms and conditions hereinafter set forth.
- 1.2** The Vendor acknowledges and understands that upon execution of this Agreement by the Vendor and the Purchaser there shall be a binding agreement of Purchase and Sale between the Purchaser and the Vendor.
- 1.3** Included in the Purchase Price is the purchase of all of the Vendor’s interest in all fixtures, improvements, and appurtenances located on the Property except those listed below which are expressly excluded:

NIL

**ARTICLE 2
PURCHASE PRICE**

- 2.1** (a) The total compensation to be paid by the Purchaser to the Vendor for the Property shall be the sum of «**TotalCompensationRounded**» Canadian Dollars, (the “**Total Compensation**”), subject to usual adjustments, if any, payable on Closing by uncertified cheque or electronic funds transfer on the Closing (as hereinafter defined).

(b) The Total Compensation is comprised as follows:

(i)	Purchase Price of the Property	\$XXXX
(ii)	IA Compensation	\$XXXX
(iii)	Option Payment	\$XXXX
(iv)	Acceptance of the Hydro One Offer	\$XXXX
(v)	Premium Above Fair Market Value	\$XXXX
(vi)	Allowance Payment	\$XXXX
(vii)	Access Agreement	\$XXXX
	TOTAL COMPENSATION	\$XXXX.00

- 2.2 The Vendor acknowledges receipt of an appraisal report and update, if any, prepared by an external, independent AACI accredited appraiser commissioned by the Purchaser.
- 2.3 The Purchaser agrees to obtain and register, at its sole expense, any new Reference Plan with respect to the Property that may be required by the Purchaser for completion of this Agreement of Purchase and Sale.
- 2.4 The calculation of the Total Compensation is shown on the calculation sheet attached hereto as Schedule “C” (the “**Calculation Sheet**”).

**ARTICLE 3
CLOSING**

- 3.1 The transaction of purchase and sale contemplated by this Agreement of Purchase and Sale shall, subject to resolution of any title issues identified pursuant to Article 5 of the Agreement of Purchase and Sale, be completed on the date that is ninety (90) days after Hydro One delivers the Exercise Notice to the Owner or on such earlier date as Hydro One, through its solicitors, may elect (the “**Closing Date**”). If the Closing Date is a date on which the Land Registry Office (the “**Land Registry Office**”) in which the Lands are registered is closed, the Closing Date shall be on the next following day when such Land Registry Office is open. In the event that there is a delay in the completion of the transaction beyond the Closing Date as established by Hydro One upon delivery of the Exercise Notice that arises through no fault of Hydro One, then Hydro One shall not be responsible for any resulting delay in the Closing Date.
- 3.2 On Closing,
- (a) Vacant possession of the Property shall be given to the Purchaser;
 - (b) The Purchaser shall pay the Total Compensation to the Vendor in accordance with section 2.1 of this Agreement;
 - (c) If applicable, rents, realty taxes, local improvement charges, water and unmetered utility charges and the cost of fuel as applicable shall be apportioned and allowed to the date of completion (the day itself to be apportioned to the Purchaser);
 - (d) In conformance with subsections 221(2) and 228(4) of the *Excise Tax Act* R.S.C. 1985, c E-15, as amended (“the Act”), Purchaser shall report and pay to the Receiver General, the Harmonized Sales Tax (“HST”) applicable to the purchase and sale of the Property. For the purposes of this clause 3.2(b), the Purchaser warrants that it is an HST registrant in good standing under the Act, that its HST registration number is 870865821RT0001, and that it is acquiring the Property for use primarily in the course of its commercial activities.

ARTICLE 4 INSPECTION PERIOD

- 4.1** The Purchaser shall be allowed thirty (30) days from the date of this Agreement (the "**Inspection Period**") to satisfy itself with respect to all matters respecting the Property including its present state of repair and condition and any structures thereon, all encumbrances and all regulations and by-laws governing the Property and the Vendor grants to the Purchaser the right to enter upon the Property and to conduct such inspections, surveys and tests as the Purchaser, acting reasonably, deems necessary in this regard, provided the Purchaser takes all reasonable care in the conduct of such inspections, surveys and tests and restores the Property to its prior condition so far as reasonably possible following such inspections and tests. The Vendor assumes no responsibility for and the Purchaser shall indemnify and save harmless the Vendor from and against all claims, demands, costs, damages, expenses and liabilities whatsoever arising out of its presence on the Property or of its activities on or in connection with the Property during the Inspection Period.
- 4.2** If for any reason, the Purchaser, acting reasonably, is not satisfied with respect to such matters arising from its activities in Section 4.1 herein, it may deliver a notice (the "**Notice of Termination**") to the Vendor prior to the expiry of the Inspection Period indicating that it is not satisfied with respect to such matters and desires to terminate this Agreement and release the Vendor from any further obligations. Upon delivery by the Purchaser of a Notice of Termination to the Vendor, and this Agreement shall be at an end and neither Party shall have any further obligation to the other respecting the Agreement.

ARTICLE 5 TITLE

- 5.1** The Purchaser shall be allowed thirty (30) days from the date of this Agreement to investigate title to the Property at its own expense (the "**Title Search Period**"), to satisfy itself that there are no outstanding encumbrances, or liens save and except those listed in Schedule "B" attached hereto and until the earlier of: (i) thirty (30) days from the later of the last date of the title search period or the date or which the conditions in this Agreement are fulfilled or otherwise waived or; (ii) five (5) days prior to completion, to satisfy itself that there are no outstanding work orders or deficiency notices affecting the property. Vendor hereby consents to the Municipality or other governmental agencies releasing to the Purchaser details of all outstanding work orders affecting the Property and the Vendor agrees to execute and deliver such further authorizations in this regard as Purchaser may reasonably require.
- 5.2** Provided that the title to the Property is good and free from all registered restrictions, charges, liens and encumbrances except those listed in Schedule "B" attached hereto, if within the Title Search Period, any valid objection to title is made by the Purchaser in writing to the Vendor together with documentary verification thereof, and which the Vendor shall be unwilling or unable to remove and which the Purchaser will not waive, this Agreement, notwithstanding any intermediate acts or negotiations in respect of such objections, shall be at an end and the Vendor shall not be liable for any costs or damages and the Vendor and the Purchaser shall be released from all obligations hereunder, and the Vendor shall also be released from all obligations under this Agreement, save and except those covenants of the Purchaser expressly stated to survive Closing or other termination of this Agreement. Save as to any valid objection to title made in accordance with this Agreement and within the Title Search Period, and except for any objection going to the root of title, Purchaser shall be conclusively deemed to have accepted Vendor's title to the Property.
- 5.3** The Vendor and Purchaser agree that there is no condition, express, or implied, representation or warranty of any kind that the future intended use of the Property by the Purchaser is or will be lawful except as may be specifically stipulated elsewhere in this Agreement.
- 5.4** The Vendor agrees to provide to the Purchaser any existing survey of the Property, within Fifteen (15) days from the date of this Agreement.

ARTICLE 6 PURCHASER'S INVESTIGATION RESULTS

- 6.1** Purchaser shall, at its own cost, forthwith make such investigation as the Purchaser deems appropriate of the Property and Vendor's title as provided for in this Agreement and shall notify the Vendor of any objection to title, together with a complete copy of any documents and other material information related thereto prior to the expiry of the Title Search Period.

ARTICLE 7 INSURANCE

- 7.1** The Vendor covenants and agrees that the Property and all structures or fixtures being purchased are insured, and that such insurance will remain in force until closing. The Property and all structures or fixtures being purchased shall be and remain at the risk of the Vendor until Closing.
- 7.2** Pending completion, Vendor shall hold all insurance policies and the proceeds thereof in trust for the parties as their interests may appear and in the event of substantial damage to the Property the Purchaser may either terminate this Agreement and have all monies paid by the Purchaser returned to the Purchaser without interest or deduction or else take the proceeds of any insurance and complete the purchase.

ARTICLE 8 PLANNING ACT

- 8.1** This Agreement is subject to the express condition that it is to be effective only if the subdivision control provisions of the *Planning Act* R.S.O. 1990, c. P.13 as amended (the "*Planning Act*") are complied with prior to Closing. The Vendor shall forthwith make any application to the local Committee of Adjustment or Land Division Committee for any consent that may be required pursuant to the *Planning Act*. In the event that any such application for consent is denied, or any condition imposed by such body is unacceptable to the Vendor, this Agreement shall be terminated.

ARTICLE 9 ADDITIONAL PROVISIONS

- 9.1** The Transfer/Deed of Land (the "**Transfer**"), and the Land Transfer Tax Affidavit, shall be prepared in registrable form by the Purchaser, and the Purchaser covenants at its cost to register the Transfer on Closing. If requested by Purchaser, Vendor covenants that the Transfer Deed to be delivered on completion shall contain the statements contemplated by s. 50(22) of the *Planning Act*.
- 9.2** Time shall in all respects be of the essence hereof provided that the time for doing or completing of any matter provided for herein may be extended or abridged by an agreement in writing signed by the Parties or by their respective solicitors who are specifically authorized in that regard.
- 9.3** Any tender of documents or money hereunder may be made upon the Parties or their respective solicitors on the day set for Closing. Money may be tendered by bank draft, uncertified cheque, or electronic funds transfer.
- 9.4** Notices to be given to either party shall be in writing, and will be sent via email, personally delivered or sent by registered mail (except during a postal disruption or threatened postal disruption), telegram, electronic facsimile or other similar means of prepaid recorded communication to the applicable address set forth below (or to such other address as such party may from time to time designate in such manner):

HYDRO ONE:

Hydro One Networks Inc.
Facilities and Real Estate
P.O. Box 4300
Markham, Ontario L2R 5Z5

185 Clegg Road
Markham, Ontario L3G 1B7

Attention:
Fax: (905) 946-6242

with a copy to its solicitors,

Barriston LLP
90 Mulcaster St
Barrie, ON L4M 4Y5

Attention: Jim McIntosh
Fax: (705) 721-4025

OWNER:

«Owner_1_name_for_letters»
«Owner_2_name_for_letters»
«Owner_3_name_for_letters»
«STREET_NUM» «STREET_NAME1»
«MUNICIPALITY», «PROVINCE»
«POSTAL_CODE»

«SAP_Phone_Number»
«SAP_email_address»

with a copy to their solicitors,

Solicitors Name
Solicitors Address 1
Solicitors Address 2
Solicitors Address 3

Notices personally delivered shall be deemed to have been validly and effectively given on the day of such delivery. Any notice sent by registered mail shall be deemed to have been validly and effectively given on the fifth (5th) business day following the date on which it was sent. Any notice sent by email, telegram, electronic facsimile or other similar means of prepaid recorded communication shall be deemed to have been validly and effectively given on the Business Day next following the day on which it was sent. “Business Day” shall mean any day which is not a Saturday or Sunday or a statutory holiday in the Province of Ontario.

- 9.5** The parties acknowledge that there are no covenants, representations, warranties, agreements or conditions, express or implied, collateral or otherwise, forming part of or in any way affecting or relating to this Agreement save as expressly set out in this Agreement and that this Agreement and all Schedules hereto constitute the entire agreement between the parties and may not be modified except as expressly agreed between the Vendor and Purchaser in writing. This Agreement shall be read with all changes of gender or number required by the context
- 9.6** If any provision or provisions of this Agreement be declared illegal or unenforceable, it or they shall be considered separate and severable from the Agreement and its remaining provisions shall remain in force and be binding upon the parties hereto as though the said provision or provisions had never been included.
- 9.7** No act or omission or delay in exercising any right or enforcing any term, covenant or agreement to be performed under this Agreement shall impair such right or be construed as to be a waiver of any default or acquiescence in such failure to perform, unless such waiver shall be given or acknowledged in writing.
- 9.8** This Agreement to Purchase shall be governed by and construed in accordance with the laws of the Province of Ontario.
- 9.9** This Agreement to Purchase shall enure to the benefit of and be binding upon the parties hereto and their respective heirs, attorneys, guardians, estate trustees, executors, trustees, successors and permitted assigns.
- 9.10** The Vendor warrants that, except to the extent such consent has been obtained, spousal consent is not necessary to this transaction and on Closing will not be necessary under the provision of the *Family Law Act*, R.S.O. 1990, c. F.3.

- 9.11** The Purchaser may, in its sole discretion and at its sole expense register this Agreement to Purchase or notice thereof on title to the Lands.
- 9.12** Where each of the Vendor and the Purchaser retain a solicitor to complete this Agreement and where the transaction contemplated herein will be completed by electronic registration pursuant to Part III of the *Land Registration Reform Act*, R.S.O. 1990, c. L.4 and any amendments thereto, the Vendor and the Purchaser acknowledge and agree that the delivery of documents and the release thereof to the Vendor and the Purchaser may, at the solicitor's discretion; (a) not occur contemporaneously with the registration of the Transfer/Deed of Land (and other registrable) documentation), and (b) be subject to conditions whereby the solicitor receiving documents and/or money will be required to hold them in trust and not release them except in accordance with the terms of a written agreement between the solicitors
- 9.13** The provisions of the attached Schedules "A", "A-1", "B" and "C" shall form part of this Agreement as if set out herein.
- 9.14** The Vendor represents and warrants and covenants that it is not now and on Closing will not be a non-resident of Canada within the meaning of the *Income Tax Act (Canada)*.
- 9.15** The Purchaser shall have the right to assign all or any part of its interest in this Agreement and any or all rights, privileges and benefits accruing to the Purchaser hereunder without the consent of the Vendor prior to or on the Closing. Upon and to the extent of such assignment, this Agreement shall thenceforth be construed as if originally made with such assignee or assignees instead of the Purchaser and the Purchaser shall, to the extent of such assignment, thereupon be relieved of all liabilities and obligations whatsoever arising out of this Agreement.
- 9.16** The parties hereto agree that any representations or covenants contained in this Agreement shall not merge on closing, but survive and continue in full force and effect thereafter, but only as to the accuracy of the representation or covenant as at the date of completion of this Agreement.
- 9.17** This Agreement may be executed in one or more counterparts, each of which shall be deemed an original and together shall constitute one and the same agreement. Counterparts may be executed either in original or by electronic means, including, without limitation, by facsimile transmission or by electronic delivery in portable document format (".pdf") or tagged image file format (".tif") and the parties shall adopt any signatures received by electronic means as original signatures of the Parties; provided, however that any party providing its signature in such manner shall promptly forward to the other party an original signed copy of this Agreement which was so delivered electronically.
- 9.18** The Vendor covenants and agrees to execute if necessary, at no further cost or condition to the Purchaser except payment of the Vendor's reasonable out-of-pocket costs, such other instruments, plans and documents as may reasonably be required by the Purchaser to effect the registration of any right or interest transferred hereunder or notice of this Agreement on title to the Lands.
- 9.19** The Purchaser agrees to pay the Vendor's reasonable legal costs in connection with this transaction.
- 9.20** The Vendor represents that the Vendor is at least 18 years of age.

IN WITNESS WHEREOF the parties hereto have duly executed this Agreement as of the Agreement Date.

WITNESS:

OWNER:

<hr/>	<hr/>
Name: «Real_Estate_Representative»	Name: «Owner_1_name_for_letters»
Address: 1800 Main Street East Milton, ON L9T 7S3	

<hr/>	<hr/>
Name: «Real_Estate_Representative»	Name: «Owner_2_name_for_letters»
Address: 1800 Main Street East Milton, ON L9T 7S3	

<hr/>	<hr/>
Name: «Real_Estate_Representative»	Name: «Owner_3_name_for_letters»
Address: 1800 Main Street East Milton, ON L9T 7S3	

WITNESS:

The spouse of the Owner hereby consents to this Agreement

SPOUSE OF OWNER:

<hr/>	<hr/>
Name: Real Estate Representative	Name: Property Owner Spouse Name
Address: 1800 Main Street East Milton, ON L9T 7S3	

HYDRO ONE NETWORKS INC.

HYDRO ONE
HST 870865821RT0001

Per:

Name:

Title:

I have authority to bind the Corporation

SCHEDULE “A”
LEGAL DESCRIPTION OF LANDS

«LEGAL_DESCRIPTION

**SCHEDULE “A-1”
LEGAL DESCRIPTION OF PROPERTY**

Legal description to be determined by deposited Reference Plan; Corridor Lands shown outlined in green.

****NOTE – Sketch shall be replaced by Corridor Lands description once applicable Reference Plan is deposited.**

Screenshot of ortho map with tower placements here

SCHEDULE “B”

PERMITTED ENCUMBRANCES

NIL

SCHEDULE “C”

CALCULATION SHEET

COMPENSATION AND INCENTIVE AGREEMENT – FEE SIMPLE

THIS COMPENSATION AND INCENTIVE AGREEMENT made as of the ____ day of _____, 20____ (the “**Agreement Date**”).

B E T W E E N:

**«OWNER 1 NAME FOR LETTERS» & «OWNER 2 NAME FOR LETTERS» &
«OWNER 3 NAME FOR LETTERS»**

(hereinafter **collectively** called the “**Owner**”)

OF THE FIRST PART

- and -

HYDRO ONE NETWORKS INC.

(hereinafter called “**Hydro One**”)

OF THE SECOND PART

- and -

SPOUSE NAME

(hereinafter **collectively** called the “**Spouse**”) **This section is only filled out if the spouse is not on title**

OF THE THIRD PART

RECITALS:

- A. The Owner is the Owner of the lands and premises described in Schedule “A” attached hereto (the “**Lands**”).
- B. Hydro One desires to purchase a portion of the Lands (the “**Corridor Lands**”), as more particularly described in an Option Agreement between the parties hereto and having a date the same as this Compensation and Incentive Agreement (the “**Option Agreement**”), upon the terms and conditions set out in the Option Agreement.
- C. Hydro One has offered to pay the Option Payment to the Owner upon execution of the Option Agreement and upon closing to purchase the Corridor Lands from the Owner for the Purchase Price (collectively, the “**Corridor Compensation**”).
- D. Hydro One has offered, on the terms and conditions set out herein, to compensate the Owner for injurious affection damages, if applicable (the “**IA Compensation**”) in respect of that portion of the Lands which are not part of the Corridor Lands. Such injurious affection damages are calculated as shown on the calculation sheet attached hereto as Schedule “B” (the “**Calculation Sheet**”).
- E. To achieve a timely resolution of its land acquisition arrangements, Hydro One has also offered to pay certain incentives to the Owner on the terms and conditions set out in this Compensation and Incentive Agreement and as shown on the Calculation Sheet.
- F. Any capitalized terms not defined in this Compensation and Incentive Agreement shall have the meaning ascribed to them in the Option Agreement.

NOW THEREFORE, the parties agree as follows:

1. VALUATION

- (a) Hydro One has retained an external, independent AACI designated appraiser to determine the fair market value of the Corridor Lands and any applicable amount of IA Compensation, if any, as of October 1st, 2021 and to prepare a report in respect thereof (the “**HONI Appraisal**”). The Owner acknowledges receiving a copy of the HONI Appraisal, and agrees to accept the amounts set out in the HONI Appraisal as a fair evaluation of the market value of the Owner’s fee simple interest in the Corridor Lands as of the date of the HONI Appraisal.
- (b) In recognition of a dynamic real estate market and that the effective date of HONI’s appraised values in the HONI Appraisal are only relevant for a limited period of time, Hydro One shall provide a market value top-up where the passage of time between the effective date of the HONI Appraisal and the date Hydro One receives project approval pursuant to section 92 of the *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15, Sched. B. (the “Section 92 Approval”) warrants such top-up (the “Top-Up”).

Provided that the Owner and Hydro One have entered into an Option Agreement prior to Hydro One receiving the Section 92 Approval, the Owner shall be entitled to the Top-Up, if applicable. The amount of the Top-Up is the difference between the HONI Appraisal, and the market value as of the date of the Section 92 Approval (if such market value is greater than the amount in the HONI Appraisal), adjusted for time only (change in market conditions) and based on an independent land rate study considering this singular factor. The land rate study will be prepared by an independent third party appraiser with an Accredited Appraiser Canadian Institute designation from the Appraisal Institute of Canada.

The Top-Up amounts will be paid by Hydro One to the Owner by adding the applicable amounts to the Purchase Price, Premium Above Fair Market Value, and the IA Compensation, if applicable.

- (c) The actual area of the Corridor Lands will be confirmed by a survey to be prepared by Hydro One and in the event the surveyed area of the Corridor Lands is greater than as provided for in the Calculation Sheet, the Purchase Price, Premium Above Fair Market Value, and the IA compensation, if applicable will be adjusted accordingly.

2. INCENTIVE PAYMENTS

- (a) Upon registration of the Option Agreement and this Compensation and Incentive Agreement by all parties thereto, Hydro One shall pay to or to the order of the Owner the Option Payment in the amount of **XXXXXX (\$XXXXXX)** as set out on the Calculation Sheet.
- (b) On the Closing Date, Hydro One shall make a further incentive payment to or to the order of the Owner in the amount of **XXXXXX (\$XX)**, (the “**Acceptance of the Hydro One Offer**”) as set out on the Calculation Sheet.
- (c) On the Closing Date, Hydro One shall make a further incentive payment to or to the order of the Owner in the amount of **XXXXXX (\$XX)**, (the “**Premium Above Fair Market Value**”) such amount being equal to XX% of the appraised fair market value of the Owner’s fee simple interest in the Corridor Lands as set out on the Calculation Sheet.
- (d) On the Closing Date, Hydro One shall make a further incentive payment to or to the order of the Owner in the amount of **XXXXXX (\$XX)**, (the “**Woodlot Compensation**”) as set out on the Calculation Sheet.

3. WAIVER

The Owner waives the right to be reimbursed by Hydro One for the reasonable costs the Owner incurs for a third party independent appraisal report and/or legal review of the HONI Appraisal,

the Option Agreement and this Compensation and Incentive Agreement, up to the amount of Seven Thousand Five Hundred Dollars (\$7,500.00) and hereby accepts the Second Incentive Payment as defined in 2(b) above.

4. IA COMPENSATION

Hydro One agrees to pay to or to the order of the Owner on the Closing Date the IA Compensation, if applicable, in the amount of **XXXXXX (\$XX)** as set out on the Calculation Sheet.

5. CONVEYANCING

Hydro One agrees to reimburse the Owner for reasonably incurred legal fees, if any, associated with the review of applicable conveyancing documents.

6. TENANTS

The Owner agrees to indemnify and save harmless Hydro One from all actions, suits, costs, losses, charges, demands, claims and expenses for and in respect of any claims any person having a possessory interest in the Corridor Lands.

7. NOTICES

Notices to be given to either party shall be in writing, and will be sent via electronic mail (“email”), personally delivered or sent by registered mail (except during a postal disruption or threatened postal disruption), telegram, electronic facsimile or other similar means of prepaid recorded communication to the applicable address set forth below (or to such other address as such party may from time to time designate in such manner):

HYDRO ONE:	with a copy to its solicitors,
Hydro One Networks Inc. Facilities and Real Estate P.O. Box 4300 Markham, Ontario L2R 5Z5	Barriston LLP 90 Mulcaster Street Barrie, ON L4M 4Y5
185 Clegg Road Markham, Ontario L3G 1B7	Attention: Jim McIntosh Fax: 705-721-4025
Attention:	
Fax: (905) 946-6242	

OWNER:	with a copy to their solicitors,
«Owner_1_name_for_letters» & «Owner_2_name_for_letters» & «Owner_3_name_for_letters» «STREET_NUM» «STREET_NAME1» «MUNICIPALITY», «PROVINCE» «POSTAL_CODE»	Solicitors Name Solicitors Address 1 Solicitors Address 2 Solicitors Address 3
«SAP_Phone_Number» «SAP_email_address»	

Notices personally delivered shall be deemed to have been validly and effectively given on the day of such delivery. Any notice sent by registered mail shall be deemed to have been validly and effectively given on the fifth (5th) business day following the date on which it was sent. Any notice sent by telegram, email, electronic facsimile or other similar means of prepaid recorded communication shall be deemed to have been validly and effectively given on the Business Day next following the day on which it was sent. “Business Day” shall mean any day which is not a Saturday or Sunday or a statutory holiday in the Province of Ontario.

8. ASSIGNMENT OF AGREEMENT BY OWNER

The Owner shall not assign all or any part of its interest in this Compensation and Incentive Agreement or any of the rights, privileges and benefits accruing to the Owner hereunder without the consent of the Hydro One, which consent may not be unreasonably withheld or delayed.

Upon and to the extent of such assignment, this Compensation and Incentive Agreement shall thenceforth be construed as if originally made with such assignee or assignees instead of the Owner and the Owner shall, to the extent of such assignment, thereupon be relieved of all liabilities and obligations whatsoever arising out of this Compensation and Incentive Agreement.

The Owner and, if applicable, the Spouse, each covenant and agree that if they transfer, assign, charge, lease or otherwise dispose of all or any part of their interest in the Lands (collectively, a “**Transfer**”) they will obtain an agreement from such Transferee assuming and agreeing to be bound by all of the terms of this Compensation and Incentive Agreement as if the Transferee had been an original signatory to this Compensation and Incentive Agreement.

9. NOTICE OF AGREEMENT

Hydro One may, in its sole discretion and at its sole expense register this Compensation and Incentive Agreement or notice thereof on title to the Lands.

10. NO MERGER

The parties hereto agree that any representations or covenants contained in this Compensation and Incentive Agreement shall not merge on closing, but survive and continue in full force and effect thereafter, but only as to the accuracy of the representation or covenant as at the date of completion of this Compensation and Incentive Agreement.

11. ENTIRE AGREEMENT

The parties hereto acknowledge that there are no covenants, representations, warranties, agreements or conditions, express or implied, collateral or otherwise, forming part of or in any way affecting or relating to this Compensation and Incentive Agreement save as expressly set out in this Compensation and Incentive Agreement and that this Compensation and Incentive Agreement and all Schedules hereto constitute the entire agreement between the parties and may not be modified except as expressly agreed between the parties in writing.

12. SEVERABILITY

Any provision or provisions of this Compensation and Incentive Agreement is declared illegal or unenforceable, it or they shall be considered separate and severable from this Compensation and Incentive Agreement and the remaining provisions shall remain in force and be binding upon the parties hereto as though the said provision or provisions had never been included.

13. GOVERNING LAW

This Compensation and Incentive Agreement shall be governed by and construed in accordance with the laws of the Province of Ontario.

14. SPOUSAL CONSENT

The Owner represents that, except to the extent such consent has been obtained, spousal consent to this transaction is not necessary under the provision of the *Family Law Act*, R.S.O. 1990, c. F.3.

15. SUCCESSORS AND ASSIGNS

This Compensation and Incentive Agreement shall enure to the benefit of and be binding upon the parties hereto and their respective heirs, attorneys, guardians, estate trustees, executors, trustees, successors and permitted assigns.

16. EXECUTION AND DELIVERY

This Compensation and Incentive Agreement may be executed and delivered in counterparts by original, facsimile or scanned e-mail copy and each Compensation and Incentive Agreement shall constitute and be deemed to be the entire agreement notwithstanding that all copies of this Compensation and Incentive Agreement may not have all signatures.

17. FURTHER ASSURANCES

The parties hereto agree to do, make and execute, if necessary, at no further cost or condition to the other except payment of reasonable out-of-pocket costs, such other instruments, plans, documents, acts, matters and things and take such further action as may reasonably be required by the other party in order to effectively carry out the true intent of this Compensation and Incentive Agreement.

18. AGE

The Owner represents that the Owner is at least 18 years of age.

IN WITNESS WHEREOF the parties hereto have duly executed this Compensation and Incentive Agreement as of the Agreement Date.

WITNESS:	OWNER:
<hr/>	<hr/> 1/s
Name: «Real_Estate_Representative»	Name: «Owner_1_name_for_letters»
Address: 1800 Main Street East Milton, ON L9T 7S3	
<hr/>	<hr/> 1/s
Name: «Real_Estate_Representative»	Name: «Owner_2_name_for_letters»
Address: 1800 Main Street East Milton, ON L9T 7S3	<hr/>
<hr/>	<hr/> 1/s
Name: «Real_Estate_Representative»	Name: «Owner_3_name_for_letters»
Address: 1800 Main Street East Milton, ON L9T 7S3	

WITNESS:	The spouse of the Owner hereby consents to this Compensation and Incentive Agreement
	SPOUSE OF OWNER:
<hr/>	<hr/> 1/s
Name: «Real_Estate_Representative»	Name: Property Owner Spouse Name
Address: 1800 Main Street East Milton, ON L9T 7S3	

HYDRO ONE HST 870865821RT0001	HYDRO ONE NETWORKS INC.
	Per: <hr/>
	Name: <hr/>
	Title: <hr/>
	I have authority to bind the Corporation

SCHEDULE “A”
LANDS

«LEGAL_DESCRIPTION»

SCHEDULE “B”
CALCULATION SHEET

OPTION AGREEMENT - EASEMENT

THIS OPTION AGREEMENT made as of the _____ day of _____, 20__
(the “**Agreement Date**”).

B E T W E E N:

«OWNER_1_NAME_FOR_LETTERS» & «OWNER_2_NAME_FOR_LETTERS» &
«OWNER_3_NAME_FOR_LETTERS»

(hereinafter collectively called the “**Owner**”)

OF THE FIRST PART

- and -

HYDRO ONE NETWORKS INC.

(hereinafter called “**Hydro One**”)

OF THE SECOND PART

- and -

SPOUSE NAME

(hereinafter collectively called the “**Spouse**”) This section is only filled if
the spouse is not on title

OF THE THIRD PART

RECITALS:

- A. The Owner is the owner of the lands and premises described in Schedule “A” (the “**Lands**”);
- B. The Owner has agreed to grant to Hydro One for the consideration and on the terms and conditions set out herein and attached hereto as Schedule “B” (the “**Standard Terms and Conditions**”) an option to purchase a right-of-way and easement in, on, over, under, across and through (the “**Easement**”) that portion of the Lands described and shown on Schedule “A-1” attached hereto (the “**Easement Lands**”), the terms of which are more particularly set out in the Transfer and Grant of Easement (the “**Easement Agreement**”) attached hereto as Schedule “C”.
- C. Hydro One has entered into an agreement with the Owner having a date the same as this Option Agreement (the “**Compensation and Incentive Agreement**”) whereby Hydro One has offered to compensate the Owner for injurious affection damages in accordance with the terms and conditions contained therein.
- D. As the Owner’s primary residence is located on the Lands within 100 metres from the centreline of the proposed new transmission line to be constructed on the Easement Lands, Hydro One has agreed that if Hydro One exercises the Option it will offer to purchase the Lands up to December 31, 2026 on the terms and conditions of the Voluntary Buyout Offer (the “**Voluntary Buyout Offer**”) attached as Schedule “E” to this Option Agreement which Voluntary Buyout Offer shall be made on the Closing Date.

NOW THEREFORE, the parties hereby agree as follows:

1. **GRANT OF OPTION**

In consideration of the sum of **XXXXX (\$XXXXX)** of lawful money of Canada paid by Hydro One to the Owner, the receipt and sufficiency of which is hereby acknowledged by the Owner, (the “**Option Payment**”) the Owner hereby grants to Hydro One an irrevocable option (the “**Option**”), to purchase the Easement upon and subject to the terms and conditions set out herein, the Standard Terms and Conditions and the Schedules hereto.

2. **PURCHASE PRICE**

In accordance with the terms and conditions set out herein, the Standard Terms and Conditions and the Schedules hereto, Hydro One agrees to pay to or to the order of the Owner the amount of **XXXX Dollars (\$ ●)** for the Easement Lands (the “**Purchase Price**”) on the Closing Date.

IN WITNESS WHEREOF the parties hereto have duly executed this Option Agreement as of the Agreement Date.

WITNESS:

OWNER:

Name: «Real_Estate_Representative»

Address: 1800 Main Street East
Milton, ON L9T 7S3

Name: «Owner_1_name_for_letters»
1/s

Name: «Real_Estate_Representative»

Address: 1800 Main Street East
Milton, ON L9T 7S3

Name: «Owner_2_name_for_letters»
1/s

Name: «Real_Estate_Representative»

Address: 1800 Main Street East
Milton, ON L9T 7S3

Name: «Owner_3_name_for_letters»
1/s

WITNESS:

The spouse of the Owner hereby consents to this Agreement

SPOUSE OF OWNER:

Name: «Real_Estate_Representative»

Address: 1800 Main Street East
Milton, ON L9T 7S3

Name: **Property Owner Spouse Name**
1/s

«OWNER_1_NAME_FOR_LETTERS»

Per: _____
Name:
Title:

We/I have authority to bind the Corporation

HYDRO ONE NETWORKS INC.

HYDRO ONE
HST 870865821RT0001

Per: _____
Name: Aaron Fair
Title: Real Estate Services Supervisor

I have authority to bind the Corporation

HYDRO ONE NETWORKS INC.

HYDRO ONE
HST 870865821RT0001

Per: _____
Name: Ranjit Multani
Title: Manager, Facilities & Real Estate
Acquisition

I have authority to bind the Corporation

HYDRO ONE NETWORKS INC.

HYDRO ONE
HST 870865821RT0001

Per: _____
Name: Erin Kelly
Title: Director, Facilities & Real Estate

I have authority to bind the Corporation

**SCHEDULE “A”
LEGAL DESCRIPTION**

«LEGAL_DESCRIPTION»

**SCHEDULE “A-1”
EASEMENT LANDS**

Legal description to be determined by deposited Reference Plan; Easement Lands shown outlined in green.

****NOTE – Sketch shall be replaced by servient lands description once applicable Reference Plan is deposited.**

Screenshot of ortho map with tower placements here

**SCHEDULE “B”
STANDARD TERMS AND CONDITIONS**

1. EXERCISE OF OPTION

The Option shall be open for exercise at any time from the Agreement Date until the 2nd anniversary of the Agreement Date, as same may have been extended in accordance with the terms hereof, (the “**Option Term**”), by providing written notice to the Owner (the “**Exercise Notice**”), after which time, subject to Section 2, this Option Agreement shall be null and void and no longer binding upon either of the parties. If the Option is exercised within the Option Term, then this Option Agreement shall become a binding agreement for the purchase and sale of the Easement and this Option Agreement shall be completed on the terms set out herein.

2. EXTENSION OF OPTION TERM

At any time during the Option Term, Hydro One may, by written notice delivered to the Owner prior to the expiration of the Option Term, as same may have been extended, extend the Option Term with respect to the Lands for one (1) additional period of one (1) year, provided that upon such election, Hydro One pays to the Owner the amount of \$10,000 in consideration for the extension of the Option Term.

3. PURCHASE PRICE

(a) Hydro One shall pay the Purchase Price to or to the order of the Owner by way of a single payment by uncertified cheque or electronic funds transfer on the Closing Date (as hereinafter defined).

(b) The Owner acknowledges receipt of an appraisal report commissioned by Hydro One and, prepared by an external, independent appraiser with the Accredited Appraiser Canadian Institute (“AACI”) designation, (the “**HONI Appraisal**”).

(c) The parties acknowledge that the Purchase Price is based on a purchase price per acre as set out in Schedule “B” of the Compensation and Incentive Agreement and the actual area of the Easement Lands shall be confirmed by a survey to be prepared by Hydro One in accordance with section 9 herein, and in the event the surveyed area of the Easement Lands is greater than as provided for in Schedule “B” of the Compensation and Incentive Agreement, and Purchase Price shall be adjusted accordingly.

4. CLOSING

The transaction of purchase and sale contemplated by this Option Agreement shall, subject to resolution of any title issues identified by Hydro One, be completed on the date that is ninety (90) days after Hydro One delivers the Exercise Notice to the Owner or on such earlier date as Hydro One, through its solicitors, may elect (the “**Closing Date**”). If the Closing Date is a date on which the Land Registry Office (the “**Land Registry Office**”) in which the Lands are registered is closed, the Closing Date shall be on the next following day when such Land Registry Office is open. In the event that there is a delay in the completion of the transaction beyond the Closing Date as established by Hydro One upon delivery of the Exercise Notice that arises through no fault of Hydro One, then Hydro One shall not be responsible for any resulting delay in the Closing Date.

5. ACKNOWLEDGEMENT AND DIRECTION

The Owner and, if applicable, the Spouse, acknowledges and agrees that execution of the Option Agreement shall constitute execution of the Acknowledgement and Direction attached as Schedule “D” to the Option Agreement (the “**Acknowledgement and Direction**”) authorizing Hydro One and its solicitors to register the Option and subsequent Easement on title to the Lands. Hydro One covenants and agrees to hold the Acknowledgement and Direction in escrow until Hydro One has paid the Purchase Price at which time the executed Acknowledgement and Direction and Option shall be released from escrow and may be acted upon by Hydro One.

6. REGISTRATION OF EASEMENT

The Owner acknowledges and agrees that Hydro One will register the Easement on title to the Lands on the Closing Date pursuant hereto and the Acknowledgement and Direction. Hydro

One will provide notice to the Owner within a reasonable period of time after the Closing Date of the registration particulars of the Easement.

7. **RIGHT TO TRANSFER**

The Owner covenants and agrees with Hydro One that it has the right to grant the Easement without restriction and that Hydro One will quietly possess and enjoy the Easement Lands.

8. **INSPECTION PERIOD AND EARLY ACCESS PERIOD**

(a) The Owner agrees and consents to Hydro One, its respective officers, employees, agents, contractors, sub-contractors, surveyors, workers and permittees or any of them entering on, exiting and passing and repassing in, on, over, along, upon, across, through and under the Easement Lands and so much of the Lands as may be reasonably necessary at all reasonable times from the Agreement Date until the later of the expiration of the Option Term (as same may be extended) and the Closing Date, with or without all plant, machinery, material, supplies, vehicles, and equipment, for all purposes necessary or convenient to conduct such inspections, tests, audits, reports as Hydro One sees fit in connection with the acquisition, exercise or enjoyment of the Easement. Hydro One shall restore the Lands to their prior condition so far as reasonably possible following such inspections, tests, audits and reports.

(b) The Owner agrees and consents to Hydro One, its respective officers, employees, agents, contractors, sub-contractors, surveyors, workers and permittees or any of them entering on, exiting and passing and repassing in, on, over, along, upon, across, through and under the Easement Lands and so much of the Lands as may be as reasonably necessary at all reasonable times from date Hydro One delivers the Exercise Notice to commence construction activities on the Easement Lands. Hydro One shall restore the Lands to their prior condition so far as reasonably possible in the event that the purchase transaction contemplated by this Option Agreement is not completed as contemplated herein.

9. **SURVEY/REFERENCE PLAN**

Hydro One agrees to obtain and register, at its sole expense, any new Reference Plan with respect to the Easement Lands that may be required by Hydro One for completion of this Option Agreement.

10. **INCOME TAX ACT**

The Owner represents and warrants and covenants that the Owner is not now and on Closing will not be a non-resident of Canada within the meaning of the *Income Tax Act (Canada)*.

11. **HARMONIZED SALES TAX**

The Owner and Hydro One acknowledge and agree that the grant of easement which is proposed under this Option Agreement constitutes a purchase and sale transaction of an interest in real property, and therefore, in conformance with subsections 221(2) and 228(4) of the *Excise Tax Act* R.S.C. 1985, c E-15, as amended (“the Act”), Hydro One shall report and pay to the Receiver General for Canada the Harmonized Sales Tax (“HST”) applicable to the purchase and sale of the Easement. For the purposes of this section 11, Hydro One shall warrants that it is an HST registrant in good standing under the Act, that its HST registration number is 870865821RT0001, and that it is acquiring the Easement for use primarily in the course of its commercial activities.

12. **NOTICE OF OPTION**

Hydro One may, in its sole discretion and at its sole expense register this Option Agreement or notice thereof on title to the Lands.

13. **NO OTHER RIGHTS**

The Owner covenants and agrees with Hydro One that the Owner shall not grant, create or transfer any easement, right, covenant, restriction, privilege, permission, or other agreement in, through, under, over or in respect of the Easement Lands prior to the registration of the Easement without the prior written consent of Hydro One.

14. **PRIOR ENCUMBRANCES**

The Owner hereby grants Hydro One permission, should Hydro One elect in its sole discretion, to approach any encumbrancer having an interest in the Easement Lands in priority to the Easement Agreement and to obtain (in registrable form) and register all necessary consents, postponements or subordinations from all current and future encumbrancers having an interest in the Easement Lands in priority to the Easement Agreement or this Option Agreement consenting, postponing or subordinating such encumbrance and their respective rights, title and interest to the Easement and this Option Agreement or to place the Easement Agreement and this Option Agreement in first priority on title to the Easement Lands.

15. **TIME OF ESSENCE**

Time shall in all respects be of the essence hereof; provided, however, that the time for doing or completing any matter provided for herein may be extended or abridged by an agreement in writing between the parties or their respective counsel.

16. **NOTICES**

Notices to be given to either party shall be in writing, and will be sent via electronic mail (“email”), personally delivered or sent by registered mail (except during a postal disruption or threatened postal disruption), telegram, electronic facsimile or other similar means of prepaid recorded communication to the applicable address set forth below (or to such other address as such party may from time to time designate in such manner):

HYDRO ONE:	with a copy to its solicitors,
Hydro One Networks Inc.	Barriston LLP
Facilities and Real Estate	90 Mulcaster Street
P.O. Box 4300	Barrie, ON L4M 4Y5
Markham, Ontario L2R 5Z5	
185 Clegg Road	Attention: Jim McIntosh
Markham, Ontario L3G 1B7	Fax: 705-721-4025
Attention: Real Estate Manager	
Fax: (905) 946-6242	

OWNER:	with a copy to their solicitors,
«Owner_1_name_for_letters»	Solicitors Name
«Owner_2_name_for_letters»	Solicitors Address 1
«Owner_3_name_for_letters»	Solicitors Address 2
«STREET_NUM» «STREET_NAME1»	Solicitors Address 3
«MUNICIPALITY», «PROVINCE»	
«POSTAL_CODE»	
«SAP_Phone_Number»	
«SAP_email_address»	

Notices personally delivered shall be deemed to have been validly and effectively given on the day of such delivery. Any notice sent by registered mail shall be deemed to have been validly and effectively given on the fifth (5th) Business Day following the date on which it was sent. Any notice sent by email, telegram, electronic facsimile or other similar means of prepaid recorded communication shall be deemed to have been validly and effectively given on the Business Day next following the day on which it was sent. “Business Day” shall mean any day which is not a Saturday or Sunday or a statutory holiday in the Province of Ontario.

17. **ASSIGNMENT OF OPTION BY HYDRO ONE**

Hydro One shall have the right to assign all or any part of its interest in this Option Agreement and any or all rights, privileges and benefits accruing to Hydro One hereunder without the consent of the Owner prior to or on the Closing Date. Upon and to the extent of such

assignment, this Option Agreement shall thenceforth be construed as if originally made with such assignee or assignees instead of Hydro One and Hydro One shall, to the extent of such assignment, thereupon be relieved of all liabilities and obligations whatsoever arising out of this Option Agreement.

18. **SURVIVAL OF REPRESENTATIONS**

The parties hereto agree that any representations or covenants contained in this Option Agreement shall not merge on closing, but survive and continue in full force and effect thereafter, but only as to the accuracy of the representation or covenant as at the date of completion of this Option Agreement.

19. **ENTIRE AGREEMENT**

The parties acknowledge that there are no covenants, representations, warranties, agreements or conditions, express or implied, collateral or otherwise, forming part of or in any way affecting or relating to this Option Agreement save as expressly set out in this Option Agreement and that this Option Agreement and all Schedules hereto constitute the entire agreement between the parties and may not be modified except as expressly agreed between the Owner and Hydro One in writing.

20. **SEVERABILITY**

Any provision or provisions of this Option Agreement is declared illegal or unenforceable, it or they shall be considered separate and severable from the Option Agreement and the remaining provisions shall remain in force and be binding upon the parties hereto as though the said provision or provisions had never been included.

21. **GOVERNING LAW**

This Option Agreement shall be governed by and construed in accordance with the laws of the Province of Ontario.

22. **SUCCESSORS AND ASSIGNS**

This Option Agreement shall enure to the benefit of and be binding upon the parties hereto and their respective heirs, attorneys, guardians, estate trustees, executors, trustees, successors and permitted assigns.

23. **EXECUTION AND DELIVERY**

This Option Agreement may be executed in any number of counterparts, each of which is deemed to be an original and all of which taken together constitutes one agreement. To evidence the fact that it has executed this Option Agreement, a party may send a copy of its executed counterpart to all other parties by a delivery method set out in Section 16 herein (the "Transmission") and the signature transmitted by such Transmission is deemed to be its original signature for all purposes.

24. **PLANNING ACT**

This Option Agreement is subject to the express condition that it is to be effective only if the provisions of the *Planning Act*, R.S.O. 1990, c. P.13 and amendments thereto are complied with.

25. **FURTHER ASSURANCES**

The Owner covenants and agrees to execute if necessary, at no further cost or condition to Hydro One such other instruments, plans and documents as may reasonably be required by Hydro One to effect the registration of the Easement or notice of this Option Agreement on title to the Lands.

26. **SPOUSAL CONSENT**

The Owner represents that, except to the extent such consent has been obtained, spousal consent to this transaction is not necessary and on closing will not be necessary under the provisions of the *Family Law Act*, R.S.O. 1990, c. F.3.

27. **AGE**

The Owner represents that the Owner is at least 18 years of age.

28. **VOLUNTARY BUYOUT OFFER**

a) If Hydro One exercises the Option in accordance with the terms hereof then, on Closing in addition to delivery of a cheque for the Purchase Price, Hydro One shall deliver to the Owner an offer to purchase the Lands on the terms set out in the Voluntary Buyout Offer attached as Schedule “E”.

b) The Purchase Price of the Voluntary Buyout Offer shall be the fair market value of the Lands as determined by a new appraisal commissioned by Hydro One and, prepared by an external, independent appraiser with the Accredited Appraiser Canadian Institute (“AACI”) designation at the time the Owner accepts the offer set out in Schedule “E” of this Option Agreement.

If the Owner does not accept the Voluntary Buyout Offer within the prescribed time specified therein, Hydro One shall not be required to purchase the Owner’s interest in the Lands, and the Voluntary Buyout Offer shall be of no further force or effect and Hydro One shall be released of all obligations in respect thereof.

**SCHEDULE “C”
TRANSFER AND GRANT OF EASEMENT**

«Owner 1 name for letters» & «Owner 2 name for letters» & «Owner 3 name for letters» (the “**Transferor**”) is the owner in fee simple and in possession of the certain lands legally described as «Legal_Description» (the “**Lands**”).

Hydro One Networks Inc. (the “**Transferee**”) has erected, or is about to erect, certain Works (as more particularly described in paragraph 1(a) hereof) in, through, under, over, across, along and upon the Lands.

1. The Transferor hereby grants and conveys to the Transferee, its successors and assigns the rights and easement, free from all encumbrances and restrictions, the following unobstructed rights, easements, rights-of-way, covenants, agreements and privileges in perpetuity (the “**Rights**”) in, through, under, over, across, along and upon that portion of the Lands of the Transferor described herein as ● and described as Part ● on Reference Plan ● hereto annexed (the “**Strip**”), for the following purposes:

- (a) To enter and lay down, install, construct, erect, maintain, open, inspect, add to, enlarge, alter, repair and keep in good condition, move, remove, replace, reinstall, reconstruct, relocate, supplement and operate and maintain at all times in, through, under, over, across, along and upon the Strip an electrical transmission systems and telecommunications systems consisting in both instances of pole structures, steel towers, anchors, guys and braces and all such aboveground or underground lines, wires, cables, telecommunications cables, grounding electrodes, conductors, apparatus, works, accessories, associated material and equipment, and appurtenances pertaining to or required by either such system (all or any of which are herein individually or collectively called the (“**Works**”)) as in the opinion of the Transferee are necessary or convenient thereto for use as required by Transferee in its undertaking from time to time, or a related business venture.
- (b) To enter on and selectively cut or prune, and to clear and keep clear, and remove all trees, branches, bush and shrubs and other obstructions and materials in, over or upon the Strip, and without limitation, to cut and remove all leaning or decayed trees located on the Lands whose proximity to the Works renders them liable to fall and come in contact with the Works or which may in any way interfere with the safe, efficient or serviceable operation of the Works or this easement by the Transferee.
- (c) To conduct all engineering, legal surveys, and make soil tests, soil compaction and environmental studies and audits in, under, on and over the Strip as the Transferee in its discretion considers requisite.
- (d) To erect, install, construct, maintain, repair and keep in good condition, move, remove, replace and use bridges and such gates in all fences which are now or may hereafter be on the Strip as the Transferee may from time to time consider necessary.
- (e) Except for fences and permitted paragraph 2(a) installations, to clear the Strip and keep it clear of all buildings, structures, erections, installations, or other obstructions of any nature (hereinafter collectively called the “**obstruction**”) whether above or below ground, including removal of any materials and equipment or plants and natural growth, which in the opinion of the Transferee, endanger its Works or any person or property or which may be likely to become a hazard to any Works of the Transferee or to any persons or property or which do or may in any way interfere with the safe, efficient or serviceable operation of the Works or this easement by the Transferee.
- (f) To enter on and exit by the Transferor’s access routes and to pass and repass at all times in, over, along, upon and across the Strip and so much of the Lands as is reasonably required, for the Transferee, its employees, agents, contractors, subcontractors, workmen and permittees with or without all plant machinery, material, supplies, vehicles and equipment for all purposes necessary or

convenient to the exercise and enjoyment of this easement, subject to compensation afterwards for any crop or other physical damage only to the Lands or permitted structures sustained by the Transferor caused by the exercise of this right of entry and passageway.

- (g) To remove, relocate and reconstruct the line on or under the Strip subject to payment by the Transferee of additional compensation for any damage caused thereby.

2. The Transferor agrees that:

- (a) It will not interfere with any Works established on or in the Strip and shall not, without the Transferee's consent in writing erect or cause to be erected or permit in, under or upon the Strip any obstruction or plant or permit any trees, bush, shrubs, plants or natural growth which does or may interfere with the Rights granted herein. The Transferor agrees it shall not, without the Transferee's consent in writing, change or permit the existing configuration, grade or elevation of the Strip to be changed and the Transferor further agrees that no excavation or opening or work which may disturb or interfere with the existing surface of the Strip shall be done or made unless consent therefore in writing has been obtained from Transferee, provided however, that the Transferor shall not be required to obtain such permission in case of emergency. Notwithstanding the foregoing, in cases where in the reasonable discretion of the Transferee, there is no danger or likelihood of danger to the Works of the Transferee or to any persons or property and the safe or serviceable operation of this easement by the Transferee is not interfered with, the Transferor may at its expense and with the prior written approval of the Transferee, construct and maintain roads, lanes walks, drains, sewers water pipes, oil and gas pipelines, fences (not to exceed 2 metres in height) and service cables on or under the Strip (the "Installation") or any portion thereof; provided that prior to commencing such Installation, the transferor shall give to the Transferee thirty (30) days notice in writing thereof to enable the Transferee to have a representative present to inspect the proposed Installation during the performance of such work, and provided further that Transferor comply with all instructions given by such representative and that all such work shall be done to the reasonable satisfaction of such representative. In the event of any unauthorised interference aforesaid or contravention of this paragraph, or if any authorised interference, obstruction or Installation is not maintained in accordance with the Transferee's instructions or in the Transferee's reasonable opinion, may subsequently interfere with the Rights granted herein, the Transferee may at the Transferor's expense, forthwith remove, relocate, clear or correct the offending interference, obstruction, Installation or contravention complained of from the Strip, without being liable for any damages cause thereby.
- (b) Notwithstanding any rule of law or equity, the Works installed by the Transferee shall at all times remain the property of the Transferee, notwithstanding that such Works are or may become annexed or affixed to the Strip and shall at anytime and from time to time be removable in whole or in part by the Transferee.
- (c) No other easement or permission will be transferred or granted and no encumbrances will be created over or in respect to the Strip, prior to the registration of a Transfer of this grant of Rights.
- (d) The Transferor will execute such further assurances of the Rights in respect of this grant of easement as may be requisite.
- (e) The Rights hereby granted:
 - (i) shall be of the same force and effect to all intents and purposes as a covenant running with the Strip.
 - (ii) is declared hereby to be appurtenant to and for the benefit of the Works and undertaking of the Transferee described in paragraph 1(a).

3. Provided that the lands are used for agricultural purposes, the Transferee hereby releases and forever discharges the Transferor from and against any and all action, causes of action, costs,

claims, demands, expenses and liability for upon or by reason of any damage to the Works (collectively the "Claims") which may arise from, be sustained, suffered or incurred in consequence of the Transferor using the lands for agricultural purposes save and except for any Claims resulting from or arising out of the Transferor's negligence or willful misconduct.

4. The Transferor agrees that the Transferee may, at the Transferee's sole discretion, obtain at the Transferee's sole cost and expense all necessary postponements and subordinations (in registrable form) from all current and future prior encumbrancers, postponing their respective rights, title and interests to the Transfer of Easement herein so as to place such Rights and easement in first priority on title to the Lands.

5. There are no representations, covenants, agreements, warranties and conditions in any way relating to the subject matter of this grant of Rights whether expressed or implied collateral or otherwise except those set forth herein.

6. No waiver of a breach or any of the covenants of this grant of Rights shall be construed to be a waiver of any succeeding breach of the same or any other covenant.

7. The burden and benefit of this transfer of Rights shall run with the Strip and the Works and undertaking of the Transferee and shall extend to, be binding upon and enure to the benefit of the parties hereto and their respective heirs, executors, administrators, successors and assigns.

SCHEDULE “D”
ACKNOWLEDGEMENT AND DIRECTION

TO: Hydro One Networks Inc. (“**Hydro One**”) and its solicitors, Barriston LLP

AND TO: Any and all designees of the above

RE: Option Agreement dated _____, 20____, (the “Option Agreement”) and the Transfer and Grant of Easement in substantially the form attached [**as Schedule “C” to the Option Agreement or hereto**] (the “Easement Agreement”)

This will confirm that:

- Hydro One and the Owner have reviewed the information set out in the Option Agreement and the draft document(s) attached to the Option Agreement, and that this information is accurate;
- You are authorized and directed to sign and register electronically on behalf of the undersigned the Option Agreement and the Easement Agreement as well as any other document(s) required to complete the transaction described above;
- You are authorized to amend the Option Agreement and the Easement Agreement as may be required to effect registration of such document including the insertion of a registerable legal description to describe the lands subject to the easement being granted pursuant to the Easement Agreement in the event one is not available at the time of execution of the Option Agreement; provided such amendments are non-material to the terms of the Option Agreement and the Easement Agreement and do not expand the description of the Easement Lands as described and/or illustrated in the Option Agreement in any material manner;
- The effect of the electronic documents described in this Acknowledgement and Direction has been fully explained to the Owner and Hydro One, and the Owner and Hydro One understand that each are parties to and bound by the terms and provisions of these electronic document(s) to the same extent as if each had signed these documents;
- You are directed to insert the names set forth in the signatory section of the Option Agreement as persons authorized (or other authorized signing officers of Hydro One) to act on behalf of Hydro One and the Owner, as applicable;
- The Owner acknowledges that Barriston LLP has not met with them nor been engaged by them, is not entering into a solicitor-client relationship with them and is not representing them solely or jointly with Hydro One for the purposes of the preparation, negotiation, completion or registration of the Option Agreement or the Easement Agreement. Barriston LLP will act in a limited capacity as agent for the undersigned for the purposes of registering the Option Agreement and the Easement Agreement; and
- Hydro One and the Owner are in fact the parties named in the electronic documents described in this Acknowledgement and Direction and each has not misrepresented the identity of same to you.

Dated _____, 20____.

WITNESS:

OWNER:

Name: «Real_Estate_Representative»

Address: 1800 Main Street East
Milton, ON L9T 7S3

Name: «Real_Estate_Representative»

Address: 1800 Main Street East
Milton, ON L9T 7S3

l/s
Name: «Owner_1_name_for_letters»

l/s
Name: «Owner_2_name_for_letters»

	<hr/>
	1/s
<hr/>	<hr/>
Name: «Real_Estate_Representative»	Name: «Owner_3_name_for_letters»
Address: 1800 Main Street East	
Milton, ON L9T 7S3	
WITNESS:	The spouse of the Owner hereby consents to this Acknowledgement and Direction
SPOUSE OF OWNER:	
	1/s
<hr/>	<hr/>
Name: «Real_Estate_Representative»	Name: Property Owner Spouse Name
Address: 1800 Main Street East	
Milton, ON L9T 7S3	
«OWNER_1_NAME_FOR_LETTERS»	
Per: <hr/>	
Name: <hr/>	
Title: <hr/>	
We/I have authority to bind the Corporation	

SCHEDULE “E”
VOLUNTARY BUYOUT OFFER

B E T W E E N:

«OWNER_1_NAME_FOR_LETTERS» & «OWNER_2_NAME_FOR_LETTERS» &
«OWNER_3_NAME_FOR_LETTERS»

(hereinafter called the “**Vendor**”)

OF THE FIRST PART

- and -

HYDRO ONE NETWORKS INC.

(hereinafter called the “**Purchaser**”)

OF THE SECOND PART

- and -

XXXXXXXX

(hereinafter called the “**Spouse**”)

OF THE THIRD PART

RECITALS

- A. The Vendor entered into an Option Agreement with the Purchaser dated ● (the “**Option Agreement**”) pursuant to which the Vendor granted the Purchaser an option to purchase a right-of-way and easement (the “**Easement**”) in, on, over, under, across and through that portion of the Lands described on Schedule “A-1” attached thereto (the “**Easement Lands**”), the terms of which are more particularly set out in the Transfer and Grant of Easement (the “**Easement Agreement**”) attached thereto as Schedule “C”.
- B. The Purchaser entered into an agreement with the Vendor having a date the same as the Option Agreement (the “**Compensation and Incentive Agreement**”) whereby the Purchaser offered to compensate the Vendor for injurious affection damages, if applicable.
- C. The Purchaser has exercised the Option to acquire the Easement pursuant to the Option Agreement.
- D. As the Vendor’s primary residence is located on the Lands within 100 metres from the centreline of the proposed new transmission line to be constructed on the Easement Lands, pursuant to the Option Agreement the Purchaser agreed to offer to purchase the Lands on the terms and conditions set out herein.
- E. Initially capitalized terms not otherwise defined in this agreement shall have the meaning given to them in the Option Agreement and Compensation and Incentive Agreement.

WITNESSETH THAT in consideration of the mutual covenants, agreements and payments herein provided, the parties hereto covenant and agree as follows:

**ARTICLE 1
OFFER**

- 1.1** The Purchaser hereby offers to purchase from the Vendor the lands and premises more particularly described in Schedule “A” attached hereto (the “**Lands**”) upon and subject to the terms and conditions hereinafter set forth.

1.2 The Vendor acknowledges and understands that upon acceptance of this Offer by the Vendor there shall be a binding Agreement of Purchase and Sale between the Purchaser and the Vendor.

1.3 Included in the Purchase Price is the purchase of all of the Vendor's interest in all fixtures, improvements, and appurtenances located on the Property except those listed below which are expressly excluded:

To be determined

1.4 The parties acknowledge and agree that this offer shall be irrevocable by the Purchaser until 3:30PM on the earlier of:

- (a) December 31, 2026; or
- (b) the date on which the Vendor ceases to be the registered and beneficial owner of the Lands (the "Irrevocable Date").

If the Vendor has not delivered a copy of this Agreement executed by the Vendor to the Purchaser on or before 3:30PM on the Irrevocable Date, this offer shall be null and void.

**ARTICLE 2
PURCHASE PRICE**

2.1 The purchase price for the Lands (the "Purchase Price") shall be the fair market value of the Lands as determined, as of the date of acceptance of this offer by the Vendor, by an external, independent AACI accredited appraiser retained by the Purchaser, at its expense, less an amount equal to the aggregate of the following amounts paid by the Purchaser to the Vendor pursuant to the Option Agreement and the Compensation and Incentive Agreement:

- (a) the Purchase Price for the Easement (as defined in the Option Agreement) in the amount of XXXXX Dollars (\$XXXXX.00);
- (b) the IA Compensation, if any, in the amount of XXXXX Dollars (\$XXXXX.00);
- (c) Other compensation, if any, in the amount of XXXXX Dollars (\$XXXXX.00).

2.2 The amount to be paid by the Purchaser to the Vendor on Closing for the Lands shall be the Purchase Price, as adjusted, after deducting the amounts as set out in Section 2.1 hereof, being the minimum amount of SEVEN HUNDRED FOURTY-NINE THOUSAND EIGHT HUNDRED FIFTY DOLLARS (\$749,850.00) representing the current fair market value of the land after adjustments. Should the appraised value of the land at the time of acceptance by the Vendor yield a result after adjustments that exceeds the minimum, the Vendor shall be entitled to the excess value. Should the appraised value of the land at the time of acceptance by the Vendor yield a result after adjustments that is less than the minimum, the Vendor shall be entitled to the minimum.

2.3 The Purchaser agrees to obtain and register, at its sole expense, any new Reference Plan with respect to the Lands that may be required by the Purchaser for completion of the transaction contemplated herein.

**ARTICLE 3
CLOSING**

3.1 The closing of this transaction shall be completed on the day that is ninety (90) days after the Vendor notifies the Purchaser of its intention to accept the Offer. If the Closing falls on a day when the Land Registry Office (the "Land Registry Office") in which the Lands are registered is closed, then the Closing shall be extended to the next day on which the Land Registry Office is open. **3.2 On Closing:**

- (a) Vacant possession of the Lands shall be given to the Purchaser;

- (b) The Purchaser shall pay to the Vendor by uncertified cheque or electronic funds transfer the Purchase Price as adjusted and subject to the deductions made in accordance with section 2.1 of this Agreement;
- (c) Rents, realty taxes, local improvement charges, water and unmetered utility charges and the cost of fuel as applicable shall be apportioned and allowed to the date of completion (the day itself to be apportioned to the Purchaser);
- (d) In conformance with subsections 221(2) and 228(4) of the *Excise Tax Act* R.S.C. 1985, c E-15, as amended (“the Act”), Purchaser shall report and pay to the Receiver General, the Harmonized Sales Tax (“HST”) applicable to the purchase and sale of the Property. For the purposes of this clause 3.2(b), the Purchaser warrants that it is an HST registrant in good standing under the Act, that its HST registration number is 870865821RT0001, and that it is acquiring the Property for use primarily in the course of its commercial activities.

3.3 In the event that there is a delay in the completion of the transaction beyond the Closing Date as established by Hydro One upon delivery of the Exercise Notice that arises through no fault of Hydro One, then Hydro One shall not be responsible for any resulting delay in the Closing Date.

ARTICLE 4 TITLE

4.1 The Purchaser shall be allowed thirty (30) days from the date of acceptance of this Agreement to investigate title to the Property at its own expense (the “**Title Search Period**”), to satisfy itself that there are no outstanding encumbrances, or liens save and except those listed in Schedule “B” attached hereto (the “Permitted Encumbrances”) and until the earlier of: (i) thirty (30) days from the later of the last date of the title search period or the date on which the conditions in this Agreement are fulfilled or otherwise waived or; (ii) five (5) days prior to completion, to satisfy itself that there are no outstanding work orders or deficiency notices affecting the Lands. Vendor hereby consents to the Municipality or other governmental agencies releasing to the Purchaser details of all outstanding work orders affecting the Lands and the Vendor agrees to execute and deliver such further authorizations in this regard as Purchaser may reasonably require.

4.2 Provided that the title to the Lands is good and free from all registered restrictions, charges, liens and encumbrances except the Permitted Encumbrances, if within the Title Search Period, any valid objection to title is made by the Purchaser in writing to the Vendor together with documentary verification thereof, and which the Vendor shall be unwilling or unable to remove and which the Purchaser will not waive, this Agreement, notwithstanding any intermediate acts or negotiations in respect of such objections, shall be at an end and the Vendor shall not be liable for any costs or damages and the Vendor and the Purchaser shall be released from all obligations hereunder, and the Vendor shall also be released from all obligations under this Agreement, save and except those covenants of the Purchaser expressly stated to survive Closing or other termination of this Agreement. Save as to any valid objection to title made in accordance with this Agreement and within the Title Search Period, and except for any objection going to the root of title, Purchaser shall be conclusively deemed to have accepted Vendor’s title to the Lands.

4.3 The Vendor agrees to provide to the Purchaser any existing survey of the Lands in the Vendor’s possession, within fifteen (15) days from the date of the Vendor’s acceptance of the offer.

ARTICLE 5 PURCHASER’S INVESTIGATION RESULTS

5.1 Purchaser shall, at its own cost, forthwith make such investigation as the Purchaser deems appropriate of the Lands and Vendor’s title as provided for in this Agreement and shall notify the Vendor of any objection to title, together with a complete copy of any documents and other material information related thereto prior to the expiry of the Title Search Period.

ARTICLE 6 INSURANCE

- 6.1** The Vendor covenants and agrees that the Lands and all structures or fixtures being purchased are insured, and that such insurance will remain in force until closing. The Lands and all structures or fixtures being purchased shall be and remain at the risk of the Vendor until Closing.
- 6.2** Pending completion, Vendor shall hold all insurance policies and the proceeds thereof in trust for the parties as their interests may appear and in the event of substantial damage to the Lands the Purchaser will take the proceeds of any insurance and complete the purchase.

ARTICLE 7 PLANNING ACT

- 7.1** This Agreement is subject to the express condition that it is to be effective only if the subdivision control provisions of the *Planning Act* R.S.O. 1990, c. P.13 as amended (the “*Planning Act*”) are complied with by the Vendor prior to Closing. The Vendor shall forthwith make any application to the local Committee of Adjustment or Land Division Committee for any consent that may be required pursuant to the *Planning Act*. In the event that any such application for consent is denied, or any condition imposed by such body is unacceptable to the Vendor, this Agreement shall be terminated.

ARTICLE 8 ADDITIONAL PROVISIONS

- 8.1** The Transfer/Deed of Land (the “**Transfer**”), and the Land Transfer Tax Affidavit, shall be prepared in registrable form by the Purchaser, and the Purchaser covenants at its cost to register the Transfer on Closing. If requested by Purchaser, Vendor covenants that the Transfer Deed to be delivered on completion shall contain the statements contemplated by s. 50(22) of the *Planning Act*.
- 8.2** Time shall in all respects be of the essence hereof provided that the time for doing or completing of any matter provided for herein may be extended or abridged by an agreement in writing signed by the Parties or by their respective solicitors who are specifically authorized in that regard.
- 8.3** Any tender of documents or money hereunder may be made upon the Parties or their respective solicitors on the day set for Closing. Money may be tendered by bank draft, uncertified cheque, or electronic funds transfer.
- 8.4** Notices to be given to either party shall be in writing, and will be sent via electronic mail (“email”), personally delivered or sent by registered mail (except during a postal disruption or threatened postal disruption), telegram, electronic facsimile or other similar means of prepaid recorded communication to the applicable address set forth below (or to such other address as such party may from time to time designate in such manner):

HYDRO ONE:

with a copy to its solicitors,

Hydro One Networks Inc.
Facilities and Real Estate
P.O. Box 4300
Markham, Ontario L2R 5Z5

Barriston LLP
90 Mulcaster St
Barrie, ON L4M 4Y5

185 Clegg Road
Markham, Ontario L3G 1B7

Attention: Jim McIntosh
Fax: (705) 721-4025

Attention: Real Estate Manager
Fax: (905) 946-6242

OWNER:

with a copy to their solicitors,

«Owner_1_name_for_letters»
«Owner_2_name_for_letters»
«Owner_3_name_for_letters»
«STREET_NUM» «STREET_NAME1»
«MUNICIPALITY», «PROVINCE»
«POSTAL_CODE»

«SAP_Phone_Number»
«SAP_email_address»

Notices personally delivered shall be deemed to have been validly and effectively given on the day of such delivery. Any notice sent by registered mail shall be deemed to have been validly and effectively given on the fifth (5th) business day following the date on which it was sent. Any notice sent by email, telegram, electronic facsimile or other similar means of prepaid recorded communication shall be deemed to have been validly and effectively given on the Business Day next following the day on which it was sent. "Business Day" shall mean any day which is not a Saturday or Sunday or a statutory holiday in the Province of Ontario.

- 8.5** The parties acknowledge that there are no covenants, representations, warranties, agreements or conditions, express or implied, collateral or otherwise, forming part of or in any way affecting or relating to this Agreement save as expressly set out in this Agreement and that this Agreement and all Schedules hereto constitute the entire agreement between the parties and may not be modified except as expressly agreed between the Vendor and Purchaser in writing. This Agreement shall be read with all changes of gender or number required by the context
- 8.6** If any provision or provisions of this Agreement be declared illegal or unenforceable, it or they shall be considered separate and severable from the Agreement and its remaining provisions shall remain in force and be binding upon the parties hereto as though the said provision or provisions had never been included.
- 8.7** No act or omission or delay in exercising any right or enforcing any term, covenant or agreement to be performed under this Agreement shall impair such right or be construed as to be a waiver of any default or acquiescence in such failure to perform, unless such waiver shall be given or acknowledged in writing.
- 8.8** This Agreement to Purchase shall be governed by and construed in accordance with the laws of the Province of Ontario.
- 8.9** The offer to purchase contained herein is personal to the Vendor and shall not be assigned by the Vendor and does not enure to the benefit of the Vendor's successors or assigns.
- 8.10** The Vendor warrants that, except to the extent such consent has been obtained, spousal consent is not necessary to this transaction and on Closing will not be necessary under the provision of the *Family Law Act*, R.S.O. 1990, c. F.3.

- 8.11** The Purchaser may, in its sole discretion and at its sole expense register this Agreement to Purchase or notice thereof on title to the Lands.
- 8.12** Where each of the Vendor and the Purchaser retain a solicitor to complete this Agreement and where the transaction contemplated herein will be completed by electronic registration pursuant to Part III of the *Land Registration Reform Act*, R.S.O. 1990, c. L.4 and any amendments thereto, the Vendor and the Purchaser acknowledge and agree that the delivery of documents and the release thereof to the Vendor and the Purchaser may, at the solicitor's discretion; (a) not occur contemporaneously with the registration of the Transfer/Deed of Land (and other registrable) documentation), and (b) be subject to conditions whereby the solicitor receiving documents and/or money will be required to hold them in trust and not release them except in accordance with the terms of a written agreement between the solicitors
- 8.13** The provisions of the attached Schedules "A" and "B" shall form part of this Agreement as if set out herein.
- 8.14** The Vendor represents and warrants and covenants that it is not now and on Closing will not be a non-resident of Canada within the meaning of the *Income Tax Act (Canada)*.
- 8.15** The Purchaser shall have the right to assign all or any part of its interest in this Agreement and any or all rights, privileges and benefits accruing to the Purchaser hereunder without the consent of the Vendor prior to or on the Closing. Upon and to the extent of such assignment, this Agreement shall thenceforth be construed as if originally made with such assignee or assignees instead of the Purchaser and the Purchaser shall, to the extent of such assignment, thereupon be relieved of all liabilities and obligations whatsoever arising out of this Agreement.
- 8.16** The parties hereto agree that any representations or covenants contained in this Agreement shall not merge on Closing, but survive and continue in full force and effect thereafter, but only as to the accuracy of the representation or covenant as at the date of completion of this Agreement.
- 8.17** This Agreement may be executed in one or more counterparts, each of which shall be deemed an original and together shall constitute one and the same agreement. Counterparts may be executed either in original or by electronic means, including, without limitation, by facsimile transmission or by electronic delivery in portable document format (".pdf") or tagged image file format (".tif") and the parties shall adopt any signatures received by electronic means as original signatures of the Parties; provided, however that any party providing its signature in such manner shall promptly forward to the other party an original signed copy of this Agreement which was so delivered electronically.
- 8.18** The Vendor covenants and agrees to execute if necessary, at no further cost or condition to the Purchaser except payment of the Vendor's reasonable out-of-pocket costs, such other instruments, plans and documents as may reasonably be required by the Purchaser to effect the registration of any right or interest transferred hereunder or notice of this Agreement on title to the Lands.
- 8.19** The Purchaser agrees to pay the Vendor's reasonable legal costs in connection with this transaction.
- 8.20** The Vendor represents that the Vendor is at least 18 years of age.

IN WITNESS WHEREOF the parties hereto have hereunto set their respective hands and seals to this Agreement of Purchase and Sale.

PURCHASER:

This Offer is dated the _____ day of _____, 20__.

HYDRO ONE NETWORKS INC.

HYDRO ONE
HST 870865821RT0001

Per: _____
Name: Ranjit Multani
Title: Manager, Facilities & Real Estate
Acquisition

I have authority to bind the Corporation

HYDRO ONE NETWORKS INC.

HYDRO ONE
HST 870865821RT0001

Per: _____
Name: Erin Kelly
Title: Director, Facilities & Real Estate

I have authority to bind the Corporation

VENDOR:

The undersigned Vendor hereby accepts the above offer and covenants, promises and agrees to and with the Purchaser to duly carry out the same on the terms and conditions above mentioned.

Dated and accepted as at this day of 20__.

WITNESS:

VENDOR:

Name: «Real_Estate_Representative»

Address: 1800 Main Street East
Milton, ON L9T 7S3

1/s
Name: «Owner_1 name for letters»

Name: «Owner 2 name for letters»

Address: 1800 Main Street East
Milton, ON L9T 7S3

Name: «Real_Estate_Representative»

1/s
Name: «Owner_3_name_for_letters»

Address: 1800 Main Street East
Milton, ON L9T 7S3

The undersigned Spouse of the Vendor hereby consents to the disposition evidenced herein pursuant to the provisions of the *Family Law Act*, R.S.O. 1990, c.F.3, and amendments thereto.

In consideration of One Dollar (\$1.00), the receipt of which from the Purchaser is hereby acknowledged, the undersigned Spouse of the Vendor hereby agrees with the Purchaser that he/she will execute all necessary or incidental documents to give full force and effect to the sale evidenced herein.

WITNESS:

SPOUSE OF VENDOR:

Name: «Real_Estate_Representative»

Name: **Property Vendor Spouse Name** 1/s

Address: 1800 Main Street East
Milton, ON L9T 7S3

SCHEDULE “A”

The Property is more particularly described as follows:

«Legal_Description»

SCHEDULE “B”

PERMITTED ENCUMBRANCES

The parties agree that title on Closing may be subject to, and will be acceptable to the Purchaser, as follows:

[NTD: the Easement Agreement.]

Material Laydown Area

THIS AGREEMENT made in duplicate the ____ day of _____ 202X.

Between:

[INSERT SUBJECT PROPERTY LEGAL OWNER]

(hereinafter referred to as the “Grantor”)

OF THE FIRST PART

--- and ---

HYDRO ONE NETWORKS INC.

(hereinafter referred to “HONI”)

OF THE SECOND PART

WHEREAS the Grantor is the owner in fee simple and in possession of certain lands legally described as [INSERT SUBJECT PROPERTY LEGAL DESCRIPTION] being PIN: [INSERT SUBJECT PROPERTY PIN], collectively referred to as the “Lands”.

WHEREAS HONI desires the right to enter onto and use a portion of the Lands in connection with the [INSERT PROJECT REQUIRING THE TEMPORARY SITE] (the “Project”).

NOW THEREFORE THIS AGREEMENT WITNESSETH that in consideration of the fee of XXXXX Dollars (\$XXXX) plus harmonized sales tax (“HST”) per month (the “Monthly Rent”) to be paid by HONI to the Grantor, and the mutual covenants herein contained and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties agree as follows:

1. The Grantor hereby grants, conveys and transfers to HONI in, over, along and upon that part of the Lands highlighted in red as shown in Schedule “A” attached hereto (the “Material Laydown Area”), the rights and privileges as follows:
 - (a) for the servants, agents, contractors and workmen of HONI at all times with all necessary vehicles and equipment to pass and repass over the Lands for the purpose of access to the Material Laydown Area;
 - (b) to store, use and maintain upon the Material Laydown Area, construction equipment and machinery as may be necessary for HONI’s purposes;
 - (c) to place upon the Material Laydown Area, temporary trailers as may be necessary for HONI’s purposes of a construction field office for the purposes of the Project; and
 - (d) to cut and remove all trees, brush and other obstructions made necessary by the exercise of the rights granted hereunder
2. The term of this Agreement and the permission granted herein shall be a term of XX (XX) months commencing on [INSERT DATE OF COMMENCEMENT] and ending [INSERT DATE OF EXPIRY] (the “Term”). HONI may, in its sole option, and upon 30 days’ notice to the Grantor, extend the Term on a month to month basis for up to an additional XX (XX) months, under the same provisions and conditions contained in this Agreement, including the Monthly Rent.
3. Upon the expiry of the Term or any extension thereof, HONI shall remove and repair any physical damage to the Material Laydown Area and/or Lands resulting from HONI’s use of the Material Laydown Area and the permission granted herein; and, shall restore the Material Laydown Area to its original condition so far as reasonably practicable.
4. The total amount of the Monthly Rent shall be paid in full by HONI at the commencement of the Term. For clarity, HONI shall pay the total amount of XXXX Dollars (\$XXX) plus HST at the commencement of the Term.

Material Laydown Area

5. All agents, representatives, officers, directors, employees and contractors and property of HONI located at any time on the Material Laydown Area shall be at the sole risk of HONI and the Grantor shall not be liable for any loss or damage or injury (including loss of life) to them or it however occurring except and to the extent to which such loss, damage or injury is caused by the negligence or willful misconduct of the Grantor.
6. HONI agrees that it shall indemnify and save harmless the Grantor from and against all claims, demands, costs, damages, expenses and liabilities (collectively the “Costs”) whatsoever arising out of HONI’s presence on the Material Storage Yard Area or of its activities on or in connection with the Material Storage Yard Area arising out of the permission granted herein except to the extent any of such Costs arise out of or are contributed to by the negligence or willful misconduct by the Grantor.
7. Notices to be given to either party shall be in writing, personally delivered or sent by registered mail (except during a postal disruption or threatened postal disruption), telegram, electronic facsimile or other similar means of prepaid recorded communication to the applicable address set forth below (or to such other address as such party may from time to time designate in such manner):

TO HONI:

Hydro One Networks Inc.
Real Estate Services
1800 Main Street East
Milton, Ontario L9T 753

Attention:
Tel:

TO GRANTOR:

XXXXXXX
XXXXXXX
XXXXXXX

Attention:
Tel:

8. Notices personally delivered shall be deemed to have been validly and effectively given on the day of such delivery. Any notice sent by registered mail shall be deemed to have been validly and effectively given on the fifth (5th) business day following the date on which it was sent. Any notice sent by telegram, electronic facsimile or other similar means of prepaid recorded communication shall be deemed to have been validly and effectively given on the Business Day next following the day on which it was sent. “Business Day” shall mean any day which is not a Saturday or Sunday or a statutory holiday in the Province of Ontario. This Agreement shall be governed by and construed in accordance with the laws of the Province of Ontario and the laws of Canada applicable herein. The parties hereto submit themselves to the exclusive jurisdiction of the Courts of the Province of Ontario.
9. Any amendments, modifications or supplements to this Agreement or any part thereof shall not be valid or binding unless set out in writing and executed by the parties with the same degree of formality as the execution of this Agreement.

Material Laydown Area

IN WITNESS WHEREOF the parties hereto have caused this Agreement to be executed by their duly authorized representatives as of the day and year first above written.

**[INSERT SUBJECT PROPERTY
LEGAL OWNER]**

Grantor’s HST Registration Number

Name:
Title:

I have authority to bind the Corporation

HYDRO ONE NETWORKS INC.

Name:
Title:

I have authority to bind the Corporation

SCHEDULE “A”

*Sketch for reference only, not to scale.

Off-Corridor Access Road

THIS AGREEMENT made in duplicate the _____ day of _____ 2021

Between:

XXXXXXXXXX

(hereinafter referred to as the “Grantor”)
OF THE FIRST PART

--- and ---

HYDRO ONE NETWORKS INC.
(hereinafter referred to as “HONI”)
OF THE SECOND PART

WHEREAS the Grantor is the owner in fee simple and in possession of certain lands legally described as **INSERT LEGAL DESCRIPTION** (the “Lands”).

WHEREAS The Grantor has entered into a Temporary Access Agreement with HONI on a portion of the Lands highlighted in green in Schedule “A” (the “Access Lands”). HONI will be utilizing a portion of the Lands as a means of off-corridor access highlighted in red in Schedule “A” (“Off-Corridor Access Lands”).

WHEREAS the Owner is agreeable in allowing HONI to enter onto the Lands to use the Off-Corridor Access Lands in order to commence activities which shall include necessary real estate, environmental and engineering studies and testing including but not limited to borehole testing, archaeological studies, soil assessments, property appraisals and surveys in, on or below the Lands subject to the terms and conditions contained herein (the “Activities”).

NOW THEREFORE THIS AGREEMENT WITNESSES THAT in consideration of the lump sum of **\$XXXXX.00** now paid by HONI to the Owner, and the respective covenants and agreements of the parties hereinafter contained and other valuable consideration, the receipt and sufficiency of which are hereby acknowledged by the parties hereto, the parties hereto agree as follows:

1. The Grantor hereby grants to HONI the right to enter upon the Lands for the purpose of Off-Corridor Access Lands.
2. The Grantor hereby grants to HONI, as of the date this Agreement, (i) the right to enter upon and exit from, and to pass and repass at any and all times in, over, along, upon, across, through and under the Off-Corridor Access Lands as may be reasonably necessary, at all reasonable times, for HONI and its respective officers, employees, workers, permittees, servants, agents, contractors and subcontractors, with or without vehicles, supplies, machinery, plant, material and equipment for the purpose of the Activities, subject to payment of compensation for damages including payment for crops caused thereby. HONI agrees that it shall take all reasonable care while undertaking the Activities.
3. The term of this Agreement and the permission granted herein shall be two (2) years from the date written above (the “Term”). HONI may, in its sole discretion, and upon 10 days notice to the Grantor, extend the Term for an additional length of time, which shall be negotiated between the parties.
4. Upon the expiry of the Term or any extension thereof, HONI shall repair any physical damage to the Off-Corridor Access Lands and/or Lands resulting from HONI’s use of the Access Lands and the permission granted herein; and, shall restore the Access Lands to its original condition so far as possible and practicable.
5. All agents, representatives, officers, directors, employees and contractors and property of HONI located at any time on the Off-Corridor Access Lands shall be at the sole risk of HONI and the Grantor shall not be liable for any loss or damage or injury (including loss of life) to them or it however occurring except and to the extent to which such loss, damage or injury is caused by the negligence or willful misconduct of the Grantor.

6. HONI agrees that it shall indemnify and save harmless the Grantor from and against all claims, demands, costs, damages, expenses and liabilities (collectively the “Costs”) whatsoever arising out of HONI’s presence on the Off-Corridor Access Lands or of its activities on or in connection with the Off-Corridor Access Lands arising out of the permission granted herein except to the extent any of such Costs arise out of or are contributed to by the negligence or willful misconduct by the Grantor.
7. Notices to be given to either party shall be in writing, personally delivered or sent by registered mail (except during a postal disruption or threatened postal disruption), telegram, electronic facsimile to the applicable address set forth below (or to such other address as such party may from time to time designate in such manner):

TO HONI:

Hydro One Networks Inc.
Real Estate Services
1800 Main Street East
Milton, Ontario L9T 7S3

Attention: Real Estate Acquisitions
Tel: 905-875-2508
Fax: 905-878-8356

TO GRANTOR:

XXXXXXXXXX
XXXXXXXXXX

8. Notices personally delivered shall be deemed to have been validly and effectively given on the day of such delivery. Any notice sent by registered mail shall be deemed to have been validly and effectively given on the fifth (5th) business day following the date on which it was sent. Any notice sent by telegram, electronic facsimile or shall be deemed to have been validly and effectively given on the Business Day next following the day on which it was sent. “Business Day” shall mean any day which is not a Saturday or Sunday or a statutory holiday in the Province of Ontario. This Agreement shall be governed by and construed in accordance with the laws of the Province of Ontario and the laws of Canada applicable herein. The parties hereto submit themselves to the exclusive jurisdiction of the Courts of the Province of Ontario.
9. Any amendments, modifications or supplements to this Agreement or any part thereof shall not be valid or binding unless set out in writing and executed by the parties with the same degree of formality as the execution of this Agreement.

IN WITNESS WHEREOF the parties hereto have caused this Agreement to be executed by their duly authorized representatives as of the day and year first above written.

SIGNED, SEALED & DELIVERED
In the presence of:

Witness

SIGNED, SEALED & DELIVERED
In the presence of:

Witness

OWNER(S):

Name:

Name:

HYDRO ONE
HST # 870 865 821 RT001

HYDRO ONE NETWORKS INC.

By: _____

Name:

Title:

I have authority to bind the Corporation

SCHEDULE “A”

PROPERTY SKETCH



CROPLAND OUT-OF-PRODUCTION FOR 202X CROP GROWING SEASON

Full and Final Release

IN CONSIDERATION of the payment in the amount of **\$XXXXXX (\$00.00)** (the “**Settlement Amount**”) by Hydro One Networks Inc. to «**Owner_1_name_for_letters**» & «**Owner_2_name_for_letters**» & «**Owner_3_name_for_letters**» and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, each of the undersigned, on behalf of himself/herself, his/her heirs, executors, administrators, successors and assigns (hereinafter the “**Releasors**”), hereby releases and forever discharges **HYDRO ONE NETWORKS INC.** and its respective officers, directors, employees, servants and agents and its parent, affiliates, subsidiaries, and their respective successors and assigns (hereinafter collectively the “**Releasee**”) jointly and severally from any and all actions, causes of action, claims and demands for damages, indemnity, costs, interest and loss or injury of every nature and kind whatsoever, howsoever arising, which the Releasors now have, may have had or may hereafter have arising from or in any way related or as a result of the loss of crop land being out of production for the 202X crop growing season on the lands legally described as «**Legal_Description**» being PIN «**PIN**» (LT) (the “**Property**”).

The Releasors acknowledge that the Settlement Amount was calculated (hereto attached as Schedule “A”) in accordance with the Annual Market Price Option set out in the Cropland Out-of-Production Booklet, as selected by the Releasors.

AND THE RELEASORS hereby confirm and acknowledge that for the Annual Market Price Option, any cropland out-of-production will not be offered to the Property Owner if the Property Owner transacts, sells, transfers, assigns, conveys or suspends agricultural operations on the lands subject to the Cropland Out-of-Production Program.

AND FOR THE SAID CONSIDERATION, the Releasors further agree not to make any claim or take any proceedings against any other person or corporation who might claim contribution or indemnity under the provisions of the *Negligence Act* and the amendments thereto from the persons or corporations discharged by the release.

AND THE RELEASORS hereby confirm and acknowledge that the Releasors have sought or declined to seek independent legal advice before signing this Release, that the terms of this Release are fully understood, and that the said amounts and benefits are being accepted voluntarily, and not under duress, and in full and final compromise, adjustment and settlement of all claims against the Releasees.

IT IS UNDERSTOOD AND AGREED that the said payment or promise of payment is deemed to be no admission whatsoever of liability on the part of the Releasees.

AND IT IS UNDERSTOOD AND AGREED that this Release may be executed in separate counterparts (and may be transmitted by email) each of which shall be deemed to be an original and that such counterparts shall together constitute one and the same instrument, notwithstanding the date of actual execution.



Schedule "A"

The area of cropland out-of-production for the growing season of 2023 being calculated and accepted by Releasors is shown below:

***EXAMPLE ONLY					
Number of Acres:	2.08				
Rate Per Acre:	\$1,000				
Crop Loss out of Production Payment Schedule:					
Year 202X (TOTAL) =	\$	2,080.00			
Total Crop Loss Out of Production Payable (202X):					\$2,080.00
Rounded to Nearest Hundredth:					\$ 2,100.00

Damage Claim

THIS MEMORANDUM OF AGREEMENT dated the ____ day of _____, 20____

Between:

[INSERT NAME OF OWNER]
herein called the “**Claimant**”

- and-

Hydro One Networks Inc.
herein called the “**Hydro One**”

Witnesseth:

The Claimant agrees to accept: XXXXXXXX (\$XXX.XX) in full payment and satisfaction of all claims or demands for damages of whatsoever kind, nature or extent which may have been done to date by Hydro One during the construction, completion, operation or maintenance of the works of Hydro One constructed on [INSERT LEGAL DESCRIPTION] which property the Claimant is the legal owner and which damages may be approximately summarized and itemized as:

[INSERT DESCRIPTION OF DAMAGE]

Area

TOTAL \$

.

Subject to Approval by Hydro One Networks Inc.

Witness

Signature

Signature

SYSTEM IMPACT ASSESSMENT

Please refer to **Attachment 1** of this Schedule for the Draft SIA prepared by the IESO (SIA reference # CAA 2021-699).

The Draft SIA concludes that the Project is expected to have no material adverse impact on the reliability of the integrated power system, provided that all requirements in this report are implemented.

Hydro One expects to receive the IESO's Final SIA shortly and will submit it on the Application's record at that time.

Hydro One confirms that it will implement the requirements noted by the IESO in the SIA.

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System Impact Assessment Report

Draft Report - Public

CAA ID: 2021-699

Project: Lambton TS – New 230 kV Circuits

Connection Applicant: Hydro One Networks Inc.

May 1, 2024



Acknowledgement

The IESO wishes to acknowledge the assistance of Hydro One in completing this assessment.

Disclaimers

IESO

This report has been prepared solely for the purpose of assessing whether the connection applicant's proposed connection with the IESO-controlled grid would have an adverse impact on the reliability of the integrated power system and whether the IESO should issue a notice of conditional approval or disapproval of the proposed connection under Chapter 4, section 6 of the Market Rules.

Conditional approval of the project is based on information provided to the IESO by the connection applicant and Hydro One at the time the assessment was carried out. The IESO assumes no responsibility for the accuracy or completeness of such information, including the results of studies carried out by Hydro One at the request of the IESO. Furthermore, the conditional approval is subject to further consideration due to changes to this information, or to additional information that may become available after the conditional approval has been granted.

If the connection applicant has engaged a consultant to perform connection assessment studies, the connection applicant acknowledges that the IESO will be relying on such studies in conducting its assessment and that the IESO assumes no responsibility for the accuracy or completeness of such studies including, without limitation, any changes to IESO base case models made by the consultant. The IESO reserves the right to repeat any or all connection studies performed by the consultant if necessary to meet IESO requirements.

Conditional approval of the proposed connection means that there are no significant reliability issues or concerns that would prevent connection of the proposed project to the IESO-controlled grid. However, the conditional approval does not ensure that a project will meet all connection requirements. In addition, further issues or concerns may be identified by the transmitter(s) during the detailed design phase that may require changes to equipment characteristics and/or configuration to ensure compliance with physical or equipment limitations, or with the Transmission System Code, before connection can be made.

This report has not been prepared for any other purpose and should not be used or relied upon by any person for another purpose. This report has been prepared solely for use by the connection applicant and the IESO in accordance with Chapter 4, section 6 of the Market Rules. This report does not in any way constitute an endorsement of the proposed connection for the purposes of obtaining a contract with the IESO for the procurement of supply, generation, demand response, demand management or ancillary services.

The IESO assumes no responsibility to any third party for any use, which it makes of this report. Any liability which the IESO may have to the connection applicant in respect of this report is governed by Chapter 1, section 13 of the Market Rules. In the event that the IESO provides a draft of this report to the connection applicant, the connection applicant must be aware that the IESO may revise drafts of this report at any time in its sole discretion without notice to the connection applicant. Although the IESO will use its best efforts to advise you of any such changes, it is the responsibility of the connection applicant to ensure that the most recent version of this report is being used. The IESO provides no comment, representation or opinion, express or implied, with respect to who should bear the cost of IESO requirements for connection in this report and disclaims any liability in connection therewith.

Hydro One

The results reported in this report are based on the information available to Hydro One, at the time of the study, suitable for a System Impact Assessment of this connection proposal.

The short circuit and thermal loading levels have been computed based on the information available at the time of the study. These levels may be higher or lower if the connection information changes as a result of, but not limited to, subsequent design modifications or when more accurate test measurement data is available.

This study does not assess the short circuit or thermal loading impact of the proposed facilities on load and generation customers.

In this report, short circuit adequacy is assessed only for Hydro One circuit breakers. The short circuit results are only for the purpose of assessing the capabilities of existing Hydro One circuit breakers and identifying upgrades required to incorporate the proposed facilities. These results should not be used in the design and engineering of any new or existing facilities. The necessary data will be provided by Hydro One and discussed with any connection applicant upon request.

The ampacity ratings of Hydro One facilities are established based on assumptions used in Hydro One for power system planning studies. The actual ampacity ratings during operations may be determined in real-time and are based on actual system conditions, including ambient temperature, wind speed and facility loading, and may be higher or lower than those stated in this study.

The additional facilities or upgrades which are required to incorporate the proposed facilities have been identified to the extent permitted by a System Impact Assessment under the current IESO Connection Assessment and Approval process. Additional facility studies may be necessary to confirm constructability and the time required for construction. Further studies at more advanced stages of the project development may identify additional facilities that need to be provided or that require upgrading.



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Project Description

According to the *Need of Bulk System Reinforcements West of London* study report issued by the IESO in September 2021, Hydro One Networks Inc. (the “connection applicant” and “transmitter”) is proposing to build two new 59 km long 230 kV circuits, L34C and L35C, between Lambton Transformer Station (TS) and Chatham Switching Station (SS) (the “project”) to address the insufficient system capability in supplying the loads west of Chatham. The project will include:

- Disconnecting the existing 115 kV circuit N5K between Kent TS and Sarnia Scott TS supplying the load at Wallaceburg TS by Q1, 2026, and temporarily supplying this load from the 230 kV circuits L28C and L29C at 31.4 km from Chatham SS;
- Building two new 59 km long 230 kV circuits L34C and L35C between Lambton TS and Chatham SS with Wallaceburg TS permanently connecting to the two new 230 kV circuits at 31.4 km from Chatham SS;

As a transition, the section of the new circuits between Wallaceburg TS and Chatham SS will be in-service in Q1, 2027 to supply the load radially at Wallaceburg TS. The remaining section between Wallaceburg TS and Lambton TS will be in-service in Q4, 2028;

- Installing two new 230 kV bus tie breakers at Chatham SS by Q4, 2028.

The new circuits will be on double-circuit towers. During the SIA process, the connection applicant advised that discussion was going on regarding the possible use of a four-circuit tower at one location where the new line crosses the existing L28C/L29C line. If used, the four circuits (the two new circuits, L28C and L29C) would be on a common tower. The connection applicant will provide a confirmation when a decision is made. This SIA assumed no use of a four-circuit tower.

Notification of Conditional Approval

This assessment concludes that the proposed connection of the project is expected to have no material adverse impact on the reliability of the integrated power system, provided that all requirements in this report are implemented. Therefore, the assessment supports the release of the Notification of Conditional Approval for connection of the project.

Assessment Findings

System studies were carried out to identify the impact of the project on loading of transmission facilities, system voltages, voltage stability, and load security in accordance to the Ontario Resource and Transmission Adequacy Criteria (ORTAC) and in line with applicable reliability standards. Based on the assessment results, the following assessment findings were identified:

- (1) During the transition period when Wallaceburg TS is connected to circuits L28C and L29C, or radially connected to Chatham SS, the load at Wallaceburg TS will exacerbate the pre-contingency thermal overloads on L28C and L29C, under L28C, L29C, W44LC, W45LS, or S47C outage conditions during the winter. The whole Brighton Beach CGS facility was assumed in-service under all outage conditions.

IESO Requirements for Connection

Specific Requirements:

The following specific requirements are applicable for the incorporation of the project and its connection facilities. Specific requirements pertain to the level of reactive power compensation needed, operation restrictions, remedial action scheme (RAS), upgrading of equipment and any project specific items not covered in the general requirements.

1. Hydro One shall install RAS facilities to include the project in the Lakeshore RAS and Lambton Generation Rejection (G/R) Scheme. During the IESO Market Registration process, a revised Facility Description Document (FDD) for Lakeshore RAS and Lambton G/R Scheme must be provided and finalized at least nine months prior to in-service. The FDD must contain the finalized RAS matrix as well as expected operating times. The actual operating times must be measured during commissioning and documented as a Performance Validation Record.

If the FDD or performance testing as per the Performance Validation Record indicates a change in design or slower than expected operating times, as compared to what was assumed in this assessment, then further analysis of the project will need to be done by the IESO. This may delay the grant of IESO final approval to place the project in-service.

Hydro One shall ensure that the RAS facilities comply with NPCC Reliability Reference Directory #7 as per the RAS type classification which will be finalized during the Market Registration process. To avoid any delay to the project, it is strongly recommended the RAS facilities be designed to meet NPCC Reliability Reference Directory #7 for NPCC Type I RAS before the RAS type classification is finalized. If deemed or expected to be a Type II or Limited Impact RAS, the transmitter shall ensure the RAS facilities have provisions to comply with NPCC Reliability Reference Directory #7 for Type I RAS in case the RAS is re-classified as NPCC Type I RAS in the future as the system evolves.

2. The connection applicant shall provide a confirmation to the IESO if a four-circuit tower is used for the new circuits and L28C/L29C. If yes, the IESO will assess the information and may need to amend this SIA report.

The connection applicant is strongly recommended to not use a four-circuit tower for the new circuits and L28C/L29C as it will result in an outage condition to multiple circuits, compromising the real-time load supply reliability of the west of Chatham system.

3. To address Finding #1, for the transition period, Hydro One is required to revise their previous internal instruction for the west of Chatham system that addresses the principles of load interruption and restoration priority and supports coordination of outage planning and real time operation. The revised instruction shall take into account the load at Wallaceburg TS or the same amount of additional load west of Chatham.

General Requirements:

The connection applicant shall satisfy all applicable requirements specified in the Market Rules, the Transmission System Code (TSC) and reliability standards. Some of the general requirements that are applicable to this project are presented in detail in Appendix A: General Requirements of this report.

Appendix A: General Requirements

The connection applicant shall satisfy all applicable requirements specified in the Market Rules, the Transmission System Code and reliability standards. This section highlights some of the general requirements that are applicable to the project.

1. The connection applicant must notify the IESO at connection.assessments@ieso.ca as soon as they become aware of any changes to the project scope or data used in this assessment. The IESO will determine whether these changes require a re-assessment.
2. The connection applicant shall ensure that the BPS elements are in compliance with the applicable NPCC criteria and the BES elements in compliance with the applicable NERC reliability standards. To determine the standard requirements that are applicable, the IESO provides mapping tools titled "NPCC Criteria Mapping Spreadsheet" for BPS elements and "NERC Reliability Standard Mapping Tool/Spreadsheet" for BES elements at the IESO's website of [Applicability Criteria for Compliance with Reliability Requirements](#).

Note, the connection applicant may request an exception to the application of the BES definition. The procedure for submitting an application for exemption can be found in Market Manual 11.4: "[Ontario Bulk Electric System \(BES\) Exception](#)" at the IESO's website.

The IESO's criteria for determining applicability of NERC reliability standards and NPCC Criteria can be found in the Market Manual 11.1: "[Applicability Criteria for Compliance with NERC Reliability Standards and NPCC Criteria](#)" at the IESO's website.

Compliance with these reliability standards will be monitored and assessed as part of the IESO's Ontario Reliability Compliance Program. For more details about compliance with applicable reliability standards, the connection applicant is encouraged to contact orcp@ieso.ca and also visit the [Ontario Reliability Compliance Program webpage](#).

However, like any other system element in Ontario, the BPS and BES classifications of the project will be periodically re-evaluated as the electrical system evolves.

3. The connection applicant shall ensure that the project's equipment meet the voltage requirements specified in section 4.2 and section 4.3 of the Ontario Resource and Transmission Assessment Criteria (ORTAC).
4. According to Section 6.1.2 of the TSC, the connection applicant must ensure the project's transmission connection equipment is designed to withstand the fault levels in the area. According to Section 6.4.4 of the TSC, if any future system changes result in an increased fault level higher than the project's equipment capability, the connection applicant is required to replace that equipment with higher rated equipment capable of withstanding the increased fault level, up to the maximum fault level specified in Appendix 2 of the TSC.

It is the connection applicant's responsibility to verify that all equipment and circuit breakers within the project are appropriately sized for the local fault levels.

The connection applicant shall ensure that the circuit breakers/switchers installed at the project have rated interrupting time that satisfies Appendix 2 of the TSC. Fault interrupting devices installed at the project must be able to interrupt fault currents at the applicable maximum continuous voltage as specified in Section 4.2 and Section 4.3 of ORTAC.

5. The connection applicant shall ensure that the protection systems are designed to satisfy all the requirements of the TSC. New protection systems must be coordinated with existing protection systems. Protection systems within the project shall only trip the appropriate equipment isolating the fault.

Associated overvoltage protective relaying must be set to ensure that the project's equipment does not automatically trip for voltages up to 5% above the equipment's corresponding maximum continuous voltage as specified in section 4.2 of the ORTAC.

BPS elements are deemed by the IESO to be essential to system reliability and security and must be protected by redundant protection systems in accordance with Section 8.2 of the TSC. These redundant protection systems must satisfy all requirements of the TSC, and in particular, they must be physically separated and not use common components, common battery banks, or common instrument transformer secondary windings.

The protection systems for transmission voltage BES elements (whose rated voltage is higher than 100 kV) must be redundant. Redundancy must be present in protective relaying for normal fault clearing and control circuitry associated with protective functions including trip coils of the circuit breakers or other interrupting devices. These redundant protection systems must not use common instrument transformer secondary windings. A single communication system, if used, must be monitored and reported and a single DC supply, if used, must be monitored and reported for both low voltage and open circuit.

As the electrical system evolves, transmission voltage non-BPS or non-BES elements (whose rated voltage is higher than 100 kV) within the project, may be re-classified as BPS elements or BES elements. The connection applicant is recommended to design the protection systems for these elements according to the protection requirements for BPS elements or have adequate provisions for future upgrade to meet those requirements.

6. The connection applicant shall ensure that the connection equipment is designed to be fully operational in all reasonably foreseeable ambient conditions. Failures of the connection equipment must be contained within the project and have no adverse impact on the IESO-controlled grid.
7. In accordance with Section 7.4 of Chapter 4 of the Market Rules, the connection applicant shall provide to the IESO the applicable telemetry data listed in Appendix 4.16 of the Market Rules on a continual basis. The data shall be provided in accordance with the performance standards set forth in Appendix 4.20 and Appendix 4.21, subject to Section 7.6A of Chapter 4 of the Market Rules. The whole telemetry list will be finalized during the IESO's Market Registration process.

The connection applicant must install monitoring equipment that meets the requirements set forth in Appendix 2.2 of Chapter 2 of the Market rules. As part of the IESO's Market Registration process, the connection applicant must also complete end to end testing of all necessary telemetry points with the IESO to ensure that standards are met and that sign conventions are understood. All found anomalies must be corrected before IESO's final approval to connect any phase of the project is granted.

8. The connection applicant must initiate the IESO's Market Registration process at least eight months prior to the commencement of any project related outages. The connection applicant is required to provide "as-built" equipment data for the project during the IESO Market Registration

process. If the submitted equipment data differ materially from the ones used in this assessment, then further analysis of the project may need to be done by the IESO before final approval to connect is granted.

At the sole discretion of the IESO, performance tests may be required at generation and transmission facilities. The objectives of these tests are to demonstrate that equipment performance meets the IESO requirements, and to confirm models and data are suitable for IESO purposes. The transmitter may also have its own testing requirements. The IESO and the transmitter will coordinate their tests, share measurements and cooperate on analysis to the extent possible.

Once the IESO's Market Registration process has been successfully completed, the IESO will provide the connection applicant with a Registration Approval Notification (RAN) document, confirming that the project is fully authorized to connect to the IESO-controlled grid. For more details about this process, the connection applicant is encouraged to contact IESO's Market Registration at market.registration@ieso.ca.

9. If the connection applicant is currently a participant in the Ontario Power System Restoration Plan, its restoration participant attachment is required to be updated to include the project according to Market Manual 7.8. For either an existing or newly identified participant in the Ontario Power System Restoration Plan, details regarding restoration participant requirements will be finalized during the IESO Market Registration process.

If the project is classified as a Key Facility that is required to establish a Basic Minimum Power System following a system blackout, it shall meet testing requirements of Critical Components belonging to Key Facilities as specified in Market Manual 7.8. Key Facility, Basic Minimum Power System and Critical Component terms are defined in the NPCC Glossary of Terms.

10. The Ontario Resource and Transmission Assessment (ORTAC) states that the transmission system must be planned such that, following design criteria contingencies on the transmission system, affected loads can be restored with the restoration times listed below:
 - a. All load must be restored within approximately a target of 8 hours;
 - b. When the amount of load interrupted is greater than 150MW, the amount of load in excess of 150MW must be restored within approximately a target of 4 hours;
 - c. When the amount of load interrupted is greater than 250MW, the amount of load in excess of 250MW must be restored within a target of 30 minutes.
11. As per Market Manual 1.4: Connection Assessment and Approval, the connection applicant will be required to provide a status report of its proposed project with respect to its progress upon request of the IESO using the [project status report form](#) on the IESO website. Failure to comply with project status requirements listed in Market Manual 1.4: Connection Assessment and Approval will result in the project being withdrawn.

The connection applicant will be required to also provide updates and notifications in order for the IESO to determine if the project is "committed" as per Section 3.3 of Market Manual 1.4: Connection Assessment and Approval.



Appendix B: Project Data (Confidential)

Appendix C: Facility Classification (Confidential)

Appendix D: Study Scope of Work (Confidential)

Appendix E: Detailed Study Results (Confidential)

**Independent Electricity
System Operator**

1600-120 Adelaide Street West
Toronto, Ontario M5H 1T1

Phone: 905.403.6900

Toll-free: 1.888.448.7777

E-mail: customer.relations@ieso.ca

ieso.ca



[@IESO Tweets](https://twitter.com/IESO)



facebook.com/OntarioIESO



linkedin.com/company/IESO

CUSTOMER IMPACT ASSESSMENT

Please refer to **Attachment 1** of this Schedule for the Draft CIA prepared by Hydro One.

Hydro One expects to finalize the CIA following the receipt of the IESO's Final SIA and once all customer comments on the Draft CIA have been addressed. Once finalized, Hydro One will submit it on the Application's record at that time.

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483 Bay Street
Toronto, Ontario
M5G 2P5

CUSTOMER IMPACT ASSESSMENT

**LAMBTON TS X CHATHAM SS NEW 2-CIRCUIT 230 kV
LINE DEVELOPMENT**

CIA ID: 2024-08

Revision: **DRAFT**

Date: **May 1, 2024**

Issued by: **Transmission System Planning Department
Hydro One Networks Inc.**

Prepared by:

Reviewed by:

Emeka Okongwu, P.Eng.
Senior Network Management Engineer
System Planning Division

Mark Brodie, P.Eng.
Manager - Transmission Planning
System Planning Division

DISCLAIMER

This Customer Impact Assessment was prepared based on information available about the connection of the Lambton TS x Chatham SS New 2-circuit 230 kV Line project. It is intended to highlight significant impacts, if any, to affected transmission customers early in the project development process and thus allow an opportunity for these parties to bring forward any concerns that they may have including those needed for the review of the connection and for any possible application for “leave to construct”. Subsequent changes **to the required modifications** or the implementation plan may affect the impacts of the proposed connection identified in Customer Impact Assessment. The results of this Customer Impact Assessment are also subject to change to accommodate the requirements of the IESO and other regulatory or municipal authority requirements.

Hydro One Networks shall not be liable to any third party which uses the results of the Customer Impact Assessment and Addendums under any circumstances whatsoever, for any indirect or consequential damages, loss of profit or revenues, business interruption losses, loss of contract or loss of goodwill, special damages, punitive or exemplary damages, whether any of the said liability, loss or damages, arises in contract, tort or otherwise.

EXECUTIVE SUMMARY

Hydro One Inc. proposes to develop the Lambton TS x Chatham SS New 2-circuit 230 kV Line project in the medium-term as the first phase in the reinforcement of the bulk transmission east of Chatham, and the second phase of reinforcement for the broader West of London region in order to reliably meet the requirements of the rapidly increasing load demand in the Windsor – Essex Region. This 63 km line project is planned for in service in Q4 2028.

Due to line routing considerations, the new line will repurpose about 41 km of the existing 115 kV line, N5K, which currently supplies Wallaceburg TS, a 2-25/33/42 MVA, 115/27.6 kV station, supplied from circuit N5K. Consequently, Wallaceburg TS will be converted to a 2-50/67/83 MVA, 230/27.6 kV station, and be supplied from the new line.

The project also involves the modification of the existing Lakeshore Remedial Action System (RAS), and Lambton G/R scheme.

This Customer Impact Assessment (CIA) is concerned with the potential impact of the above project on transmission connected customers in the area.

An assessment of voltage performance and loading capability of the transmission facilities in the area has been carried out and documented in an IESO System Impact Assessment (SIA) Draft Report, CAA ID 2021-699: Lambton x Chatham – New 230 kV Circuits, dated May 1, 2024. The report indicates that voltage performance of all connection points would remain within the Market Rules requirements, and that with the application of the modified Lakeshore RAS and Lambton G/R scheme, as specified by the SIA, the thermal loading of the facilities would remain within their ratings.

The following potential impacts on existing customers in the area are reviewed in this CIA:

- Short circuit impact
- Impact on customer power supply reliability.

The findings of this CIA are as follows:

1. Following the incorporation of the Lambton TS x Chatham SS New 2-circuit 230 kV Line project, the short circuit levels exceed the limits of the Transmission System Code (TSC) at Lambton 230 kV while remaining within the limits at all customer connection points. Lambton TS would have to be operated in a bus split mode to manage this exceedance. The largest percentage increase in symmetrical short circuit current due to this project is 135% at Wallaceburg TS 27.6 kV bus.
2. The incorporation of the Lambton TS x Chatham SS New 2-circuit 230 kV Line project, specifically the conversion of Wallaceburg TS from 115 kV to 230 kV supply, will materially improve the power supply reliability for customers supplied from this station; substantially reduce the transmission line losses associated with supplying the station; and substantially increase the station supply capacity.
3. The Lakeshore RAS would affect only South Middle Road TS, Windsor NextStar TS and stations connected to the radial Lakeshore TS x Leamington TS circuits. Hence the reliability of supply to customers connected to other stations in the Windsor – Essex Region would not be affected.

CUSTOMER IMPACT ASSESSMENT

LAMBTON TS X CHATHAM SS NEW 2-CCT 230 KV LINE

1.0 INTRODUCTION

1.1 Background

Hydro One Inc. proposes to develop the Lambton TS x Chatham SS New double-circuit 230 kV Line project (Figure 1) in the medium-term in order to reliably meet the requirements of the rapidly increasing load demand in the Windsor – Essex Region. This would be the first phase in the reinforcement of the bulk transmission east of Chatham, and the second phase of reinforcement west of London, intended to eliminate transmission constraints which limit power transfers into the Windsor – Essex Region hence limiting load growth in the region. The rapid load growth in the region is driven by both the industrial and agricultural sectors. These transmission constraints are currently being managed with a Remedial Action System (RAS) which is located at Lakeshore TS. The RAS rejects load and generation, as required, to keep circuit flows within limits. This project is planned to be in service in Q4 2028.

Due to line routing considerations, the new line will repurpose a 41 km section of the existing Scott TS x Kent TS 115 kV single circuit line, N5K, which currently supplies Wallaceburg TS, a 115/27.6 kV load supply station. Consequently, this station would be disconnected from circuit N5K, converted to a 230/27.6 kV load supply station and connected to the two new circuits. Hence the station which is currently supplied by a single circuit would be supplied by two circuits thus increasing the supply reliability.

The existing Lakeshore Remedial Action System (RAS) and Lambton Generation Rejection (G/R) scheme are to be modified to reflect changes due to the transmission reinforcement brought about by this project.

In accordance with section 6 of the Ontario Energy Board's Transmission System Code, Hydro One Networks Inc (Hydro One) has carried out this Customer Impact Assessment (CIA) study to assess the impact of the proposed projects on existing customers in the affected area. The primary focus of this assessment is possible short circuit and reliability impact on transmission connected customers following the incorporation of the Lambton TS x Chatham SS new double-circuit 230 kV Line project. This study does not evaluate the overall impact of these projects on the bulk electricity system. The impact of the new facilities on the bulk electricity system is the subject of the System Impact Assessment (SIA) carried out by the Independent Electricity System Operator (IESO).

As part of the Connection Assessment and Approval (CAA) process, the IESO has carried out a System Impact Assessment (SIA) for the West of Chatham Transmission Development projects, and has documented the findings in the Draft Report, CAA ID 2021-699: Lambton x Chatham – New 230 kV Circuits, dated May 1, 2024.

1.3 Customer List

The transmission customers in the area are;

- Trans Alta Energy Corporation (Sarnia)
- Imperial Oil (Sarnia Refinery Complex)

- Arlanxeo Canada Inc.
- St. Clair Power LP
- Shell Canada Products
- Nova Chemicals (Canada) Ltd
- Greenfield South Power Corporation
- Greenfield Energy Centre LP
- East Lake St. Clair Wind LP
- North Kent Wind 1 LP
- Brighton Beach Power LP
- Erieau Wind LP
- Kruger Energy Port Alma LP
- North Kent Wind 1 LP
- Romney Energy Centre LP
- South Kent Wind LP
- SP Belle River Wind LP
- Talbot Windfarm LP
- TerraForm IWG Ontario Holdings, LLC
- 2016 Comber Wind LP
- Hydro One Networks Inc
- Entegrus Powerlines Inc
- 2820853 Ontario Ltd.

Table 1 lists all stations and supply circuits of the existing transmission customers in the area.

Table 1: Transmission Customers in the Area

No.	Station	Connection	Connected Customer
1	Trans Alta Energy CGS	230 kV N6S, N7S	• Trans Alta Energy Corp (Sarnia)
2	Imperial Oil CTS	230 kV N6S, N7S	• Imperial Oil (Sarnia Refinery Complex)
3	Arlanxeo Canada Inc CTS	230 kV N6S, N7S	• Arlanxeo Canada Inc.
4	St Clair Energy Centre CGS	230 kV V41N, V43N	• St. Clair Power LP
5	Shell Sarnia CTS	230 kV L23N, V43N	• Shell Canada Products
6	Nova St Clair CTS	230 kV L23N, V43N	• Nova Chemicals (Canada) Ltd
7	Nova Corunna CTS	230 kV L27V, V41N	• Nova Chemicals (Canada) Ltd
8	Nova Moore CTS	230 kV L25V, L27V	• Nova Chemicals (Canada) Ltd
9	Greenfield Energy Centre CGS	230 kV L37G, L38G	• Greenfield Energy Centre LP
10	Leamington TS	230 kV H38, H39	• Hydro One Networks Inc.
11	Malden TS	230 kV H25J, H26J	• Essex Powerlines Corp. • Enwin Utilities Ltd • Hydro One Networks Inc.
12	Keith TS	230 kV H25J, H26J, J20B	• Brighton Beach Power LP • West Windsor Power
13	Lauzon TS	230 kV H53Z, H54Z	• Enwin Utilities Ltd. • Hydro One Networks Inc. • Essex Powerlines Corp.
14	Comber WFCGS	230 kV C42H, C43Z	• 2016 Comber Wind LP
15	Port Alma #1 WFCGS	230 kV C42H, C43H	• Kruger Energy Port Alma LP
16	Port Alma #2 WFCGS	230 kV C42H C43H	• Kruger Energy Port Alma LP
17	Dillon WFCGS	230 kV C42H	• TerraForm IWG Ontario Holdings, LLC
18	Belle River CGS	230 kV C42H	• SP Belle River Wind LP
19	Romney CGS	230 kV C64H	• Romney Energy Centre LP
20	South Kent Sattern CGS, Railbed CGS	230 kV C31	• South Kent Wind LP
21	East Lake St Clair CGS	230 kV L29C	• East Lake St Clair Wind LP
22	North Kent 1 CGS	230 kV L29C	• North Kent Wind 1 LP
23	GSPC CGS	230 kV L28C	• Greenfield South Power Corporation
24	Spence CGS	230 kV Spence SS	• Talbot Windfarm LP
25	Erieau WF CGS	230 kV S47C	• Erieau Wind LP

26	Kent TS	230 kV L28C, L29C	<ul style="list-style-type: none"> • Hydro One Networks Inc • Entegrus Powerlines Inc
27	Wallaceburg TS	230 kV L34C, L35C	<ul style="list-style-type: none"> • Hydro One Inc
28	Mastron CTS	230 kV H38	<ul style="list-style-type: none"> • 2820853 Ontario Ltd.
29	Windsor NextStar TS	230 kV H53Z, H54Z	<ul style="list-style-type: none"> • Hydro One Networks Inc.

2.0 Customer Impact Assessment Scope

The purpose of this CIA is to assess the potential impacts of the Lambton TS x Chatham SS New 2-circuit 230 kV Line project on the existing transmission-connected load and generation customers in the general area. This is in accordance with the requirements of the Ontario Energy Board's Transmission System Code.

A review of the following potential impacts on existing customers is conducted in this CIA:

- Short circuit impact at the connection point
- Impact on customer power supply reliability

3.0 LOAD FLOW

As documented in the SIA report, the results of load flow studies indicate thermal overload of various circuits following recognized contingencies. The existing Lakeshore RAS and the existing Lambton G/R scheme will be modified to manage these overloads. The report indicates that voltage levels and voltage changes are within Ontario Resource and Transmission Criteria (ORTAC) criteria for all 230 kV and 115 kV buses in the general area. The thermal overload of circuits is the consequence of the inadequacy of the existing transmission network facilities in the West system. The modified Lakeshore RAS and Lambton G/R scheme will be used to manage this inadequacy pending future transmission development.

Only South Middle Road TS, Windsor NextStar TS and stations connected to the Lakeshore TS x Leamington TS radial circuits will participate in the Lakeshore RAS load rejection.

4.0 SHORT-CIRCUIT STUDY ANALYSIS

Short-circuit studies were carried out to determine fault levels at customer connection points in the general area before, and after the incorporation of the Lambton TS x Chatham SS New 2-circuit 230 kV Line project. These results would help customers determine if the proposed project results in short-circuit levels that are within the ratings of their existing equipment.

For the determination of fault levels, pre-fault voltages of 250 kV, 127 kV, 29 kV and 14.2 kV are assumed at 230 kV, 115 kV, 27.6 kV and 13.8 kV buses, respectively.

4.1 Prior to Incorporation of the Lambton TS x Chatham SS New 2-circuit 230 kV Line project

Short-circuit studies were initially carried out to determine fault levels in the general area before the incorporation of the Lambton TS x Chatham SS New 2-circuit 230 kV Line project in Q4 2028. The study results are summarized in Table 2, showing both symmetric and asymmetric fault currents.

As shown in Table 2, short circuit levels at all connection points are within the limits set out in Appendix 2 of the TSC. The applicable TSC limits for this project are summarized below for reference:

Nominal Voltage (kV)	Max 3-Phase Fault (kA)	Max SLG Fault (kA)
230	63	63
115	50	50
27.6 (4-wire)	17	12
13.8	21	10

4.2 With the Incorporation of Lambton TS x Chatham SS New 2-circuit 230 kV Line project

The results of short circuit studies following the incorporation of the Lambton TS x Chatham SS New 2-circuit 230 kV Line project are shown in Table 3 along with the relative increase due to the project.

The results in Table 3 show that short circuit levels increase at all customers' connection points in the general area. These levels are still within the limits of the Transmission System Code, except for Lambton TS 230 kV bus where both the three-phase and single phase-to-ground limits are exceeded.

To manage this fault level exceedance, the Lambton 230 kV bus tie breakers would have to be operated open. The resulting fault levels in this mode of operation are shown in Table 4, and these levels are now within the limits of the code. The largest percentage increase in symmetrical short circuit current due to this project is 135% at the Wallaceburg TS 27.6 kV bus due to its conversion from 115 kV supply to 230 kV supply.

All area customers are advised to review the short circuit results to ensure that their equipment ratings are adequate.

5.0 SUPPLY RELIABILITY AND CAPACITY

The IESO SIA report concluded that the Lambton TS x Chatham SS New 2-circuit 230 kV Line project does not have a material adverse impact on the reliability of the integrated power system, provided that the recommended modifications to the Lakeshore RAS and the Lambton G/R scheme are implemented.

The addition of the new 2-circuit Lambton TS x Chatham SS line will reinforce the bulk transmission system east of Chatham, allowing for increased power transfer into the Windsor - Essex Region to reliably supply the forecast load growth in the region. This addition will improve the power supply reliability for customers in the region.

The conversion of Wallaceburg TS from a single circuit 115 kV supply to 2-circuit 230 kV supply will improve supply reliability for customers supplied from this station, as the loss of the station

would now be due to a fault on two circuits which is a lower probability event than a fault on a single circuit. For this delivery point, the frequency of supply interruptions, due to both planned and forced outages, would be reduced from 1.46 interruptions/year to 0.06 interruptions/year, and the annual interruption duration would be reduced from 9.4565 minutes to 8.3500 minutes (Table 5).

This conversion combined with the use of significantly lower resistance conductor, relative to the existing N5K conductor, would significantly reduce the transmission line losses in supplying the station load. As per Table 6, the transmission line losses associated with this delivery point would be reduced from 2191 MWhr/year to 52 MWhr/year.

The transformers at Wallaceburg TS which are currently 2-25/33/42 MVA, 115/27.6 kV, would be replaced with larger size units (2-50/67/83 MVA, 230/27.6 kV). Hence the station supply capacity would increase from 63 MVA to 95 MVA, and then to 114 MVA if additional LV station work is done. The increase in capacity would enable the station to provide supply to more customers.

6.0 CONCLUSIONS AND RECOMMENDATIONS

This CIA report presents results of incorporating the Lambton TS x Chatham SS new 2-circuit 230 kV Line project which is planned to be completed in Q4 2028. In particular, the results of short circuit analyses customers have been presented, including the beneficial impact of converting Wallaceburg TS from 115 kV supply to 230 kV supply.

The assessment as reported in the SIA document shows that voltage performance and circuit loading are within applicable criteria with the application of load and generation rejection as recommended in the report.

Short-circuit studies were carried out to determine the expected fault levels at customer transmission connection points following the incorporation of the Lambton TS x Chatham SS New 2-circuit 230 kV Line project. The Lambton 230 kV bus would have to be operated in split mode to manage the high short circuit levels resulting from this project. In this mode of operation the short circuit levels observed at all connection points, though substantially increased at some locations, are within the limits of the Transmission System Code.

It is recommended that area customers review the impact of the short-circuit changes on their facilities and take appropriate and timely action to address any safety/technical issues arising out of the changes which would result following the incorporation the Lambton TS x Chatham SS New 2-circuit 230 kV Line project in Q4 2028.



Figure 1: Map of Lambton – Chatham Area: With New 230 kV Line

Table 2: Fault Levels (kA) Before the Lambton TS x Chatham SS 2-cct 230 kV Line Project

Location	3-Phase		L-G	
	Symmetrical	Asymmetrical	Symmetrical	Asymmetrical
Chatham SS 230 kV	27.43	30.79	25.17	28.06
Lambton P1K1 230 kV	60.52	77.72	61.15	78.29
Lambton P2K2 230 kV	60.52	84.20	61.15	84.93
Scott 230 kV	43.49	53.82	42.46	52.54
Keith 230 kV	21.86	28.34	24.04	32.78
Lauzon A 230 kV	10.76	12.44	10.40	12.44
Lauzon H 230 kV	10.71	12.32	10.36	12.33
Greenfield L37 230 kV	41.07	52.87	41.10	52.20
Greenfield L38 230 kV	40.08	49.19	38.88	46.85
TransAlta Energy 230 kV	34.99	43.08	30.83	40.16
Imperial Oil N6S 230 kV	34.81	40.47	31.91	35.86
Imperial Oil N7S 230 kV	34.56	40.15	31.58	35.41
Arlanxco N6S 230 kV	36.13	42.11	33.40	37.74
Arlanxco N7S 230 kV	36.48	42.57	33.87	38.39
St Clair EC V41N 230 kV	35.47	43.12	36.65	46.17
St Clair EC V43N 230 kV	35.57	43.28	36.72	46.28
N Chem SS V41N 230 kV	31.57	37.15	28.51	31.35
N Chem SS V43N 230 kV	31.73	37.37	28.53	31.39
Shell Sarnia L23N 230 kV	29.03	33.21	25.74	27.56
Shell Sarnia V23N 230 kV	29.99	34.57	27.33	30.09
Nova St Clair L23N 230 kV	30.78	35.75	27.75	29.92
Nova St Clair V43N 230 kV	31.52	36.79	29.17	32.48
Nova Corunna L27N 230 kV	27.69	31.43	24.06	26.04
Nova Corunna V41N 230 kV	27.41	31.07	23.85	25.79
Nova Moore L25V 230 kV	30.84	35.74	27.02	29.31
Nova Moore L27V 230 kV	30.91	35.81	27.01	29.31
GSPC Jct L28C 230 kV	37.09	42.91	35.41	41.06
HRPP JCT 230 kV	36.70	41.93	34.56	40.04
East LK St Clair 230 kV	15.76	17.51	13.88	15.15
North Kent Jct 230 kV	17.36	19.13	15.15	16.12
Kent TS L28C 230 kV	17.96	19.70	14.80	15.68
Kent TS L29C 230 kV	18.15	19.97	15.08	15.99
C31 SKWP CMS Jct 230 kV	17.56	19.22	15.54	16.99
Erieau WF Jct 230 kV	27.06	30.34	24.77	27.58
Spence CSS 230 kV	13.91	15.40	11.23	12.27
Kepa WF Jct C42H 230 kV	13.58	14.82	11.69	12.27
Kepa WF Jct C43H 230 kV	14.12	15.35	13.50	14.41
Railbed CGS 230 kV	8.21	8.93	7.32	8.45
Sattern CGS 230 kV	13.35	14.50	11.64	13.22
Comber Jct C42H 230 kV	19.63	21.87	19.40	22.35
Comber Jct C43H 230 kV	19.67	21.67	19.55	22.27
NOVA SS V41N 230 kV	31.57	37.15	28.51	31.35
Romney Jct 230 kV	15.11	16.47	13.69	14.78
Belle River Jct 230 kV	19.78	22.07	18.81	20.85
Brighton Beach J20B 230 kV	21.63	28.02	23.76	32.03
Windsor NextStar H53Z 230 kV	10.76	12.44	10.40	12.44
Windsor NextStar H54Z 230 kV	10.71	12.32	10.36	12.33
Mastron2 Jct 2230 kV	17.09	19.02	15.05	16.35
S Middle Rd H75 230 kV	22.44	25.16	21.52	24.16
S Middle Rd H76 230 kV	22.84	25.63	21.86	24.62
Leamington H38 230 kV	12.38	13.81	10.15	10.86
Leamington H39 230 kV	12.26	13.68	10.05	10.75
Lambton J 27.6 kV	9.15	12.53	6.53	8.80
Lambton Q 27.6 kV	10.61	14.22	8.18	10.72
Kent B 27.6 kV	13.26	17.29	10.49	13.80
Kent Y 27.6 kV	14.31	18.55	10.65	14.03
Kent EZ 27.6 kV	13.65	17.97	10.72	14.87
Wallaceburg 27.6 kV	7.13	7.13	7.28	7.28
Wallaceburg 230 kV	-	-	-	-

Table 3: Fault Levels (kA) with the Lambton TS x Chatham SS 2-cct 230 kV Line Project - Lambton 230 kV bus Closed

Location	3-Phase		L-G		Increase (%)	
	Symmetrical	Asymmetrical	Symmetrical	Asymmetrical	3-Ph Sym.	L-G Sym.
Chatham SS 230 kV	33.38	37.37	30.28	33.50	21.68	20.28
Lambton P1K1 230 kV	63.39	81.11	64.13	81.64	4.73	4.86
Lambton P2K2 230 kV	63.39	87.95	64.13	88.69	4.73	4.86
Scott 230 kV	43.99	54.32	42.77	52.86	1.15	0.72
Keith 230 kV	22.34	28.87	24.42	33.22	2.20	1.61
Lauzon A 230 kV	11.03	12.71	10.57	12.60	2.44	1.59
Lauzon H 230 kV	10.97	12.58	10.52	12.50	2.45	1.59
Greenfield L37 230 kV	42.23	54.20	42.01	53.18	2.82	2.21
Greenfield L38 230 kV	41.22	50.40	39.75	47.72	2.84	2.23
TransAlta Energy 230 kV	35.29	43.37	30.98	40.31	0.84	0.48
Imperial Oil N6S 230 kV	35.11	40.77	32.08	36.02	0.88	0.52
Imperial Oil N7S 230 kV	34.86	40.44	31.74	35.56	0.87	0.51
Arlanxo N6S 230 kV	36.47	42.44	33.59	37.91	0.92	0.55
Arlanxo N7S 230 kV	36.82	42.90	34.06	38.57	0.93	0.56
St Clair EC V41N 230 kV	35.86	43.52	36.93	46.47	1.09	0.78
St Clair EC V43N 230 kV	35.96	43.67	37.00	46.58	1.10	0.78
N Chem SS V41N 230 kV	32.00	37.58	28.79	31.62	1.37	0.97
N Chem SS V43N 230 kV	32.17	37.81	28.80	31.65	1.37	0.95
Shell Sarnia L23N 230 kV	29.36	33.53	25.94	27.74	1.12	0.74
Shell Sarnia V23N 230 kV	30.32	34.90	27.53	30.28	1.10	0.73
Nova St Clair L23N 230 kV	31.14	36.12	27.97	30.13	1.19	0.80
Nova St Clair V43N 230 kV	31.88	37.15	29.40	32.70	1.16	0.78
Nova Corunna L27N 230 kV	28.02	31.76	24.26	26.23	1.20	0.80
Nova Corunna V41N 230 kV	27.73	31.39	24.04	25.97	1.19	0.81
Nova Moore L25V 230 kV	31.32	36.22	27.32	29.61	1.54	1.12
Nova Moore L27V 230 kV	31.38	36.28	27.30	29.60	1.53	1.08
GSPC Jct L28C 230 kV	37.59	43.40	35.82	41.46	1.35	1.16
HRPP JCT 230 kV	37.20	42.43	34.98	40.45	1.38	1.20
East LK St Clair 230 kV	16.10	17.87	14.10	15.37	2.13	1.61
North Kent Jct 230 kV	18.28	20.10	15.79	16.76	5.31	4.23
Kent TS L28C 230 kV	19.79	21.64	16.02	16.91	10.15	8.25
Kent TS L29C 230 kV	19.99	21.93	16.32	17.23	10.14	8.22
C31 SKWP CMS Jct 230 kV	19.71	21.42	17.04	18.50	12.21	9.65
Erieau WF Jct 230 kV	32.78	36.65	29.65	32.76	21.15	19.69
Spence CSS 230 kV	14.62	16.15	11.62	12.67	5.09	3.51
Kepa WF Jct C42H 230 kV	14.53	15.78	12.23	12.80	6.97	4.66
Kepa WF Jct C43H 230 kV	15.10	16.34	14.18	15.07	6.98	5.01
Railbed CGS 230 kV	8.62	9.34	7.57	8.70	4.98	3.46
Sattern CGS 230 kV	14.52	15.69	12.40	13.99	8.81	6.51
Comber Jct C42H 230 kV	21.18	23.46	20.47	23.45	7.91	5.51
Comber Jct C43H 230 kV	21.22	23.22	20.63	23.35	7.86	5.49
NOVA SS V41N 230 kV	32.00	37.58	28.79	31.62	1.37	0.97
Romney Jct 230 kV	16.12	17.49	14.29	15.38	6.67	4.43
Belle River Jct 230 kV	21.19	23.51	19.71	21.75	7.14	4.78
Brighton Beach J20B 230 kV	22.10	28.54	24.13	32.46	2.16	1.58
Windsor NextStar H53Z 230 kV	11.03	12.71	10.57	12.60	2.44	1.58
Windsor NextStar H54Z 230 kV	10.97	12.58	10.52	12.50	2.45	1.58
Mastron2 Jct 2230 kV	18.19	20.14	15.65	16.94	6.44	4.03
S Middle Rd H75 230 kV	24.39	27.16	22.79	25.44	8.70	5.94
S Middle Rd H76 230 kV	24.86	27.71	23.18	25.95	8.87	6.04
Leamington H38 230 kV	12.94	14.38	10.41	11.12	4.52	2.62
Leamington H39 230 kV	12.81	14.24	10.31	11.01	4.47	2.61
Lambton J 27.6 kV	9.16	12.54	6.54	8.80	0.10	0.05
Lambton Q 27.6 kV	10.62	14.23	8.19	10.73	0.08	0.04
Kent B 27.6 kV	13.38	17.51	10.54	13.89	0.91	0.48
Kent Y 27.6 kV	14.43	18.77	10.69	14.12	0.86	0.42
Kent EZ 27.6 kV	13.76	18.14	10.76	14.95	0.77	0.40
Wallaceburg 27.6 kV	16.79	21.47	11.95	15.72	135.40	64.14
Wallaceburg 230 kV	15.97	17.33	11.94	12.46	-	-

Table 4: Fault Levels (kA) with the Lambton TS x Chatham SS 2-cct 230 kV Line Project - Lambton 230 kV bus tie breakers Open

Location	3-Phase (kA)		L-G (kA)		Increase (%)	
	Symmetrical	Asymmetrical	Symmetrical	Asymmetrical	3-Ph Sym.	L-G Sym.
Chatham SS 230 kV	33.35	37.34	30.26	30.01	21.60	20.23
Lambton P1K1 230 kV	43.23	54.99	42.04	34.38	-28.58	-31.25
Lambton P2K2 230 kV	38.13	52.71	38.66	22.42	-37.00	-36.78
Scott 230 kV	43.55	53.84	42.46	15.02	0.13	0.01
Keith 230 kV	22.34	28.87	24.42	12.65	2.19	1.60
Lauzon A 230 kV	11.03	12.71	10.57	14.88	2.43	1.58
Lauzon H 230 kV	10.97	12.58	10.52	21.69	2.44	1.58
Greenfield L37 230 kV	33.05	43.00	33.31	21.73	-19.54	-18.97
Greenfield L38 230 kV	29.47	36.82	28.79	29.89	-26.47	-25.95
TransAlta Energy 230 kV	35.03	43.10	30.84	13.90	0.09	0.02
Imperial Oil N6S 230 kV	34.84	40.50	31.92	34.00	0.10	0.01
Imperial Oil N7S 230 kV	34.59	40.18	31.58	13.11	0.10	0.01
Arlanxeo N6S 230 kV	36.17	42.14	33.41	29.49	0.10	0.01
Arlanxeo N7S 230 kV	36.52	42.60	33.88	42.93	0.10	0.01
St Clair EC V41N 230 kV	35.04	42.64	36.28	16.91	-1.19	-1.02
St Clair EC V43N 230 kV	35.95	43.65	36.98	16.12	1.06	0.70
N Chem SS V41N 230 kV	30.19	35.65	27.43	28.66	-4.37	-3.80
N Chem SS V43N 230 kV	31.12	36.66	27.97	46.75	-1.94	-1.96
Shell Sarnia L23N 230 kV	28.35	32.48	25.24	44.18	-2.36	-1.95
Shell Sarnia V23N 230 kV	30.06	34.62	27.31	23.09	0.24	-0.07
Nova St Clair L23N 230 kV	30.01	34.92	27.16	23.22	-2.50	-2.11
Nova St Clair V43N 230 kV	31.59	36.84	29.15	5.47	0.25	-0.07
Nova Corunna L27N 230 kV	27.23	30.94	23.67	8.03	-1.66	-1.63
Nova Corunna V41N 230 kV	26.38	30.00	23.09	32.36	-3.76	-3.16
Nova Moore L25V 230 kV	28.85	33.60	25.48	44.74	-6.46	-5.71
Nova Moore L27V 230 kV	29.34	34.10	25.80	23.54	-5.06	-4.48
GSPC Jct L28C 230 kV	28.57	33.91	28.39	23.23	-22.96	-19.83
HRPP JCT 230 kV	30.53	35.42	29.07	28.61	-16.82	-15.89
East LK St Clair 230 kV	15.88	17.65	13.96	28.35	0.78	0.57
North Kent Jct 230 kV	18.21	20.03	15.74	23.37	4.88	3.90
Kent TS L28C 230 kV	19.74	21.59	15.99	23.38	9.87	8.06
Kent TS L29C 230 kV	19.99	21.93	16.32	27.44	10.13	8.21
C31 SKWP CMS Jct 230 kV	19.70	21.42	17.04	27.60	12.17	9.62
Erieau WF Jct 230 kV	32.76	36.63	29.64	31.59	21.08	19.63
Spence CSS 230 kV	14.62	16.14	11.62	31.61	5.08	3.50
Kepa WF Jct C42H 230 kV	14.52	15.78	12.23	25.27	6.95	4.65
Kepa WF Jct C43H 230 kV	15.10	16.34	14.17	25.32	6.96	4.99
Railbed CGS 230 kV	8.62	9.33	7.57	14.41	4.97	3.44
Sattern CGS 230 kV	14.52	15.69	12.39	14.16	8.78	6.50
Comber Jct C42H 230 kV	21.17	23.45	20.46	15.83	7.88	5.49
Comber Jct C43H 230 kV	21.21	23.22	20.62	13.19	7.83	5.47
NOVA SS V41N 230 kV	30.19	35.65	27.43	13.17	-4.37	-3.80
Romney Jct 230 kV	16.12	17.49	14.29	15.30	6.65	4.41
Belle River Jct 230 kV	21.19	23.50	19.71	15.48	7.12	4.77
Brighton Beach J20B 230 kV	22.10	28.54	24.13	15.53	2.15	1.57
Windsor NextStar H53Z 230 kV	11.03	12.70	10.57	15.42	2.43	1.58
Windsor NextStar H54Z 230 kV	10.97	12.58	10.52	13.87	2.44	1.58
Mastron2 Jct 2230 kV	18.19	20.13	15.65	12.77	6.41	4.01
S Middle Rd H75 230 kV	24.38	27.15	22.79	12.30	8.67	5.92
S Middle Rd H76 230 kV	24.86	27.70	23.18	11.55	8.84	6.02
Leamington H38 230 kV	12.93	14.38	10.41	10.39	4.51	2.62
Leamington H39 230 kV	12.81	14.24	10.31	9.87	4.45	2.60
Lambton J 27.6 kV	9.08	12.41	7.83	9.72	-0.79	-0.38
Lambton Q 27.6 kV	10.54	14.10	0.80	0.80	-0.69	-0.35
Kent B 27.6 kV	13.38	17.51	3.19	3.44	0.90	0.48
Kent Y 27.6 kV	14.43	18.77	2.94	3.18	0.85	0.42
Kent EZ 27.6 kV	13.76	18.13	7.94	10.46	0.77	0.40
Wallaceburg 27.6 kV	16.79	21.47	9.74	11.77	135.38	64.14
Wallaceburg 230 kV	15.51	16.88	10.34	12.34	-	-

Table 5: Reliability Impact of Wallaceburg TS 230 kV Conversion

Performance Measure	Frequency of supply interruptions/year	Duration of interruptions/year (min)
Wallaceburg TS: 115 kV supply	1.4565	9.4565
Wallaceburg TS: 230 kV supply	0.0627	8.3500

Table 6: Supply Line Loss Impact of Wallaceburg TS 230 kV Conversion

	Supply line losses/year (MWhr)
Wallaceburg TS: 115 kV supply	2191
Wallaceburg TS: 230 kV supply	52

REGIONAL AND BULK PLANNING

The most recent regional and bulk planning reports in support of this Project are provided in Attachments 1 and 2, as noted below:

Attachment 1: Chatham-Kent/Lambton/Sarnia Regional Infrastructure Plan (Aug 2022)

Attachment 2: Need for Bulk System Reinforcements West of London (Sept 2021)

These reports conclude that the construction of the SCTL Project is the most feasible and cost-effective option that alleviates the supply capacity need in the area and maintains system reliability, consistent with the IESO's evidence in support of need provided in **Exhibit B, Tab 3, Schedule 1, Attachment 6**.

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Chatham-Kent / Lambton / Sarnia Regional Infrastructure Plan

August 13, 2022



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Prepared and supported by:

Company
Hydro One Networks Inc. (Lead Transmitter)
Bluewater Power Distribution Corporation
Entegrus Power Lines Inc.
Hydro One Networks Inc. (Distribution)
Independent Electricity System Operator

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Disclaimer

This Regional Infrastructure Plan (“RIP”) report was prepared for the purpose of developing an electricity infrastructure plan to address all near and mid-term needs (2021-2030) identified in previous planning phases and any additional needs identified based on new and/or updated information provided by the RIP Working Group.

The preferred solution(s) that have been identified in this report may be re-evaluated 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 Working Group.

Working Group participants, their respective affiliated organizations, and Hydro One Networks Inc. (collectively, “the Authors”) make no representations or warranties (express, implied, statutory or otherwise) as to the RIP report or its contents, including, without limitation, the accuracy or completeness of the information therein and shall not, under any circumstances whatsoever, be liable to each other, or to any third party for whom the RIP report was prepared (“the Intended Third Parties”), or to any other third party reading or receiving the RIP report (“the Other Third Parties”), for any direct, indirect or consequential loss or damages or for any punitive, incidental or special damages or any loss of profit, loss of contract, loss of opportunity or loss of goodwill resulting from or in any way related to the reliance on, acceptance or use of the RIP report or its contents by any person or entity, including, but not limited to, the aforementioned persons and entities.

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Executive Summary

THIS REGIONAL INFRASTRUCTURE PLAN (“RIP”) WAS PREPARED BY HYDRO ONE AND THE WORKING GROUP IN ACCORDANCE WITH THE ONTARIO TRANSMISSION SYSTEM CODE REQUIREMENTS. IT IDENTIFIES INVESTMENTS IN TRANSMISSION FACILITIES, DISTRIBUTION FACILITIES, OR BOTH, THAT SHOULD BE PLANNED AND IMPLEMENTED TO MEET THE ELECTRICITY INFRASTRUCTURE NEEDS WITHIN THE CHATHAM-KENT / LAMBTON / SARNIA (CKLS) REGION.

The participants of the RIP Working Group included members from the following organizations:

- Hydro One Networks Inc. (Lead Transmitter)
- Bluewater Power Distribution Corporation
- Entegrus Power Lines Inc.
- Hydro One Networks Inc. (Distribution)
- Independent Electricity System Operator

In the first cycle of the Regional Planning (“RP”) process for the CKLS Region, a Needs Assessment (“NA”) was published in June 2016 and recommended that an Integrated Regional Resource Plan (“IRRP”) was not required. The first cycle of the RP process was completed in August 2017 with the publication of the Regional Infrastructure Plan (“RIP”) which provided a description of needs and recommendations of preferred wires plans to address near-term needs.

This RIP is the final phase of the second cycle of the regional planning process for the CKLS Region, which follows the completion of the Chatham-Kent/Lambton/Sarnia Region Scoping Assessment Outcome Report in December 2021 and the CKLS Needs Assessment in September 2021. This report provides a consolidated summary of needs and recommended plans for the Chatham-Kent/Lambton/Sarnia Region for the near-term (up to 5 years) and mid-term (5 to 10 years).

Investments planned for the CKLS Region over the near and mid-term, identified in the various phases of the regional planning process, are given in the table below.

No.	Project	In-Service Date	Cost
1	Construct new Lambton-by-Chatham double-circuit line (St. Clair Transmission Line)	2028	\$210-290M ¹
2	Build new Dresden TS supplied by LxC corridor	2028	\$40M
3	St. Andrews TS refurbishment	2025	\$40-50M

¹ [Letter: IESO Letter to Hydro One re Transmission Line from Lambton to Chatham](#) ^[4]

In accordance with the Regional Planning process, the RIP should be reviewed and/or updated at least every five years. The Region will continue to be monitored and should there be a need that emerges earlier due to a change in load forecast or any other reason, the next regional planning cycle will be started to address the need .

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1. INTRODUCTION

THIS REPORT PRESENTS THE REGIONAL INFRASTRUCTURE PLAN (“RIP”) TO ADDRESS THE ELECTRICITY NEEDS OF THE CHATHAM-KENT / LAMBTON / SARNIA REGION.

The report was prepared by Hydro One Networks Inc. (“Hydro One”) and documents the results of the joint study carried out by Hydro One, Entegrus Power Lines Inc., Bluewater Power Distribution Corporation, Hydro One Distribution, and the Independent Electricity System Operator (“IESO”), in accordance with the Regional Planning process established by the Ontario Energy Board (“OEB”) in 2013.

The CKLS Region includes the municipalities of Lambton Shores and Chatham-Kent, as well as the townships of Petrolia, Plympton-Wyoming, Brooke-Alvinston, Dawn-Euphemia, Enniskillen, St. Clair, Warwick, and Villages of Oil Springs and Point Edward. The area is bordered by the London area to the east and Windsor-Essex to the southwest. The boundaries of the Region are highlighted in Figure 1-1 below.

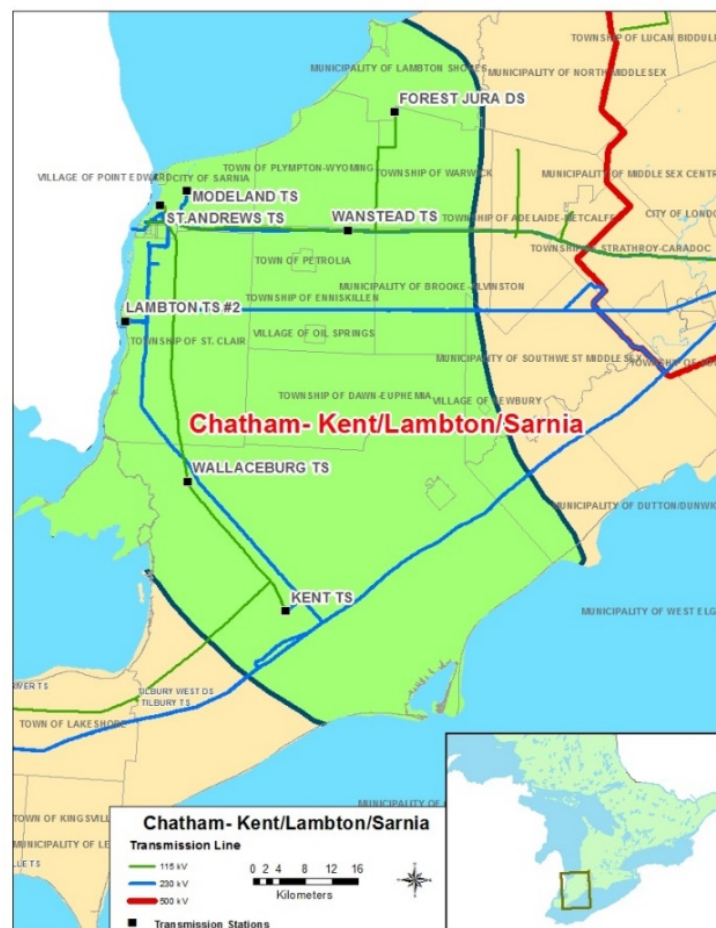


Figure 1-1. Chatham-Kent/Lambton/Sarnia Region

1.1 Objective and Scope

This RIP report examines the needs in the CKLS Region. Its objectives are:

- To develop a wires plan to address needs identified in previous planning phases for which a wires-only alternative was recommended by the Working Group
- To 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)
- To provide the status of wires planning currently underway or completed for specific needs
- To 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, major high voltage sustainment work, transmission and distribution system capability along with any updates with respect to local plans, conservation and demand management (CDM), 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 all the needs and relevant plans to address near and mid-term needs (2021-2030) identified in previous planning phases (Needs Assessment or Local Plan)
- Identification of any new needs over the 2021-2030 period
- Develop a plan to address any longer term needs identified by the Working Group

1.2 Structure

The rest of the report is organized as follows:

- Section 2 provides an overview of the regional planning process
- Section 3 describes the Region
- Section 4 describes the transmission work completed over the last ten years
- Section 5 describes the load forecast and study assumptions used in this assessment
- Section 6 describes the results of the adequacy assessment of the transmission facilities and identifies needs
- Section 7 summarizes the Regional Plan to address the needs
- Section 8 provides the conclusion and next steps

2. REGIONAL PLANNING PROCESS

2.1 Overview

Planning for the electricity system in Ontario is done at essentially three levels: bulk system planning, regional system planning, and distribution system planning. These levels differ in the facilities that are considered and the scope of impact on the electricity system. Planning at the bulk system level typically looks at issues that impact the system on a provincial level, while planning at the regional and distribution levels looks at issues on a more regional or localized level.

Regional planning looks at supply and reliability issues at a regional or local area level. Therefore, it largely considers the 115 kV and 230 kV portions of the power system that supply various parts of the province.

2.2 Regional Planning Process

A structured regional planning process was established by the Ontario Energy Board in 2013, through amendments to the Transmission System Code (“TSC”) and the Distribution System Code (“DSC”). The process consists of four phases: the Needs Assessment (“NA”), the Scoping Assessment (“SA”), the Integrated Regional Resource Plan (“IRRP”), and the Regional Infrastructure Plan (“RIP”).

The regional planning process begins with the NA phase which is led by the transmitter to determine if there are regional needs. The NA phase identifies the needs and the Working Group determines whether further regional coordination is necessary to address them. If no further regional coordination is required, further planning is undertaken by the transmitter and the impacted local distribution company (“LDC”) or customer and develops a Local Plan (“LP”) to address them. These needs are local in nature and can be best addressed by a straight-forward wires solution.

In situations where identified needs require coordination at the regional or sub-regional levels, 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 alternatives, and makes a decision on the most appropriate regional planning approach. The approach is either a RIP, which is led by the transmitter, or an IRRP, which is led by the IESO. If more than one sub-region was identified in the NA phase, it is possible that a different approach could be taken for different sub-regions.

The IRRP phase will generally assess infrastructure (wires) versus resource options (e.g. CDM, generation and Distributed Energy Resources (“DER”)) at a higher or more macro level but sufficient to permit a comparison of options. If the IRRP process identifies that infrastructure

options may be most appropriate to meet a need, the RIP phase will conduct detailed planning to identify and assess the specific wires alternatives and recommend the preferred wires solution. Similarly, resource options which the IRRP identifies as best suited to meet a need are then further planned in greater detail by the IESO. The IRRP phase also includes IESO led stakeholder engagement with municipalities and establishes a Local Advisory Committee in the region or sub-region.

The RIP phase is the final stage of the regional planning process and involves: confirmation of previously identified needs; identification of any new needs that may have emerged since the start of the planning cycle; and development of a wires plan to address the needs where a wires solution was determined to be the best overall approach. This phase is led and coordinated by the transmitter and the deliverable of this stage is a comprehensive report of a wires plan for the region. Once completed, this report can be referenced in rate filing submissions or as part of LDC rate applications with a planning status letter provided by the transmitter. Reflecting the timeliness provisions of the RIP, plan level stakeholder engagement is not undertaken at this stage. However, stakeholder engagement at a project specific level will be conducted as part of the project approval requirement.

To efficiently manage the regional planning process, Hydro One has been undertaking wires planning activities in collaboration with the IESO and/or LDCs for the CKLS Region as part of and/or in parallel with:

- Planning activities that were already underway in the region prior to the new regional planning process taking effect.
- The NA, IRRP, and LP phases of regional planning.
- Working and planning for connection capacity requirements with the LDCs and transmission connected customers

Figure 2-1 illustrates the various phases of the regional planning process (NA, SA, IRRP, and RIP) and their respective phase trigger, lead, and outcome.

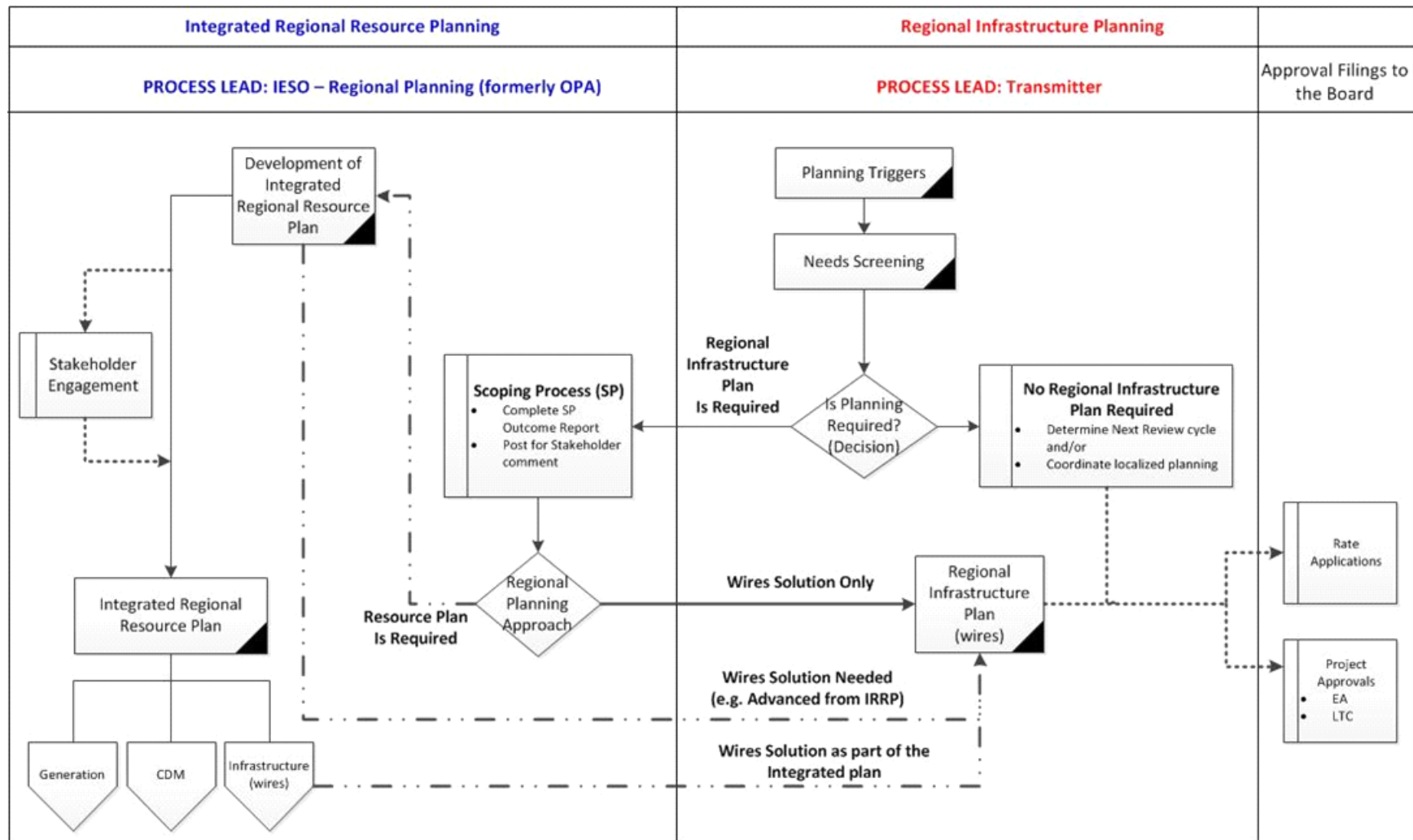


Figure 2-1. Regional Planning Flowchart

2.3 RIP Methodology

The RIP phase consists of four steps (see Figure 2-2) as follows:

1. **Data Gathering:** The first step of the RIP phase 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 the Working Group to reconfirm or update the information as required. The data collected includes:
 - Gross and net peak demand forecast at the transformer station level. This includes the effect of any distributed generation and/or conservation and demand management programs.
 - Existing area network and capabilities including any bulk system power flow assumptions.
 - Other data and assumptions as applicable such as asset conditions; load transfer capabilities, and previously committed transmission and distribution system plans.
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 mid-term needs may be identified at this stage.
3. **Alternative Development:** The third step is the development of wires options to address the needs and to come up with a preferred alternative based on an assessment of technical considerations, feasibility, environmental impact and costs.
4. **Implementation Plan:** The fourth and last step is the development of the implementation plan for the preferred alternative.

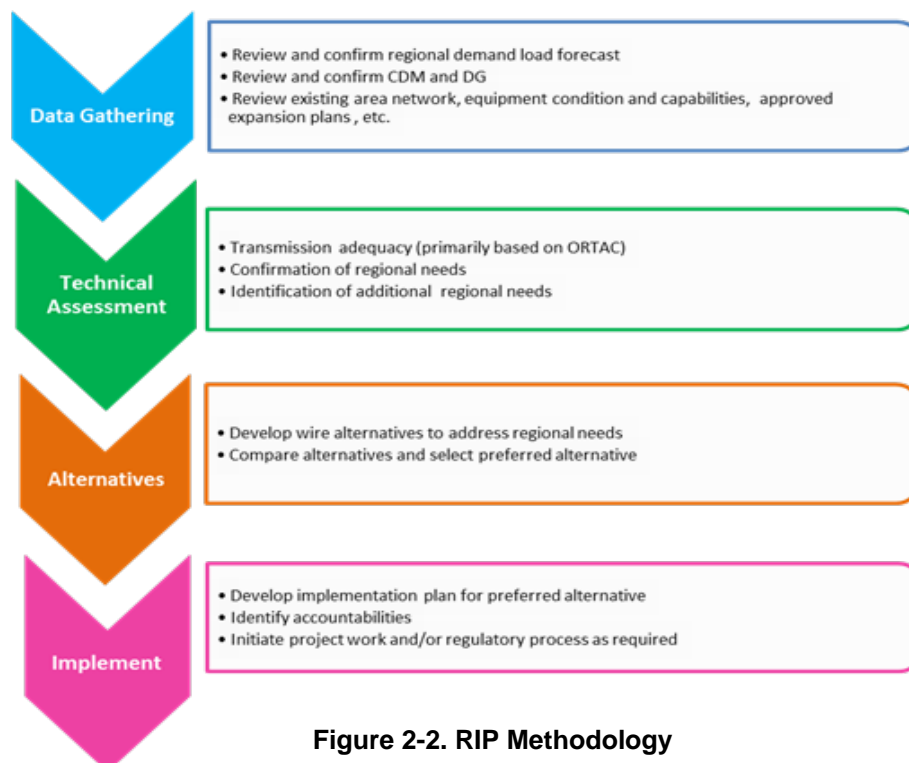


Figure 2-2. RIP Methodology

3. REGIONAL CHARACTERISTICS

THE CHATHAM-KENT / LAMBTON / SARNIA REGION COMPRISES THE MUNICIPALITIES OF LAMBTON SHORES AND CHATHAM-KENT, AS WELL AS THE TOWNSHIPS OF PETROLIA, PLYMPTON-WYOMING, BROOKE-ALVINSTON, DAWN-EUPHEMIA, ENNISKILLEN, ST. CLAIR, WARWICK, AND VILLAGES OF OIL SPRINGS AND POINT EDWARD. THE AREA IS BORDERED BY THE LONDON AREA TO THE EAST AND WINDSOR-ESSEX TO THE SOUTHWEST AS SHOWN IN FIGURE 1-1.

Electricity supply for the Region is provided through a network of 230 kV and 115 kV transmission lines. The bulk of the electrical supply is transmitted through 230 kV circuits (N21W, N22W, L24L, L26L, W44LC and W45LS) between Longwood TS and Buchanan TS and Lambton TS/Scott TS/Chatham SS, and 230 kV circuits L28C and L29C towards Chatham SS. This Region also contains a number of interconnections with neighboring Michigan State (B3N, L4D and L51D).

Within the Region, electricity is delivered to the end users of LDCs and direct-connected industrial customers by eight Hydro One step-down transformation stations, as well as nine customer-owned transformer or distribution stations supplied directly from the transmission system. Large gas-fired generators in the region include: Greenfield Energy Centre CGS, TransAlta Sarnia CGS, St. Clair Power CGS, North Kent 1 CGS, and Greenfield South Power Corporation (GSPC) CGS. Appendix A lists all step-down transformer stations in the Region. Appendix B lists all transmission circuits and Appendix C lists LDCs in the Region. The Single Line Diagram for the CKLS Region transmission system facilities is shown below in Figure 3-1.

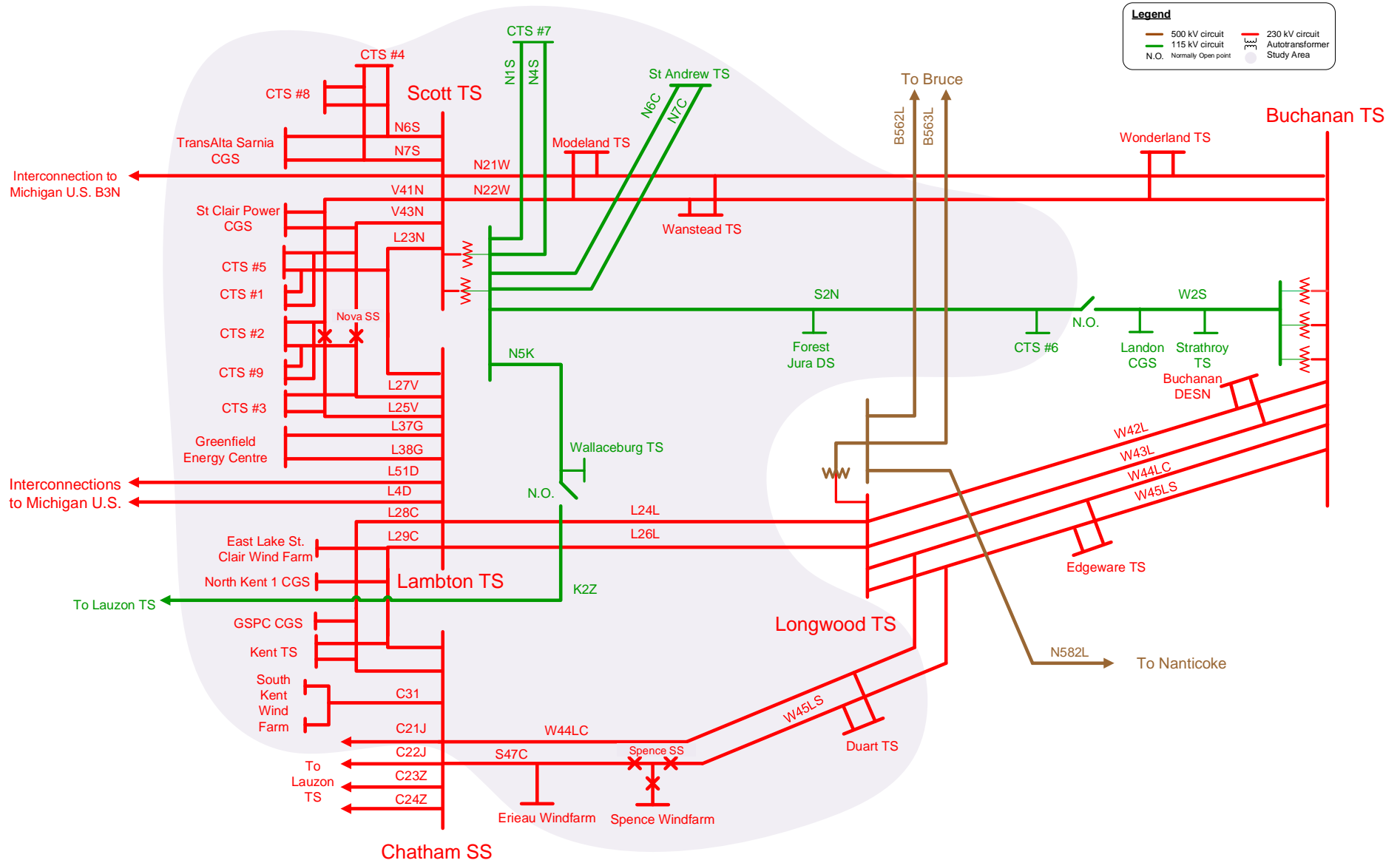


Figure 3-1. Chatham-Kent / Lambton / Sarnia Region Single-Line Diagram

4. TRANSMISSION FACILITIES COMPLETED OVER LAST TEN YEARS OR CURRENTLY UNDERWAY

OVER THE LAST 10 YEARS A NUMBER OF TRANSMISSION PROJECTS HAVE BEEN PLANNED AND COMPLETED BY HYDRO ONE, OR ARE UNDERWAY, AIMED AT IMPROVING THE SUPPLY TO THE CHATHAM-KENT / LAMBTON / SARNIA REGION.

In addition to Hydro One's ongoing transmission station and line sustainment programs, specific projects were identified as a result of joint planning studies undertaken by Hydro One, IESO and the LDCs; or initiated to meet the needs of the LDCs; and/or to meet Provincial Government policies. A brief listing of the completed projects is given below.

For bulk power system transfer needs:

- 230 kV Capacitor Bank replacement at Chatham SS in 2020

For major station refurbishment needs based on asset condition assessment:

- Wanstead TS in 2018

For renewable generation connection needs:

- 230 kV North Kent 1 Wind Farm onto circuit L29C in 2017
- 230 kV East Lake St. Clair Wind Farm onto L29C in 2012
- 230 kV Erieau Wind Farm onto circuit S47C in 2012

The following projects are underway:

- Lambton TS switchyard is currently undergoing major station refurbishment work with a projected in-servicing by 2023
- Scott TS switchyard is currently undergoing major station refurbishment work with a projected in-servicing by 2024
- New Lambton by Chatham transmission line is currently under development with a projected in-servicing by 2028

5. LOAD FORECAST AND STUDY ASSUMPTIONS

5.1 Load Forecast

The load in the CKLS Region is forecast to increase annually between 2021 and 2030. The growth rate varies across the Region with most of the growth concentrated in the Municipality of Chatham-Kent and more specifically in the Dresden area. The Region's 2022 RIP load forecasts, including the Dresden Area forecast, are provided in Appendix D and were prepared by the Working Group upon initiation of the RIP phase. The RIP forecasts are identical to the Needs Assessment forecast except as otherwise noted in Appendix D.

As per the load forecasts in Appendix D, the winter *gross* coincident load in the Region is expected to grow at an average rate of approximately 2.7% annually from 2021-2030 and the summer *gross* coincident load in the Region is expected to grow at an average rate of approximately 2.4% from 2021-2030.

As per the load forecasts in Appendix D, the winter *net* coincident load in the Region is expected to grow at an average rate of approximately 2.5% annually from 2021-2030 and the summer *net* coincident load in the Region is expected to grow at an average rate of approximately 2.2% from 2021-2030.

For both winter and summer coincident load, the strongest growth is expected between 2021 and 2025, tapering off to an average of 1% annual growth over the last 5 years of the study period.

Figure 5-1 shows the Region's gross and net *winter* coincident forecasts while Figure 5-2 shows the Region's gross and net *summer* coincident forecasts. The regional-coincident (at the same time) forecast represents the total peak load of all 18 step-down transformer stations in the Region.

Based on historical load and on the coincident load forecasts, the Region's summer coincident peak load is larger than its winter coincident peak load. Based on historical load and the non-coincident load forecasts, the Region contains most stations that are summer peaking and a few that are winter peaking. Equipment ratings are normally higher in winter than summer due to ambient temperature. Based on these factors, assessment for this Region was conducted for summer peak load.

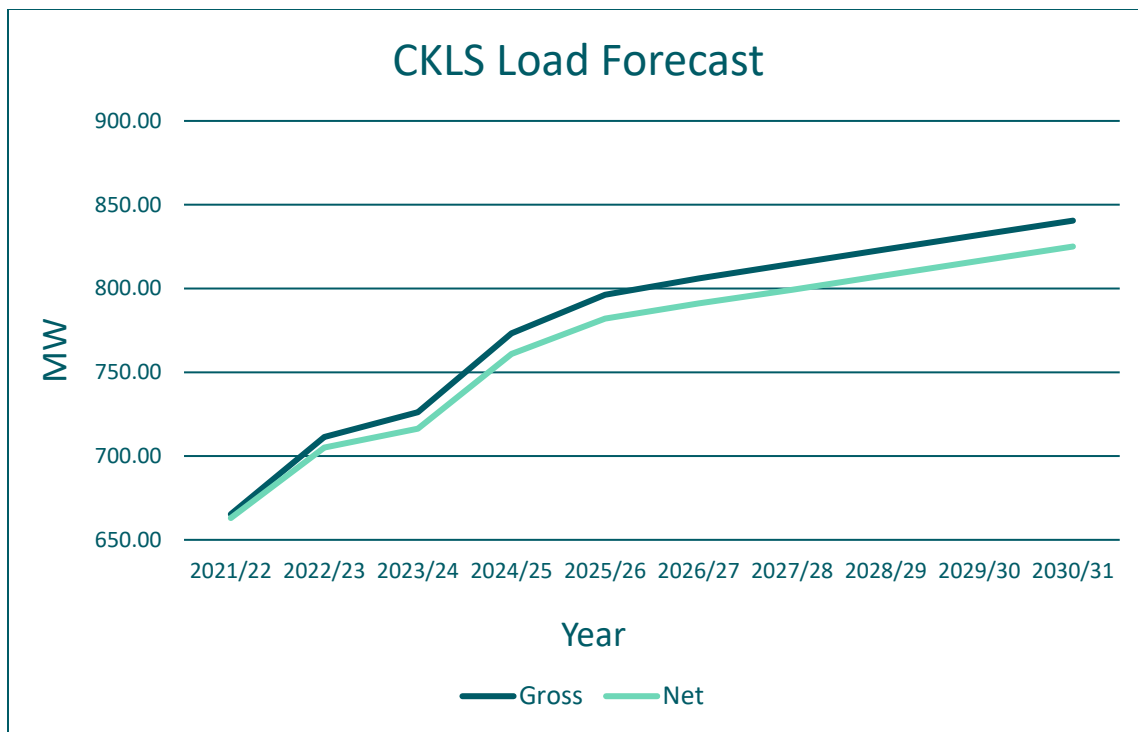


Figure 5-1. Chatham-Kent/Lambton/Sarnia Region Winter Coincident Forecast

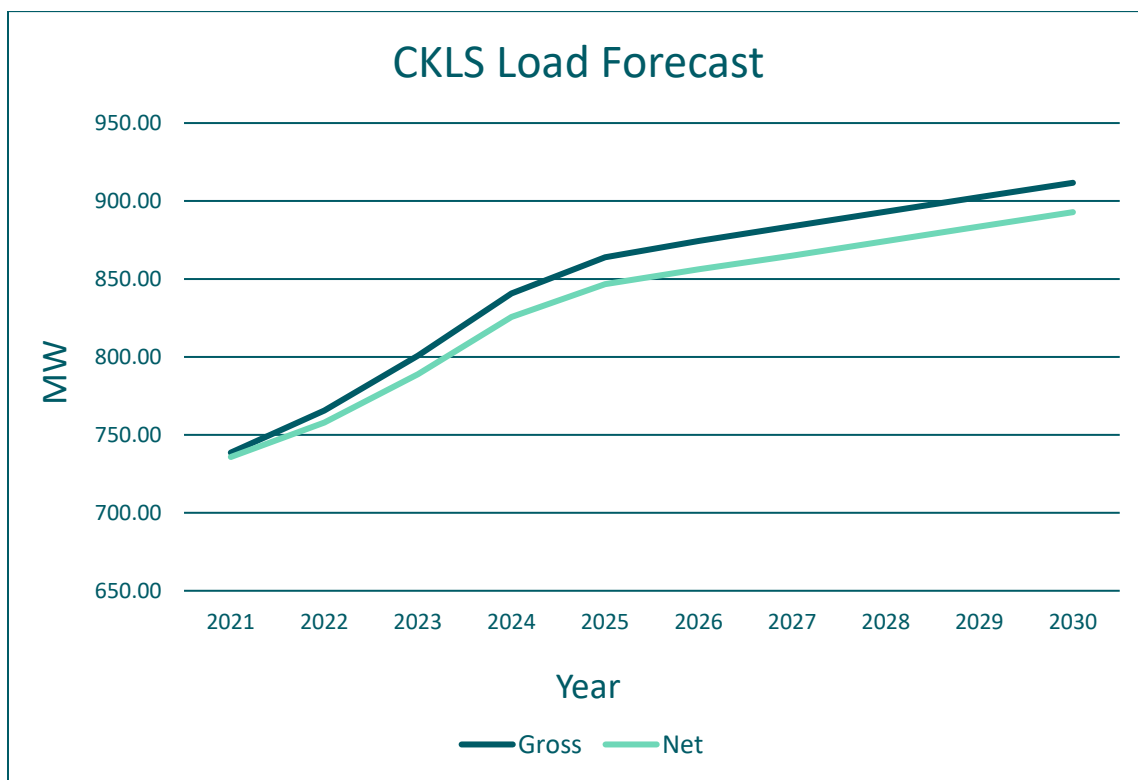


Figure 5-2. Chatham-Kent/Lambton/Sarnia Region Summer Coincident Forecast

5.2 Study Assumptions

The following assumptions are made in this report.

- 1) The study period for the RIP assessments is 2021-2030.
- 2) The Region contains most stations that are summer peaking and some that are winter peaking. The assessment is therefore based on summer peak loads.
- 3) Station capacity adequacy is assessed by comparing the non-coincident peak load with the station's normal planning supply capacity by assuming a 90% lagging power factor for stations without low-voltage capacitor banks or the historical low voltage power factor, whichever is more conservative. Normal planning supply capacity for transformer stations in this Region is determined by the summer and winter 10-Day Limited Time Rating (LTR), as appropriate.
- 4) Adequacy assessment is conducted as per Ontario Resource Transmission Assessment Criteria (ORTAC).

6. ADEQUACY OF FACILITIES AND REGIONAL NEEDS OVER THE 2021-2030 PERIOD

THIS SECTION REVIEWS THE ADEQUACY OF THE EXISTING TRANSMISSION SYSTEM AND STEP-DOWN TRANSFORMATION STATION FACILITIES SUPPLYING THE CHATHAM-KENT / LAMBTON / SARNIA REGION AND LISTS THE FACILITIES REQUIRING REINFORCEMENT OVER THE NEAR AND MID-TERM.

Within the current regional planning cycle, two regional assessments have been conducted for the Chatham-Kent/Lambton/Sarnia Region. The findings of these studies are input to the RIP. The studies are:

- 1) Needs Assessment Report – Chatham-Kent/Lambton/Sarnia Region, September 2021
- 2) Chatham-Kent/Lambton/Sarnia Region Scoping Assessment Report, December 2021

This RIP reviewed the loading on transmission lines and stations in the Chatham-Kent/Lambton/Sarnia Region based on the RIP load forecast. Sections 6.1-6.5 presents the results of this review and Table 6-1 lists the Region's needs identified in both the Needs Assessment and the SA phases.

In addition, this RIP reviewed an updated list of Hydro One transmission lines and station major sustainment work over the next several years to determine if there are opportunities to consolidate with any emerging development needs within the Region. Section 7.5 presents the results of this review.

Table 6-1: Near and Mid-term Regional Needs

Type	Section	Needs	Timing
Needs and Timing Identified in the Needs Assessment Report and the Scoping Assessment ^[1]			
Transmission Circuit Capacity	6.2.2	Post-contingency overload and voltage violations on L28C/L29C due to strong load growth in neighbouring Windsor-Essex region	Medium-Term
Transformation Capacity	6.2.3	Transformation capacity need in the Wallaceburg TS and Kent TS area (Dresden area) due to new load connection requests	Short- to Medium-Term
		St. Andrews TS	2024
		Forest Jura HVDS	2030
Voltage Performance	6.3.3	Voltage violations on 115kV N5K circuit in the absence of new Dresden area station due to new load connection requests	Short- to Medium-Term
Bulk System Performance	6.3.4	Bulk system performance need on circuits L28C/L29C due to strong load growth in neighbouring Windsor-Essex region	Medium-Term
End-Of-Life Equipment Needs	6.4	Lambton TS	2023
		Scott TS	2024
		St. Andrews TS	2025
		Kent TS	2027
	SA	N1S/N4S	2027
		N6C/N7C	2027
		S2N	2025
		N5K*	2027

*subject to final routing selection for the Lambton by Chatham (St. Clair) transmission line ^[5]

6.1 230 kV Transmission Facilities

Half of the 230 kV transmission circuits in the CKLS Region are classified as part of the Bulk Electricity System (“BES”). They connect the Region to the rest of Ontario’s transmission system and are also part of the transmission path from generation in Southwestern Ontario to the load centers in the London and Windsor-Essex areas. These circuits also serve local area stations within the Region and the power flow on them depends on the bulk system transfer as well as local area loads. These circuits are as follows (refer to Figure 3-2):

- 1) Scott TS to Buchanan TS 230kV transmission circuits N21W/N22W – supplies Modeland TS, Wanstead TS, and Wonderland TS (London Area)
- 2) Lambton TS to Longwood TS 230kV transmission circuits L24L/L26L
- 3) Chatham SS to Buchanan TS 230kV transmission circuits W44LC/W44LS/S47C – supplies Duart TS, and generation connections for Erieau Wind Farm and Spence Wind Farm
- 4) Lambton TS to Chatham SS 230kV transmission circuits L28C/L29C – supplies Kent TS, and generation connections for East Lake St. Clair Wind Farm, North Kent 1 CGS, and GSPC CGS

The RIP review shows that, based on current forecast station loadings, bulk transfers, and IESO’s West of London Bulk Study ^[3], 230 kV circuits L28C/L29C are expected to exceed their post-contingency thermal limits and experience voltage violations over the study period. Supply capacity of all other 230kV transmission circuits is adequate over the study period.

6.2 230/115 kV Transformation Facilities

Bulk power supply to the CKLS Region is provided by Hydro One’s 230 kV to 115 kV and 230kV to 345kV autotransformers. The number and location of these autotransformers are as follows:

- 1) Two (2) 230/115kV autotransformers at Scott TS
- 2) Two (2) 230/345kV autotransformers at Lambton TS (interconnection to Michigan)

The RIP review shows that based on current forecast station loadings and bulk transfers, the auto-transformation supply capacity is adequate over the study period.

6.3 Supply Capacity of the 115 kV Network

The CKLS Region contains two (2) double-circuit and two (2) single circuit 115 kV lines. These 115 kV circuits radially supply local area load. These circuits are as follows (see Figure 3-2):

- 1) Scott TS to CTS #7 115 kV double-circuit transmission line N1S/N4S – radially supplies CTS
- 2) Scott TS to St. Andrews TS 115 kV double-circuit transmission line N6C/N7C – radially supplies St. Andrews TS
- 3) Scott TS to Adelaide JCT 115 kV transmission circuit S2N – radially supplies Forest Jura HVDS and CTS #6
- 4) Scott TS to Kent TS 115 kV transmission circuit N5K with normally-open point at Wallaceburg TS – radially supplies Wallaceburg TS

The RIP review shows that based on current forecast station loadings, the supply capacity of the 115 kV network is adequate over the study period.

6.4 Step-down Transformer Stations

There are 18 step-down transformer stations within the CKLS Region. Nine supply electricity to LDCs and nine are transmission-connected industrial customer stations. These stations are listed in Appendix C. One of the 18 stations is owned and operated by an LDC.

As part of the Needs Assessment, as well as this RIP, step-down transformation station capacity was reviewed. Since the September 2021 Needs Assessment, the load forecasts at stations in the region remained unchanged; refer to Appendix D for the forecasts. Based on new customer connection requests, there is a potentially strong capacity need in the Dresden area, which is currently supplied by Kent TS and Wallaceburg TS. If the need materializes, additional capacity would be required in the next 3-6 years. The analysis also showed that the net load forecast at St. Andrews will reach the station's summer LTR in 2024, however, the planned like-for-like replacement of the transformers and switchyard (2025) will increase the station capacity and address the capacity need. Likewise, the net load forecast at Forest Jura HVDS is expected to reach the stations summer LTR in 2030 – the station owner, Hydro One Distribution, will continue to monitor the station loading and develop a plan to address the capacity need that is forecasted towards the end of the study period. The gross load forecast at all remaining stations can be accommodated over the study period.

6.5 Other Items Identified During Regional Planning

6.5.1 End-Of-Life Equipment Replacement Needs

Lambton TS – T7/T8, T5/T6 and Component Replacement

Lambton TS has two 230kV/345 kV 600MVA auto-transformers (T7/T8) that facilitate the interconnection to Michigan and two 230kV/27.6kV 56/75/93MVA step-down transformers (T5/T6) that supply Hydro One Distribution via six 27.6 kV feeders.

The current scope of this project is to replace the T7/T8 transformers with a single 1000MVA auto-transformer, the T5/T6 transformers like-for-similar with 50/83MVA capacity, the 27.6kV switchyard and associated equipment.

Based on the load forecast, similar equipment ratings are required for the EOL replacement. The new step-down transformers will increase the capacity of the station by 20 MVA. This project is underway and the planned in-service date for the project is in year 2023.

Scott TS – T5 and 115kV Switchyard Replacement

Scott TS has two 230kV/115kV 150/200/250 MVA auto-transformers (T5/T6) that supply the 115kV system in the CKLS region. Transformer T5 has been in service since 1958 as well as the 115 kV switchyard.

The current scope of this project included the like-for-like replacement of the T5 auto-transformer and the 115kV switchyard including associated equipment.

Based on the load forecast, similar equipment ratings are required for EOL replacement. The planned in-service date for the project is in year 2024.

St. Andrews TS – T3/T4 and Component Replacement

St. Andrews TS is transformer station that was built in 1964. The station consists of two 115kV/27.6 kV 56/74/93 MVA step-down transformers (T3/T4) supplied radially by 115 kV circuits N6C/N7C. The station supplies Bluewater Power Distribution Corporation via six feeders and an industrial customer via two feeders.

The current scope of this project is to replace T3/T4 transformers like-for-similar with 50/83MVA capacity and the 27.6kV switchyard along with associated equipment.

Based on the load forecast for the station, similar equipment ratings are required for EOL replacement of all equipment discussed above. The new transformers will increase the capacity of the station by 20MVA. The planned in-service date for the project is in year 2025.

Kent TS – T2 and Component Replacement

Kent TS consists of two 230kV/27.6 kV, 75/100/125 MVA step-down transformers (T1/T2) supplied by 230 kV circuits L28C/L29C (Lambton x Chatham). The station supplies Hydro One Distribution and Entegrus Powerlines Inc. T1 was replaced on demand due to a transformer failure in 2020.

The scope of this project includes the like-for-like replacement of transformer T2 along with the 27.6kV switchyard and associated equipment.

Based on the load forecast, similar equipment ratings are required for EOL replacement. Once T2 is replaced, the capacity of the station will increase by 35-40MVA. The planned in-service date for the project is in year 2027.

N1S/N4S – Transmission Line Refurbishment

End-of-life refurbishment of 115kV double-circuit transmission line is planned for the section between Scott TS and Vidal JCT and is expected to be completed in 2027.

N6C/N7C – Transmission Line Refurbishment

End-of-life refurbishment of 115kV double-circuit transmission line is planned for the section between Scott TS and St. Andrews TS, and is expected to be completed in 2027.

S2N – Transmission Line Refurbishment

End-of-life refurbishment of 115kV transmission line is planned for the section between Scott TS and Adelaide JCT and is expected to be completed in 2025.

N5K – Transmission Line Refurbishment

End-of-life refurbishment of 115kV transmission line is planned for the section between Scott TS and Kent TS and is expected to be completed in 2027. Depending on the route selection for the new Lambton-by-Chatham transmission line (referred to as the St. Clair Transmission Line project), this refurbishment may not be required as the N5K circuit may be decommissioned.

7. REGIONAL PLANS

THIS SECTION DESCRIBES THE NEEDS FROM TABLE 6-1 AND SUMMARIZES THE REGIONAL PLANS FOR ADDRESSING THE NEEDS.

7.1 Transmission Circuit Capacity

7.1.1 Circuits L28C/L29C

The L28C/L29C double-circuit transmission line will start to experience capacity issues and voltage violations in the medium term due to significant capacity needs in the neighbouring Windsor-Essex region as well as the demand for potential new connections in Dresden Area. The need for reinforcement of this corridor was documented in IESO's West of London Bulk System Study which recommended the construction of a new 230kV double-circuit transmission line between Lambton and Chatham.

Recommended Plan and Current Status

To address the potential need for additional capacity and improved voltage performance along this corridor, Hydro One has agreed with IESO's recommendation to construct the new 230kV double-circuit transmission line which is expected to be in-serviced in 2028. Three of the five routes that are currently under study involve the decommissioning of circuit N5K and a voltage conversion of Wallaceburg TS from 115kV to 230kV. The selection of the preferred route for the new double-circuit line is anticipated in Q2 2023.

7.2 Transformation Capacity

7.2.1 Wallaceburg TS and Kent TS Area (Dresden Area)

There is potentially a strong need for capacity in the Dresden Area which is currently supplied by Wallaceburg TS and Kent TS. The demand for new customer connections in the area has the potential of exceeding 100 MW by 2025 and upwards of 130 MW by the end of the study period – a capacity need that cannot be wholly supplied by the available capacities at Wallaceburg TS and Kent TS. Wallaceburg TS has approximately 5-10 MW of available capacity, whereas the existing Kent TS (T1/T2) has about 30-35 MW of spare capacity which will increase to roughly 65 MW once T2 is replaced in 2027, and the need for new capacity in this area remains in high demand. This need was also documented in IESO's Dresden Load Connection Study (included in Appendix 3 of the CKLS Scoping Assessment Outcome Report ^[2]) which recommended the construction of a new station supplied by the 230kV Lambton by Chatham corridor. If Wallaceburg TS is converted to 230kV supply as a result of the new Lambton by Chatham transmission line routing, additional transformation capacity of 30-40 MW would become available.

Recommended Plan and Current Status

Subject to the confirmation of the load materializing in the Dresden Area, Hydro One would move forward with IESO's recommendation of constructing a new station (proposed to be named Dresden TS) on the Lambton by Chatham corridor. Due to the existing limitations on the L28C/L29C circuits the construction of the new Dresden TS would be aligned with the construction of the new Lambton by Chatham transmission line with the intention of being ready connect new customers at the same time that the new double-circuit line is complete, in 2028. The immediate capacity needs of new customers can be supplied by the limited capacities available at Kent TS (T1/T2 DESN) and Wallaceburg TS until the proposed Dresden TS is placed in service. The need for Dresden TS may possibly be delayed if the Lambton by Chatham routing results in additional capacity becoming available at Wallaceburg TS.

7.2.2 St. Andrews TS

St. Andrews TS will reach its LTR in 2024, from which point it will continue to grow at an average rate of less than 0.5% towards the end of the study period. As the station is expected to slowly start exceeding its LTR, additional capacity is required.

Recommended Plan and Current Status

To address the capacity need at St. Andrews, it is recommended that Hydro One proceed with the sustainment plan to replace the end-of-life transformers and switchyard which will increase the LTR of the station by 20 MVA and provide sufficient capacity for the long-term. The replacement of the EOL assets is expected to be completed in 2025. Capital contribution from customers is not anticipated at this time as this a like-for-like sustainment project.

Additionally, if more capacity is requested in the local area of St. Andrews TS, the nearby Modeland TS will still have approximately 30MVA of spare capacity by the end of the study period. The existing Modeland TS also has the potential for future expansion should capacity need arise in the area.

7.2.3 Forest Jura HVDS

Forest Jura HVDS, a station owned by Hydro One Distribution, is expected to reach its LTR in 2030, with an average growth rate of 1.2% over the study period. If the forecast materializes as expected, additional capacity will be required in the long-term.

Recommended Plan and Current Status

To address the potential capacity need at Forest Jura HVDS, Hydro One Distribution will monitor the loading and determine a plan to ensure the station can meet the capacity demand.

7.3 Voltage Performance

7.3.1 Circuit N5K

Assuming a large load growth at Wallaceburg TS in the absence of the proposed Dresden TS, there would be voltage violations on the 115kV N5K circuit. This violation is mitigated with the new Dresden TS in place and Wallaceburg loaded within its LTR. Also, if the Lambton by Chatham line routing results in the decommissioning of N5K and Wallaceburg TS being supplied at 230kV, the violation is mitigated.

Recommended Plan and Current Status

It is recommended to maintain loading at Wallaceburg within its capacity limit and wait for the Lambton by Chatham line routing to be established, anticipated in Q2 2023, which will determine if the supply voltage to Wallaceburg TS is increased to 230kV. The line routing selection will also help determine the urgency in constructing the new Dresden TS.

7.4 Bulk System Performance

7.4.1 Circuits L28C/L29C

Based on the study assumptions listed in Section 5.2, and accounting for needs in neighbouring Windsor-Essex Region, there is a bulk system need to reinforce the 230kV corridor between Lambton and Chatham. There are a number of large-scale combined-cycle gas plants in the Sarnia-Lambton area and gas-fired generation output could vary depending on broader system conditions such as expected load growth in the province or availability of other generation resources. Moreover, the Chatham-Kent/Lambton/Sarnia Region is connected to the US market through interconnections in Sarnia and Lambton. Import and export generation levels on the interties have a significant impact on the bulk transmission system. Generation output and import/export levels were parameters considered for the bulk system performance for this Region as well as to serve the growing needs in neighbouring regions (Windsor-Essex region and Chatham-Kent area). The IESO undertook a study to assess the bulk system adequacy for the West of London area, under different system conditions. As a result, the need to reinforce the Lambton-by-Chatham corridor was identified to increase supply capacity into Windsor-Essex region and Chatham-Kent area to meet the mid-term capacity need, and improve the deliverability of resources in Lambton-Sarnia.

Recommended Plan and Current Status

As recommended in IESO's West of London Bulk System Study, Hydro One will proceed with the construction a new double-circuit transmission line between Lambton and Chatham to address bulk system reinforcement needs. The project is expected to be completed in 2028.

7.5 Transmission Sustainment Plans

As part of Hydro One's transmitter requirements, Hydro One continues to ensure a reliable transmission system by carrying out maintenance programs as well as periodic replacement of equipment based on their condition. Table 7-1 lists Hydro One's major transmission sustainment *projects* in the Region that are currently planned or underway. Maintenance *programs* such as insulator, shield wire, structure replacements will continue to be carried out in the Region as required based on equipment/asset condition assessments.

Table 7-1: Hydro One Transmission Major Sustainment Initiatives²

Station/Lines	General Description of Work	Planning In-Service Date
Lambton TS	<ul style="list-style-type: none"> Replacement of T7/T8 auto-transformers and associated switches Replacement of T5/T6 DESN transformers and associated switches Replacement 27.6kV switchyard and associated equipment 	2023
Scott TS	<ul style="list-style-type: none"> Replacement of T5 auto-transformer Replacement of 115kV switchyard and associated equipment 	2024
St. Andrews TS	<ul style="list-style-type: none"> Replacement of T3/T4 DESN transformers and associated switches Replacement of 27.6kV switchyard and associated equipment 	2025
Kent TS	<ul style="list-style-type: none"> Replacement of T2 DESN transformers and associated switch Replacement of 27.6kV switchyard and associated equipment 	2027
N1S/N4S	<ul style="list-style-type: none"> Refurbishment of circuit section between Scott TS and Vidal JCT 	2027
N6C/N7C	<ul style="list-style-type: none"> Refurbishment of circuit section between Scott TS and St. Andrews TS 	2027
S2N	<ul style="list-style-type: none"> Refurbishment of circuit section between Scott TS and Adelaide JCT 	2025
N5K	<ul style="list-style-type: none"> Refurbishment of circuit section between Scott TS and Kent TS* 	2027

*subject to final routing selection for the Lambton by Chatham (St. Clair) transmission line

² Scope and dates as of August 2022 and are subject to change

Based on the needs identified in the region thus far and the transmission sustainment plans listed in Table 7-1, consolidation of sustainment and development needs is not necessary at this time.

8. CONCLUSION

THIS REGIONAL INFRASTRUCTURE PLAN REPORT CONCLUDES THE REGIONAL PLANNING PROCESS FOR THE CHATHAM-KENT / LAMBTON / SARNIA REGION.

Six near and mid-term needs were identified for the CKLS Region. They are:

- I. Transmission Circuit Capacity on Lambton by Chatham Corridor (mid-term)
- II. Transformation Capacity in Dresden Area (mid-term)
- III. Transformation Capacity at St. Andrews TS (short- to mid-term)
- IV. Transformation Capacity at Forest Jura HVDS (mid-term)
- V. Voltage Performance on N5K (mid-term)
- VI. Bulk System Performance on Lambton by Chatham Corridor (mid-term)

This RIP report addresses six needs and has concluded that regional plans are required. Next Steps, Lead Responsibility, and Timeframes for implementing the regional plans to address needs I through VI are summarized in the Table 8-1 below.

Table 8-1: Regional Plans – Next Steps, Lead Responsibility and Plan In-Service Dates

No.	Project	Next Steps	Lead Responsibility	In-Service Date	Cost	Needs Mitigated
1	Construct new Lambton by Chatham double-circuit line (St. Clair Transmission Line)	Project Under Development	Hydro One Transmission	2028	\$210-290M	I,VI
2	Build new Dresden TS supplied by Lambton by Chatham corridor	Initiate project	Hydro One Transmission	2028*	\$40M	II,V
3	St. Andrews TS Refurbishment	Detailed Estimate	Hydro One Transmission	2025	\$40-50M	III
4	Monitor growth at Forest Jura HVDS	Monitor & Determine Plan	Hydro One Distribution	--	--	IV

*may be delayed if Lambton by Chatham route selection results in additional capacity available at Wallaceburg TS

In accordance with the Regional Planning process, the Regional Plan should be reviewed and/or updated at least every five years. The region will continue to be monitored and should there be a need that emerges due to a change in load forecast or any other reason, the next regional planning cycle will be started earlier to address the need.

9. REFERENCES

- [1] Hydro One, “Needs Assessment Report, Chatham-Kent/Lambton/Sarnia Region”, 30 September 2021.
<https://www.hydroone.com/abouthydroone/CorporateInformation/regionalplans/chatham-lambtonsarnia/Documents/ChathamAreaRegion-NeedsAssessmentReport-Final.pdf>
- [2] IESO, “Chatham-Kent/Lambton/Sarnia Scoping Assessment Outcome Report”, 30 December 2021.
<https://www.ieso.ca/-/media/Files/IESO/Document-Library/regional-planning/Chatham-Kent-Lambton-Sarnia/CKLS-Scoping-Assessment-Outcome-Dec-2021.ashx>
- [3] IESO, “Need for Bulk System Reinforcements West of London”, September 2021.
https://ieso.ca/-/media/Files/IESO/Document-Library/regional-planning/southwest-ontario/WOL_Bulk_Report_Final_20210923.ashx
- [4] IESO, “Letter: IESO Letter to Hydro One re Transmission Line from Lambton to Chatham”, March 2021.
<https://ieso.ca/-/media/Files/IESO/Document-Library/regional-planning/southwest-ontario/WOL-Stage-1-Handoff-Letter-Final-Signed.ashx>
- [5] Hydro One, “Hydro One Website: Saint Clair Transmission Line Project Page”.
<https://www.hydroone.com/abouthydroone/CorporateInformation/majorprojects/saint-clair/>

APPENDIX A: STEP-DOWN TRANSFORMER STATIONS IN THE CHATHAM-KENT / LAMBTON / SARNIA REGION

Station	Voltage (kV)	Supply Circuits
Duart TS	230 kV	W44LC/W45LS
Forest Jura HVDS	115 kV	S2N
Kent TS	115 kV	L28C/L29C
Lambton TS	230 kV	N/A
Modeland TS	230 kV	N21W/N22W
Scott TS	230/115 kV	N/A
St Andrews TS	115 kV	N6C/N7C
Wallaceburg TS	115 kV	N5K
Wanstead TS	230 kV	N21W/N22W
Customer CTS #1	230 kV	V43N/L23N
Customer CTS #2	230 kV	V41N/L27V
Customer CTS #3	230 kV	L25V/L27V
Customer CTS #4	230 kV	N6S/N7S
Customer CTS #5	230 kV	V43N/L23N
Customer CTS #6	115 kV	S2N
Customer CTS #7	115 kV	N1S/N4S
Customer CTS #8	230 kV	N6S/N7S
Customer CTS #9	230 kV	V41N/L27V

APPENDIX B: REGIONAL TRANSMISSION CIRCUITS IN THE CHATHAM-KENT / LAMBTON / SARNIA REGION

Location	Circuit Designation	Voltage (kV)
Scott TS – TransAlta Sarnia CGS	N6S/N7S	230 kV
Scott TS – Nova SS	V41N/V43N	230 kV
Scott TS – Lambton TS	L23N	230 kV
Lambton TS – Nova SS	L25V/L27V	230 kV
Lambton TS – Greenfield Energy Centre CGS	L37G/L38G	230 kV
Lambton TS – Chatham SS	L28C/L29C	230 kV
Chatham SS – South Kent Wind Farm CGS	C31	230 kV
Buchanan TS – Longwood TS – Chatham SS	W44LC	230 kV
Buchanan TS – Longwood TS – Spence SS	W45LS	230 kV
Spence SS – Chatham SS	S47C	230 kV
Lambton TS – Longwood TS	L24L/L26L	230 kV
Scott TS – Buchanan TS	N21W/N22W	230 kV
Scott TS – CTS	N1S/N4S	115 kV
Scott TS – St. Andrews TS	N6C/N7C	115 kV
Scott TS – CTS	S2N	115 kV
Scott TS – Wallaceburg TS	N5K	115 kV
Kent TS – Lauzon TS	K2Z	115 kV

APPENDIX C: DISTRIBUTORS IN THE CHATHAM-KENT / LAMBTON / SARNIA REGION

Distributor Name	Station Name	Connection Type
Hydro One Networks Inc.	Duart TS	Tx
	Forest Jura HVDS	Tx
	Kent TS	Tx
	Lambton TS	Tx
	Wallaceburg TS	Tx
	Wanstead TS	Tx
Bluewater power Distribution Corp.	Modeland TS	Tx
	St. Andrews TS	Tx
	Wanstead TS	Dx
Entegrus Powerlines Inc.	Kent TS	Tx, Dx
	Wallaceburg TS	Dx

APPENDIX D: REGIONAL LOAD FORECAST (2021-2030)

Table D-1. Gross Winter Regional-Coincident Forecast (MW)

Station	Limited- Time Rating (MVA)	Historical (MW)	Forecast (MW)									
			2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Duart TS	215.2	14.97	15.68	15.88	21.29	21.51	21.72	21.95	22.19	22.44	22.67	22.89
Forest Jura DS	31.25	18.84	19.12	19.40	19.69	19.98	20.28	20.58	20.88	21.19	21.50	21.82
Kent TS (T1/T2)	171.2*	59.51	61.12	68.36	66.17	68.00	72.65	74.54	75.22	75.91	76.58	77.24
Kent TS (T3/T4)	65.8	31.57	31.98	32.39	32.81	33.24	33.67	34.11	34.55	35.00	35.45	35.91
Lambton TS	114.1**	56.80	57.19	57.59	57.99	58.40	58.80	59.21	59.63	60.04	60.46	60.88
Modeland TS	214.8	66.30	70.00	76.91	83.81	90.72	97.63	100.85	104.08	107.30	110.52	113.75
St. Andrews TS	110.9***	62.10	65.97	66.48	66.98	101.49	102.00	102.50	103.01	103.52	104.03	104.53
Wallaceburg TS	63	26.84	27.10	27.37	27.64	27.91	28.19	28.46	28.74	29.03	29.31	29.60
Wanstead TS	128.8	37.39	38.71	39.65	40.37	40.98	48.63	49.35	50.11	50.86	51.59	52.31
CTS #1	N/A	28.20	28.43	28.67	28.91	29.14	29.39	29.63	29.88	30.12	30.37	30.63
CTS #2	N/A	16.42	16.63	16.85	17.07	17.29	17.52	17.75	17.98	18.22	18.45	18.69
CTS #3	N/A	33.36	33.36	33.36	33.36	33.36	33.36	33.36	33.36	33.36	33.36	33.36
CTS #4	N/A	40.06	40.30	40.55	40.79	41.04	41.29	41.54	41.80	42.05	42.31	42.57
CTS #5	N/A	9.47	9.47	9.47	9.47	9.47	9.47	9.47	9.47	9.47	9.47	9.47
CTS #6	N/A	1.45	1.46	1.47	1.48	1.49	1.50	1.51	1.52	1.53	1.54	1.55
CTS #7	N/A	47.46	47.79	48.12	48.45	48.79	49.13	49.47	49.82	50.16	50.51	50.87
CTS #8	N/A	49.27	98.00	98.88	99.87	100.49	101.05	101.71	102.46	103.16	103.83	104.42
CTS #9	N/A	0.00	3.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00

* LTR will increase to approximately 210 MVA after T2 is replaced (2027)

** LTR will increase to approximately 135 MVA after T5/T6 are replaced (2023)

*** LTR will increase to approximately 135 MVA after T1/T2 are replaced (2025)

Table D-2. Gross Summer Regional-Coincident Forecast (MW)

Station	Limited-Time Rating (MVA)	Historical (MW)	Forecast (MW)									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Duart TS	200	15.00	15.65	15.88	20.68	20.89	21.09	21.31	21.55	21.78	22.01	22.22
Forest Jura DS	31.25	19.82	20.12	20.43	20.74	21.06	21.38	21.70	22.03	22.37	22.71	23.06
Kent TS (T1/T2)	155.6*	88.60	90.17	95.73	93.78	94.63	99.41	101.60	102.55	103.51	104.46	105.39
Kent TS (T3/T4)	59.8	41.83	42.36	42.89	43.43	43.97	44.53	45.09	45.65	46.23	46.81	47.40
Lambton TS	103.8**	58.25	58.68	59.11	59.55	59.99	60.44	60.88	61.34	61.79	62.25	62.71
Modeland TS	196.5	98.97	102.99	109.95	116.90	123.86	130.82	134.07	137.32	140.56	143.81	147.06
St. Andrews TS	101.8***	60.67	63.86	64.32	64.78	92.55	93.01	93.47	93.94	94.40	94.86	95.33
Wallaceburg TS	51.8	33.91	34.25	34.74	35.26	35.58	35.88	36.21	36.56	36.92	37.24	37.55
Wanstead TS	118.9	39.25	40.69	41.66	42.65	43.49	51.03	51.97	52.95	53.92	54.87	55.80
CTS #1	N/A	26.67	26.90	27.14	27.37	27.61	27.85	28.10	28.34	28.59	28.84	29.09
CTS #2	N/A	17.80	18.01	18.22	18.43	18.65	18.86	19.09	19.31	19.53	19.76	19.99
CTS #3	N/A	34.16	34.16	34.16	34.16	34.16	34.16	34.16	34.16	34.16	34.16	34.16
CTS #4	N/A	44.34	44.63	44.92	45.22	45.51	45.81	46.11	46.41	46.71	47.02	47.32
CTS #5	N/A	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53
CTS #6	N/A	2.69	2.71	2.73	2.75	2.77	2.79	2.81	2.83	2.85	2.87	2.89
CTS #7	N/A	53.79	54.19	54.59	54.99	55.40	55.81	56.22	56.64	57.06	57.48	57.90
CTS #8	N/A	29.57	79.73	80.62	81.57	82.08	82.54	83.07	83.68	84.25	84.80	85.27
CTS #9	N/A	0.00	1.00	10.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00

* LTR will increase to approximately 195 MVA after T2 is replaced (2027)

** LTR will increase to approximately 120 MVA after T5/T6 are replaced (2023)

*** LTR will increase to approximately 120 MVA after T1/T2 are replaced (2025)

Table D-3. Gross Winter Non-Coincident Forecast (MW)

Station	Limited-Time Rating (MVA)	Historical (MW)	Forecast (MW)									
		2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
Duart TS	215.2	15.62	16.36	16.57	22.21	22.43	22.65	22.89	23.15	23.40	23.65	23.88
Forest Jura DS	31.25	18.84	19.12	19.40	19.69	19.98	20.28	20.58	20.88	21.19	21.50	21.82
Kent TS (T1/T2)	171.2*	67.94	69.78	78.05	75.54	77.63	82.95	85.10	85.88	86.67	87.43	88.18
Kent TS (T3/T4)	65.8	36.64	37.11	37.59	38.08	38.58	39.08	39.58	40.10	40.62	41.14	41.68
Lambton TS	114.1**	61.93	62.37	62.80	63.24	63.68	64.12	64.57	65.02	65.47	65.93	66.39
Modeland TS	214.8	73.93	78.06	85.76	93.46	101.16	108.87	112.46	116.06	119.65	123.25	126.84
St. Andrews TS	110.9***	64.73	68.76	69.29	69.82	105.78	106.31	106.84	107.37	107.90	108.43	108.96
Wallaceburg TS	63	32.37	32.69	33.01	33.33	33.66	33.99	34.33	34.67	35.01	35.35	35.70
Wanstead TS	128.8	39.16	40.54	41.52	42.28	42.92	50.93	51.69	52.48	53.26	54.03	54.78
CTS #1	N/A	31.78	32.04	32.31	32.58	32.85	33.12	33.39	33.67	33.95	34.23	34.51
CTS #2	N/A	17.04	17.26	17.49	17.72	17.95	18.18	18.42	18.66	18.91	19.15	19.40
CTS #3	N/A	36.60	36.60	36.60	36.60	36.60	36.60	36.60	36.60	36.60	36.60	36.60
CTS #4	N/A	47.22	47.50	47.79	48.09	48.38	48.67	48.97	49.27	49.57	49.87	50.18
CTS #5	N/A	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64
CTS #6	N/A	3.04	3.06	3.08	3.10	3.12	3.14	3.16	3.18	3.21	3.23	3.25
CTS #7	N/A	53.71	54.08	54.46	54.84	55.22	55.60	55.99	56.38	56.77	57.17	57.57
CTS #8	N/A	51.40	102.23	103.15	104.17	104.82	105.41	106.10	106.88	107.61	108.31	108.92
CTS #9	N/A	0.00	3.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00

* LTR will increase to approximately 210 MVA after T2 is replaced (2027)

** LTR will increase to approximately 135 MVA after T5/T6 are replaced (2023)

*** LTR will increase to approximately 135 MVA after T1/T2 are replaced (2025)

Table D-4. Gross Summer Non-Coincident Forecast (MW)

Station	Limited-Time Rating (MVA)	Historical (MW)	Forecast (MW)									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Duart TS	200	17.52	18.28	18.55	24.15	24.39	24.63	24.89	25.17	25.44	25.71	25.96
Forest Jura DS	31.25	26.60	27.00	27.41	27.83	28.26	28.69	29.13	29.57	30.02	30.48	30.95
Kent TS (T1/T2)	155.6*	105.10	106.96	113.55	111.24	112.25	117.92	120.52	121.65	122.78	123.90	125.01
Kent TS (T3/T4)	59.8	46.81	47.40	48.00	48.60	49.21	49.83	50.46	51.09	51.73	52.38	53.04
Lambton TS	103.8**	65.41	65.90	66.39	66.88	67.37	67.87	68.37	68.88	69.39	69.90	70.42
Modeland TS	196.5	114.81	119.46	127.53	135.60	143.68	151.75	155.51	159.28	163.05	166.81	170.58
St. Andrews TS	101.8***	65.06	68.48	68.98	69.47	99.25	99.74	100.24	100.74	101.23	101.73	102.23
Wallaceburg TS	51.8	39.11	39.50	40.07	40.67	41.04	41.39	41.77	42.18	42.58	42.96	43.32
Wanstead TS	118.9	46.42	48.13	49.27	50.45	51.44	60.36	61.47	62.63	63.77	64.90	66.00
CTS #1	N/A	32.20	32.48	32.76	33.05	33.34	33.63	33.92	34.22	34.51	34.82	35.12
CTS #2	N/A	19.35	19.57	19.80	20.03	20.27	20.51	20.75	20.99	21.23	21.48	21.73
CTS #3	N/A	35.75	35.75	35.75	35.75	35.75	35.75	35.75	35.75	35.75	35.75	35.75
CTS #4	N/A	48.71	49.02	49.34	49.67	49.99	50.32	50.64	50.98	51.31	51.64	51.98
CTS #5	N/A	9.96	9.96	9.96	9.96	9.96	9.96	9.96	9.96	9.96	9.96	9.96
CTS #6	N/A	2.77	2.79	2.81	2.83	2.85	2.87	2.89	2.91	2.93	2.95	2.97
CTS #7	N/A	56.08	56.50	56.92	57.34	57.76	58.19	58.62	59.05	59.49	59.93	60.37
CTS #8	N/A	112.89	113.74	114.59	115.45	116.32	117.19	118.07	118.96	119.85	120.75	121.66
CTS #9	N/A	0.00	1.00	10.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00

* LTR will increase to approximately 195 MVA after T2 is replaced (2027)

** LTR will increase to approximately 120 MVA after T5/T6 are replaced (2023)

*** LTR will increase to approximately 120 MVA after T1/T2 are replaced (2025)

Table D-5. Net Winter Regional Coincident Forecast (MW)

Station	Limited- Time Rating (MVA)	Historical (MW)	Forecast (MW)									
			2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Duart TS	215.2	14.97	15.59	15.63	20.90	21.02	21.15	21.35	21.58	21.82	22.05	22.27
Forest Jura DS	31.25	18.84	19.00	19.08	19.19	19.36	19.56	19.83	20.10	20.41	20.73	21.05
Kent TS (T1/T2)	171.2*	59.51	60.76	67.36	64.61	66.03	70.40	72.17	72.77	73.45	74.12	74.78
Kent TS (T3/T4)	65.8	31.57	31.78	31.86	31.99	32.20	32.47	32.85	33.25	33.70	34.15	34.61
Lambton TS	114.1**	56.80	56.84	56.63	56.50	56.52	56.65	56.95	57.28	57.70	58.12	58.54
Modeland TS	214.8	66.30	69.59	75.79	82.08	88.53	95.12	98.21	101.34	104.56	107.79	111.01
St. Andrews TS	110.9***	62.10	65.59	65.43	65.36	99.44	99.64	100.03	100.45	100.96	101.46	101.97
Wallaceburg TS	63	26.84	26.94	26.92	26.94	27.03	27.17	27.40	27.64	27.92	28.21	28.50
Wanstead TS	128.8	37.39	38.48	39.02	39.39	39.75	47.21	47.86	48.57	49.32	50.05	50.76
CTS #1	N/A	28.20	28.43	28.67	28.91	29.14	29.39	29.63	29.88	30.12	30.37	30.63
CTS #2	N/A	16.42	16.63	16.85	17.07	17.29	17.52	17.75	17.98	18.22	18.45	18.69
CTS #3	N/A	33.36	33.36	33.36	33.36	33.36	33.36	33.36	33.36	33.36	33.36	33.36
CTS #4	N/A	40.06	40.30	40.55	40.79	41.04	41.29	41.54	41.80	42.05	42.31	42.57
CTS #5	N/A	9.47	9.47	9.47	9.47	9.47	9.47	9.47	9.47	9.47	9.47	9.47
CTS #6	N/A	1.45	1.46	1.47	1.48	1.49	1.50	1.51	1.52	1.53	1.54	1.55
CTS #7	N/A	47.46	47.79	48.12	48.45	48.79	49.13	49.47	49.82	50.16	50.51	50.87
CTS #8	N/A	49.27	98.00	98.88	99.87	100.49	101.05	101.71	102.46	103.16	103.83	104.42
CTS #9	N/A	0.00	3.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00

* LTR will increase to approximately 210 MVA after T2 is replaced (2027)

** LTR will increase to approximately 135 MVA after T5/T6 are replaced (2023)

*** LTR will increase to approximately 135 MVA after T1/T2 are replaced (2025)

Table D-6. Net Summer Regional Coincident Forecast (MW)

Station	Limited-Time Rating (MVA)	Historical (MW)	Forecast (MW)									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Duart TS	200	15.00	15.56	15.63	20.28	20.39	20.52	20.71	20.93	21.16	21.39	21.61
Forest Jura DS	31.25	19.82	20.00	20.09	20.22	20.40	20.63	20.91	21.22	21.55	21.89	22.24
Kent TS (T1/T2)	155.6**	88.60	89.63	94.23	91.46	91.71	96.05	98.07	98.90	99.85	100.80	101.74
Kent TS (T3/T4)	59.8	41.83	42.10	42.18	42.33	42.59	42.94	43.42	43.93	44.50	45.08	45.67
Lambton TS	103.8***	58.25	58.32	58.13	58.03	58.07	58.23	58.56	58.93	59.39	59.84	60.30
Modeland TS	196.5	98.97	102.38	108.27	114.31	120.60	127.07	130.13	133.23	136.48	139.73	142.97
St. Andrews TS	101.8****	60.67	63.49	63.30	63.19	90.55	90.71	91.06	91.43	91.90	92.36	92.82
Wallaceburg TS	51.8	33.91	34.04	34.16	34.37	34.46	34.59	34.86	35.17	35.52	35.85	36.15
Wanstead TS	118.9	39.25	40.45	40.99	41.62	42.20	49.54	50.41	51.33	52.30	53.25	54.18
CTS #1	N/A	26.67	26.90	27.14	27.37	27.61	27.85	28.10	28.34	28.59	28.84	29.09
CTS #2	N/A	17.80	18.01	18.22	18.43	18.65	18.86	19.09	19.31	19.53	19.76	19.99
CTS #3	N/A	34.16	34.16	34.16	34.16	34.16	34.16	34.16	34.16	34.16	34.16	34.16
CTS #4	N/A	44.34	44.63	44.92	45.22	45.51	45.81	46.11	46.41	46.71	47.02	47.32
CTS #5	N/A	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53	8.53
CTS #6	N/A	2.69	2.71	2.73	2.75	2.77	2.79	2.81	2.83	2.85	2.87	2.89
CTS #7	N/A	53.79	54.19	54.59	54.99	55.40	55.81	56.22	56.64	57.06	57.48	57.90
CTS #8	N/A	29.57	79.73	80.62	81.57	82.08	82.54	83.07	83.68	84.25	84.80	85.27
CTS #9	N/A	0.00	1.00	10.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00

* LTR will increase to approximately 195 MVA after T2 is replaced (2027)

** LTR will increase to approximately 120 MVA after T5/T6 are replaced (2023)

*** LTR will increase to approximately 120 MVA after T1/T2 are replaced (2025)

Table D-7. Net Winter Non-Coincident Forecast (MW)

Station	Limited-Time Rating (MVA)	Historical (MW)	Forecast (MW)									
		2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31
Duart TS	215.2	15.62	16.26	16.30	21.80	21.92	22.06	22.27	22.50	22.76	23.00	23.23
Forest Jura DS	31.25	18.84	19.00	19.08	19.19	19.36	19.56	19.83	20.10	20.41	20.73	21.05
Kent TS (T1/T2)	171.2*	67.94	69.37	76.90	73.76	75.39	80.37	82.40	83.08	83.86	84.63	85.38
Kent TS (T3/T4)	65.8	36.64	36.89	36.97	37.12	37.37	37.69	38.12	38.58	39.10	39.63	40.17
Lambton TS	114.1**	61.93	61.99	61.76	61.62	61.64	61.78	62.10	62.47	62.92	63.38	63.84
Modeland TS	214.8	73.93	77.60	84.51	91.52	98.72	106.06	109.52	113.01	116.60	120.19	123.79
St. Andrews TS	110.9***	64.73	68.36	68.19	68.12	103.65	103.86	104.26	104.70	105.23	105.76	106.28
Wallaceburg TS	63	32.37	32.49	32.46	32.49	32.59	32.77	33.04	33.33	33.67	34.02	34.37
Wanstead TS	128.8	39.16	40.30	40.86	41.25	41.63	49.44	50.13	50.86	51.65	52.42	53.16
CTS #1	N/A	31.78	32.04	32.31	32.58	32.85	33.12	33.39	33.67	33.95	34.23	34.51
CTS #2	N/A	17.04	17.26	17.49	17.72	17.95	18.18	18.42	18.66	18.91	19.15	19.40
CTS #3	N/A	36.60	36.60	36.60	36.60	36.60	36.60	36.60	36.60	36.60	36.60	36.60
CTS #4	N/A	47.22	47.50	47.79	48.09	48.38	48.67	48.97	49.27	49.57	49.87	50.18
CTS #5	N/A	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64	10.64
CTS #6	N/A	3.04	3.06	3.08	3.10	3.12	3.14	3.16	3.18	3.21	3.23	3.25
CTS #7	N/A	53.71	54.08	54.46	54.84	55.22	55.60	55.99	56.38	56.77	57.17	57.57
CTS #8	N/A	51.40	102.23	103.15	104.17	104.82	105.41	106.10	106.88	107.61	108.31	108.92
CTS #9	N/A	0.00	3.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00

* LTR will increase to approximately 210 MVA after T2 is replaced (2027)

** LTR will increase to approximately 135 MVA after T5/T6 are replaced (2023)

*** LTR will increase to approximately 135 MVA after T1/T2 are replaced (2025)

Table D-8. Net Summer Non-Coincident Forecast (MW)

Station	Limited-Time Rating (MVA)	Historical (MW)	Forecast (MW)									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Duart TS	200	17.52	18.17	18.25	23.69	23.81	23.96	24.19	24.44	24.72	24.98	25.23
Forest Jura DS	31.25	26.60	26.84	26.97	27.14	27.38	27.68	28.07	28.47	28.92	29.38	29.85
Kent TS (T1/T2)	155.6**	105.10	106.31	111.78	108.49	108.78	113.94	116.33	117.31	118.45	119.57	120.68
Kent TS (T3/T4)	59.8	46.81	47.11	47.21	47.37	47.67	48.05	48.59	49.16	49.80	50.45	51.11
Lambton TS	103.8***	65.41	65.50	65.28	65.16	65.21	65.39	65.77	66.18	66.69	67.20	67.72
Modeland TS	196.5	114.81	118.76	125.59	132.60	139.89	147.40	150.94	154.54	158.31	162.08	165.84
St. Andrews TS	101.8****	65.06	68.08	67.88	67.77	97.10	97.28	97.65	98.05	98.55	99.04	99.54
Wallaceburg TS	51.8	39.11	39.26	39.41	39.65	39.75	39.91	40.21	40.56	40.97	41.35	41.70
Wanstead TS	118.9	46.42	47.84	48.49	49.23	49.91	58.60	59.63	60.71	61.86	62.98	64.09
CTS #1	N/A	32.20	32.48	32.76	33.05	33.34	33.63	33.92	34.22	34.51	34.82	35.12
CTS #2	N/A	19.35	19.57	19.80	20.03	20.27	20.51	20.75	20.99	21.23	21.48	21.73
CTS #3	N/A	35.75	35.75	35.75	35.75	35.75	35.75	35.75	35.75	35.75	35.75	35.75
CTS #4	N/A	48.71	49.02	49.34	49.67	49.99	50.32	50.64	50.98	51.31	51.64	51.98
CTS #5	N/A	9.96	9.96	9.96	9.96	9.96	9.96	9.96	9.96	9.96	9.96	9.96
CTS #6	N/A	2.77	2.79	2.81	2.83	2.85	2.87	2.89	2.91	2.93	2.95	2.97
CTS #7	N/A	56.08	56.50	56.92	57.34	57.76	58.19	58.62	59.05	59.49	59.93	60.37
CTS #8	N/A	112.89	113.74	114.59	115.45	116.32	117.19	118.07	118.96	119.85	120.75	121.66
CTS #9	N/A	0.00	1.00	10.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00

* LTR will increase to approximately 195 MVA after T2 is replaced (2027)

** LTR will increase to approximately 120 MVA after T5/T6 are replaced (2023)

*** LTR will increase to approximately 120 MVA after T1/T2 are replaced (2025)

Table D-9. Dresden TS Net Summer Non-Coincident Forecast

	2022	2023	2024	2025	2026	2027	2028	2029	2030
Load (MW)	33.45	45	43	56.3	59	59	59	59	59

Table D-10. Dresden TS Net Winter Non-Coincident Forecast

	2022	2023	2024	2025	2026	2027	2028	2029	2030
Load (MW)	50.6	60.6	80.6	109.6	128.6	128.6	128.6	128.6	128.6

APPENDIX E: LIST OF ACRONYMS

Acronym	Description
A	Ampere
BES	Bulk Electric System
BPS	Bulk Power System
CDM	Conservation and Demand Management
CIA	Customer Impact Assessment
CGS	Customer Generating Station
CSS	Customer Switching Station
CTS	Customer Transformer Station
DCF	Discounted Cash Flow
DER	Distributed Energy Resources
DESN	Dual Element Spot Network
DG	Distributed Generation
DSC	Distribution System Code
GATR	Guelph Area Transmission Reinforcement
GS	Generating Station
GTA	Greater Toronto Area
HV	High Voltage
IESO	Independent Electricity System Operator
IRRP	Integrated Regional Resource Plan
kV	Kilovolt
LDC	Local Distribution Company
LP	Local Plan
LTE	Long Term Emergency
LTR	Limited Time Rating
LV	Low Voltage
MTS	Municipal Transformer Station
MW	Megawatt
MVA	Mega Volt-Ampere
MVAR	Mega Volt-Ampere Reactive
NA	Needs Assessment
NERC	North American Electric Reliability Corporation
NGS	Nuclear Generating Station
NPCC	Northeast Power Coordinating Council Inc.
NUG	Non-Utility Generator
OEB	Ontario Energy Board
OPA	Ontario Power Authority
ORTAC	Ontario Resource and Transmission Assessment Criteria
PF	Power Factor
PPWG	Planning Process Working Group
RIP	Regional Infrastructure Plan
ROW	Right-of-Way
SA	Scoping Assessment
SIA	System Impact Assessment
SPS	Special Protection Scheme
SS	Switching Station
TS	Transformer Station
TSC	Transmission System Code
UFLS	Under Frequency Load Shedding
ULTC	Under Load Tap Changer
UVLS	Under Voltage Load Rejection Scheme



Need for Bulk System Reinforcements West of London

September 2021

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List of Abbreviations

AAR	Annual Acquisition Report
APO	Annual Planning Outlook
CAD	Canadian
CDM	Conservation Demand Management
CEATI	Centre for Energy Advancement through Technological Innovation
CEP	Community Energy Plan
CHP	Combined Heat and Power
CONE	Cost of the Marginal New Resource
DE-HPS	Double-Ended High-Pressure Sodium
DESN	Dual Element Spot Network
DG	Distributed Generation
DS	Distribution Station
FIC	Flow into Chatham
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GS	Generating Station
HCCC	Haundenosaunee Confederacy Chiefs Council (HCCC),
HDI	Haundenosaunee Development Institute (HDI)
IESO	Independent Electricity System Operator
IRRP	Integrated Regional Resource Plan
kV	Kilovolt
LDC	Local Distribution Company
LED	Light Emitting Diode
MECP	Ministry of Environment, Conservation and Parks
MTS	Municipal Transformer Station
MW	Megawatt
NERC	North American Electric Reliability Corporation
NPCC	Northeast Power Coordinating Council
NPV	Net Present Value
OEB	Ontario Energy Board
OGVG	Ontario Greenhouse Vegetable Growers Association
OR	Operating Reserve
ORTAC	Ontario Resource and Transmission Assessment Criteria
RAS	Remedial Action System
SCGT	Simple Cycle Gas Turbine
SECTR	Supply to Essex County Transmission Reinforcement
SIA	System Impact Assessment
SS	Switching Station
TS	Transformer Station
UCAP	Unforced Capacity
USD	United States dollars
WOC	West of Chatham
WOL	West of London

1. Executive Summary

This report documents the results of a planning study the IESO has undertaken to assess the reliability of the bulk transmission system in the West of London (WOL) area. The WOL area encompasses a 230 kV and 115 kV high voltage network in southwest Ontario, stretching from outside the western edge of the City of London, to the City of Sarnia in the northwest, and to the City of Windsor in the west. This system interconnects large generators in the Lambton-Sarnia and Windsor areas, with existing load centres and encompasses the growing Kingsville-Leamington and Chatham-Kent areas. It provides four interconnection points with Michigan's power system via Windsor and Lambton-Sarnia. The area is also connected to the 500 kV system at Longwood TS, within the Municipality of Strathroy-Catadoc near the City of London, providing a strong path between the WOL area and the rest of the province.

Electricity demand in Windsor-Essex and the Chatham-Kent area (referred to as the "Focus Area") within WOL is growing at a rapid pace. This growth has been driven by strong indoor agricultural growth, mainly vegetable greenhouses, as well as in part, cannabis, specifically through existing greenhouses switching to lit indoor facilities, expansion of greenhouse facilities, and supplemental load to support the agricultural sector. The agricultural sector demand in the Focus Area is expected to increase from a winter peak of roughly 500 MW today to 2,300 MW in 2035 – this is the electrical equivalent of adding a city the size of Ottawa. Due to this rapid growth, planning in southwestern Ontario has been occurring on a continuum over the last five years. In 2019, the IESO released the [2019 Windsor-Essex bulk study](#), which made recommendations for supplying this growing demand. This report is the latest in a line of ongoing analysis at the bulk system and regional level.

Based on the reference forecast, and assuming the transmission recommendations from the 2019 Windsor-Essex bulk study come into service as planned, there will still be a winter need for additional supply to the Focus Area starting in 2024 that reaches 2,050 MW by 2035. This supply need assumes that when generation contracts expire, the resources are not reacquired, and export capability on the Ontario-Michigan intertie, J5D, is maintained with all transmission elements in-service. Typically, the system is planned to maintain export capability when all transmission elements are in service, not when transmission elements are out of service. The supply need is specified assuming resources are not reacquired since reacquisition is a decision that should be made as per the IESO's Resource Adequacy Framework and should not be presupposed. Hence, the statement of supply need should not assume resources are reacquired.

In response to this growing need, the IESO has adopted a multi-pronged approach using a combination of transmission reinforcements, resources, and targeted energy efficiency programs.

Due to the lead time required to implement solutions to provide the additional supply required and support the economic growth in the near-term (2021-2027) and mid-term (2028-2029), the IESO recommended actions ahead of the publication of this report. This report will provide the need and rationale for the actions taken by the IESO, which were:

- On March 26, 2021, the IESO sent a letter to the lead transmitter in the region, Hydro One Networks Inc. ("Hydro One"), in order to inform them of the need for a new 230 kV double circuit line from Lambton TS southwards to Chatham SS (Lambton South line) and associated station facility expansions or upgrades required at the terminal stations. While Hydro One will initiate the work, engagement and related activities, it will be subject to all required Environmental Assessment, regulatory (e.g., Leave-to-Construct), and other approvals and permits; and
- On July 19, 2021, the IESO indicated, through the Annual Acquisition Report (AAR), an intention to begin bilateral negotiations for Brighton Beach Generating Station. This is an existing facility supporting the area's needs today, that has been identified as required to continue supporting this immediate localized need in the near-term until the transmission line recommended in the March 26, 2021 letter is in-service.

These actions will provide the required supply to the domestic load up to the year 2030. With these actions taken, the winter supply requirement for the Focus Area reduces from 2,050 to 1,100 MW in the year 2035.

To deliver the 1,100 MW of required supply, this plan recommends a single circuit 500 kV transmission line from Longwood TS to Lakeshore TS, as well as 550 MW of local resources. The transmission line is required to be in service by 2030. The 550 MW of local resources is the total amount required by 2035, where the requirement progressively increases up to this level starting in 2030. It can be met by reacquiring resources that exist today whose contracts have expired between now and 2035, and/or by acquiring new resources.

The IESO is committed to transitioning to the long-term use of competitive resource acquisition mechanisms to meet Ontario's reliability needs. As such, the long-term resource requirement for 550 MW will be met by using the mechanisms outlined in the IESO's Resource Adequacy Framework, which will be outlined in future AARs.

The IESO will work with entities applying to the Ontario Energy Board (OEB) to become the transmitter for this project as well as stakeholders and communities, to implement the recommended 500 kV transmission line.

This planning report also identifies interdependencies between this provincial/bulk level plan and the regional electricity plan being developed in parallel with local distribution companies (LDCs) in the area – through the on-going Windsor-Essex Regional Addendum study and Chatham-Kent/Lambton/Sarnia regional planning cycle. In particular, depending on where the 550 MW of recommended capacity is located within the Focus Area, a double circuit 230 kV transmission line between Windsor and Lakeshore may be needed to address local reliability issues and maintain interchange capability with Michigan under all elements in-service. Furthermore, the IESO will continue to monitor and explore opportunities for conservation efforts targeted to the Focus Area, including cost-effective energy efficiency measures and pilot projects that help mitigate needs and manage reliability issues until bulk reinforcements are in-service.

Finally, in addition to the reliability of the supply to the Focus Area, this report also explores the reliability of the supply to the larger WOL area, which encompasses the Focus Area. A review of the supply to WOL area was necessary not only because of the forecast load growth in the Focus Area,

but also because 85% of the nearly 5,000 MW of supply resources within WOL have contracts expiring by the end of the decade.

The study of the supply to the broader WOL area concluded, that 1,425 MW of local resources must be acquired in the WOL area to reliably supply the region in 2035, where the requirement progressively increases up to that level starting in 2030. This is in addition to what was recommended in this report to supply the Focus Area. Similar to the recommendations made for the Focus Area, the need for 1,425 MW in WOL will be included in future AARs, can be met by reacquiring resources that exist today whose contracts have expired between now and 2035 and/or by acquiring new resources, and will be addressed using the IESO's Resource Adequacy Framework.

2. Introduction

Electricity planning in Ontario typically occurs on a cyclical basis. However, due to the rapidly growing agricultural sector, planning in southwestern Ontario has been occurring on a continuum over the last five years, with no signs of slowing down. Over the course of that time, the IESO has recommended supply lines to Leamington, two load stations at Leamington (Leamington TS DESN 1 and 2) with two more under development in Lakeshore (South Middle Road TS DESN 1 and 2), a new switching station at Leamington Junction (Lakeshore TS¹) and a new 230 kV double circuit line from Chatham SS to the new Lakeshore TS.

The [2019 Windsor-Essex bulk study](#) recommended Lakeshore TS and the new line from Chatham SS to Lakeshore TS to address bulk transmission system limitations west of Chatham, between Chatham SS and the Kingsville-Leamington area. These recommendations would increase the overall transfer capability of the bulk transmission system west of Chatham in order to reliably supply the forecast load growth in the Kingsville-Leamington area and Windsor-Essex region. At that time, transmission system constraints east of Chatham were also identified but additional assessments (this study) were required before further bulk recommendations could be made.

Agricultural electricity demand primarily concentrated in the Windsor-Essex region and in the community of Dresden within Chatham-Kent (referred to as the “Focus Area” for the purposes of this report) is expected to grow from a winter peak of roughly 500 MW to 2,300 MW between now and 2035 – the electrical equivalent of adding a city the size of Ottawa. Further, there is a significant amount of resources within the broader West of London area, 85% of which have contracts expiring by the end of the decade. As such, a review of the bulk transmission system in WOL is necessary at this time, primarily to ensure adequate supply to the Focus Area, which is experiencing the rapid agricultural load growth. But also to ensure adequate supply to the larger WOL area, given the expiry of generation contracts in the area, and to identify any transmission constraints limiting the ability of supply resources and imports within WOL to meet provincial needs.

The WOL area encompasses a 230 kV and 115 kV high voltage network in southwest Ontario, stretching from the western edge of the City of London, to the City of Sarnia in the northwest, and the City of Windsor in the west. This system interconnects large generators in the Lambton-Sarnia and Windsor areas with existing load centres, and encompasses the growing Kingsville-Leamington and Chatham-Kent areas. It provides four interconnection points with Michigan’s power system via Windsor and Lambton-Sarnia. The area is also connected to the 500 kV system at Longwood TS, within the Municipality of Strathroy-Catadoc near the City of London, providing a strong path between the WOL area and the rest of the province.

The Windsor-Essex region has historically been characterized by manufacturing loads, large gas generation and interconnection supply with Michigan in the Windsor area, as well as numerous wind generators across the region. More recently, agricultural development and the adoption of indoor

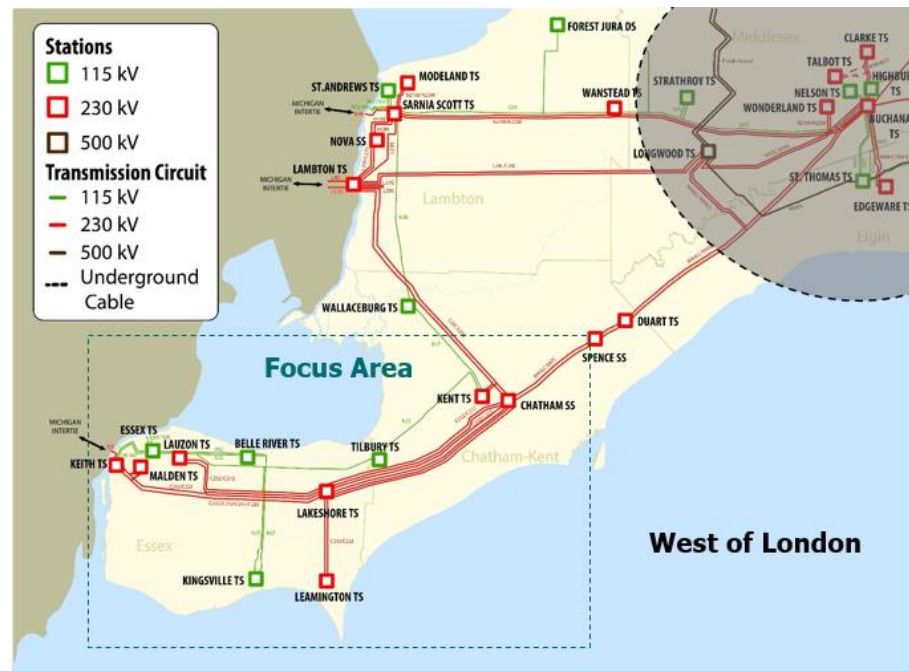
¹ Note that while a switching station was recommended, with the connection of South Middle Road TS DESN 1 and 2 to the station this was designated a transformer station by Hydro One and will subsequently be referred to as a transformer station in this report.

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grow lights in Kingsville-Leamington have expanded and is forecast to increase significantly, spreading east towards Chatham proper and surrounding areas. Within the Chatham-Kent/Lambton/Sarnia region, there is a significant amount of supply resources in Lambton-Sarnia, strategically located near the Dawn gas supply hub, as well as interconnection supply with Michigan. This area also includes large petro-chemical industrial loads in Lambton-Sarnia, much of which are interdependent with the combined heat and power generators.

The relevant parts of the WOL bulk system, consisting of 230 kV and 115 kV transmission circuits, as well the demarcation of the Focus Area, is shown in Figure 1.

Figure 1 | Map of West of London, Highlighting Focus Area



The bulk of the electrical supply is transmitted into WOL through 230 kV circuits from Buchanan TS to Scott TS, Lambton TS, and Chatham SS. Additional supply is transmitted within WOL through the 230 kV circuits between Chatham SS and Lambton TS, and the four existing circuits supplying the Windsor-Essex region from Chatham SS. These four existing circuits will be connected to the new station in Lakeshore, which was recommended in 2019, along with the two new 230 kV circuits from Lakeshore to Chatham. Over the last decade, prevailing power flows on the bulk system have been from the gas generation located in the WOL area east towards Toronto. However, with load changes in the Focus Area, bi-directional flow is expected going forward as new load connects.

This report is organized into the following sections:

- Section 3 provides background on the areas of interest within WOL, specifically the Kingsville-Leamington, Chatham-Kent, and Lambton-Sarnia pockets;
- Section 4 details the relevant electricity demand and load forecast scenarios, as well as overall forecast considerations;
- Section 5 provides an overview of the internal and external resources supplying the Focus Area and the broader WOL area;

- Section 6 discusses the need for additional capacity and energy supply in the Focus Area and WOL area;
- Section 7 outlines the transmission and resource recommendations required to meet the near-to mid-term needs;
- Section 8 analyzes the transmission and resource alternatives considered to meet the long-term needs;
- Section 9 summarizes the implications of the WOL bulk recommendations on the broader area and regional planning;
- Section 10 goes over the engagement activities to date and moving forward for WOL;
- Appendix A outlines the IESO's transmission planning objectives and assessment criteria;
- Appendix B provides a detailed breakdown of the load forecasts used in this study;
- Appendix C presents hourly supply need data determined through the need assessments;
- Appendix D breaks down the capacity and energy assessment assumptions; and
- Appendix E details the options and assumptions associated with the cost comparison for the alternatives.

3. Background and Planning Considerations

3.1 Areas of Interest

The majority of the identified load growth and economic development in WOL is within the Windsor-Essex region and Municipality of Chatham-Kent. This is driven by strong growth in the indoor agricultural sector, mainly in vegetable greenhouses, as well as in part, cannabis, specifically through existing greenhouses switching to lit indoor facilities, expansion of greenhouse facilities, and supplemental load to support the agricultural sector.

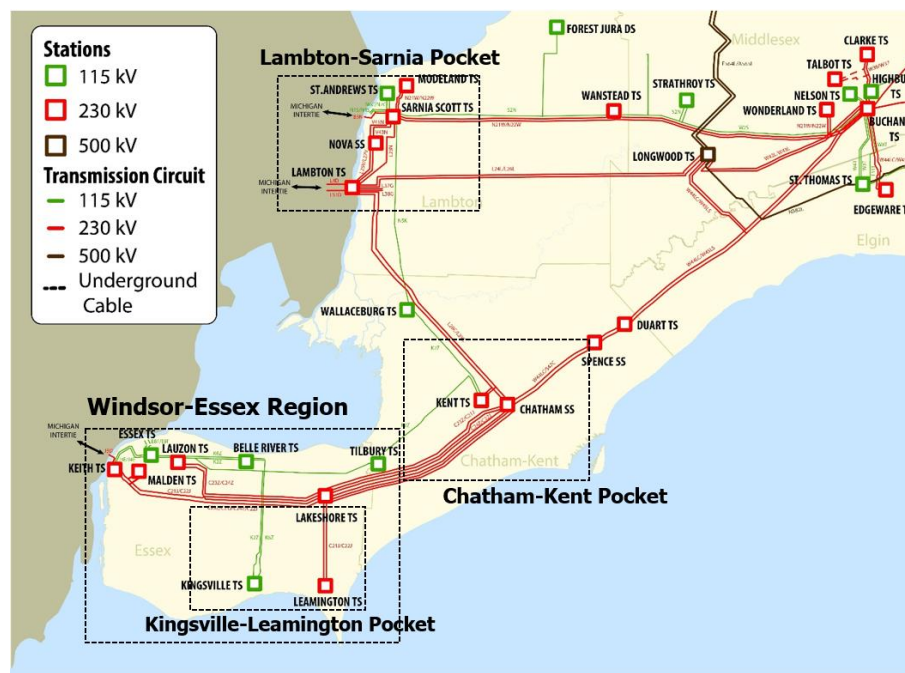
Aside from the points of interconnection with Michigan – one in Windsor and three in Lambton-Sarnia – Lambton-Sarnia contains the largest concentration of generation resources in WOL.

Thus, within WOL there are three areas of interest based on load growth, economic development and/or resources, as follows:

- Windsor-Essex;
- Chatham-Kent; and
- Lambton-Sarnia.

Each of these areas, as illustrated in Figure 2 will be described in the following sections. The considerations highlighted in this section regarding load growth, economic development and Community Energy Plans are incorporated in the load forecasts in Section 4 to the extent known, while local preferences were considered when developing options.

Figure 2 | Map of West of London, Highlighting Areas of Interest



3.1.1 Windsor-Essex

The Windsor-Essex region is the southernmost portion of Ontario, extending southwest from the Municipality of Chatham-Kent to the City of Windsor. The electricity demand of the region has historically been defined by its tourism and manufacturing, in particular automotive manufacturing near the City of Windsor. More recently, agricultural development and adoption of indoor grow lights in the Town of Kingsville and Municipality of Leamington (the Kingsville-Leamington pocket), has expanded and is forecast to increase significantly. The Kingsville-Leamington pocket is considered North America's largest concentration of greenhouse vegetable production, and accounts for all greenhouse and supplemental load that is supplied or will be supplied between Lakeshore TS and Kingsville TS.

Bulk and regional plans for the area are informed by the community's priorities and energy plans. In 2019, the County of Essex, City of Windsor, and other local municipalities declared a climate emergency and called for cooperation in reducing greenhouse gas (GHG) emissions in the region. The [County of Essex](#) and [City of Windsor](#) each established energy plans that support local economic development while taking climate change action and improving energy performance. The City of Windsor's community energy plan targets a 40% GHG reduction by 2041 from 2014 levels. The City of Windsor also recently requested that the government of Ontario place an interim cap of 2.5 megatons per year on the GHG pollution from Ontario's gas-fired power plants, and develop and implement a plan to phase-out all gas-fired electricity generation by 2030 to help Ontario and the City of Windsor meet their climate targets.

In the Essex Regional Energy Plan, specific targets were identified under seven total strategic directions:

- Efficient homes and buildings;
- Efficient greenhouses;
- Efficient industry;
- Efficient transportation;
- Efficient local supply and distribution;
- Efficient community planning; and
- Data-driven insights and reporting.

These strategic directions will be advanced through a variety of initiatives, including 16 priority projects between 2021-2025. These projects range from developing municipal policies and incentives (such as aligning the Regional Energy Plan with the County Economic Transportation Master Plan, or the County Economic and Employment Land Strategy), to forming governance groups to oversee implementation. Some of these governance groups include a County of Essex Retrofit Entity that would be established to offer standardized energy retrofits to homes and commercial and institutional buildings, as well as a Greenhouse Growers Energy Services Co-operative to consolidate expertise as it relates to energy efficiency and supply needs in the greenhouse sector. Other near-term endeavours involve scale projects, such as a neighbourhood-scale Integrated Energy Master Plan for both a manufacturing cluster and a net-zero community, and more broadly, raising energy and climate literacy. To the extent known, these community priorities have informed the demand forecast

in the area and have been taken into consideration in the evaluation of options and the IESO will continue to consider community-led energy plans in future demand forecasts as they are implemented.

3.1.2 Chatham-Kent

The Municipality of Chatham-Kent is about 2,500 square kilometers, located adjacent to the Windsor-Essex region. Based on feedback received from the greenhouse sector, municipalities and local utilities, there are potential constraints regarding the availability of land, water, electricity and natural gas in the Windsor-Essex region.² As a result, agricultural load is shifting eastward, concentrated in the community of Dresden and areas surrounding Chatham proper (referred to here as “Chatham-Kent”).

In November 2019, Enbridge completed the construction of a new gas pipeline in the area; the Chatham-Kent Rural Pipeline Expansion. This pipeline, which runs from Dover Centre east through the communities of Tupperville and Dresden, provides 30,000 m³/hr of natural gas capacity, or the equivalent of 350 acres of greenhouses. The Municipality of Chatham-Kent indicated that there are no water or wastewater supply concerns that would delay the development of this area.

The Municipality of Chatham-Kent was an early adopter and is a large supporter of renewable energy in Ontario. Chatham-Kent's 2016 Community Energy Plan builds on its leadership in renewable energy and promotes further energy efficiency, aiming to reduce energy consumption in 2036 by 15% over the 2013 baseline, leading to associated reductions in greenhouse gas emissions.³ The Environmental Sustainability Section of Council's 2018-2022 Term Priorities calls for reducing the cost and environmental impact of energy use, among other priorities. In addition, on July 15, 2019, Council unanimously approved a motion to declare a climate emergency in Chatham-Kent.⁴

3.1.3 Lambton-Sarnia

The County of Lambton and City of Sarnia (referred to here as Lambton-Sarnia) form part of the Ontario-Michigan interconnection across from Port Huron, Michigan. Together they are home to over 190,000 people, with electricity demand largely driven by the hub of traditional petro-chemical industrial loads and the emerging bio-industrial and clean energy economy.

Based on Ontario's Low-Carbon Hydrogen Strategy [discussion paper](#)⁵, depending on the production method, hydrogen can help decarbonize the economy and reduce reliance on fuels that have a larger carbon footprint. Key principles of that strategy include reducing greenhouse gas emissions, stimulating economic development, and promoting energy resilience. Since Lambton-Sarnia houses a large concentration of refineries and chemical producers that could switch from using high- to low-carbon hydrogen, the municipality is positioning itself to play a key role in Ontario's hydrogen strategy. This is one way that the County of Lambton is pursuing its mission statement of the “promotion of economic growth, environmental stewardship, and an enhanced quality of life through

² Refer to Section 4 for further details on factors influencing greenhouse load.

³ As described in the 2016 Chatham-Kent [council meeting](#).

⁴ Refer to the [Municipality of Chatham-Kent Climate Change Action Plan Terms of Reference](#) for further details.

⁵ Issued by the Ontario government in November 2020.

the provision of responsive and efficient services”.⁶ Similarly, Sarnia city councillors unanimously passed a resolution in support of Enbridge Line 5 as critical infrastructure for the safe, efficient delivery of energy to residents, commerce, and industry in Western Ontario. This pipeline delivers crude oil to be processed by Ontario refineries to produce a cost-effective supply of gasoline, diesel, jet fuel, and natural gas liquids to make petrochemical products.

Over the study period, there is a relatively small amount of industrial load growth projected in the pocket. However, there is approximately 2,300 MW of gas generation in the area, strategically located near the Dawn gas supply hub. It also forms the majority of the Ontario-Michigan interconnection which currently has a capability of approximately 1,600 MW for imports and/or exports.

3.2 Ongoing Conservation and Demand Management Activities

The main driver for electricity growth in the Focus Area is the adoption of indoor grow lights – a vegetable greenhouse with lighting consumes 10 times as much electricity as an unlit vegetable greenhouse. To date, the use of high-intensity discharge lighting, with double-ended high-pressure sodium (DE-HPS) grow lights, continues to be the primary technology in Ontario’s greenhouse sector. The [2019 Greenhouse Profile Study](#) issued by the IESO indicated that switching to more energy-efficient light emitting diodes (LED) could save as much as 550 GWh/yr. The study suggests significant potential for energy-efficiency strategies to help greenhouses and indoor facilities improve their operations and save on energy, while reducing the need for new supply infrastructure and enabling new businesses to connect.

Energy efficiency is a low cost resource that offers benefits for individuals, businesses, and the power system as a whole. The efforts made through the participation in energy efficiency programs help reduce the need for new investments in generation resources and transmission lines. The IESO has directed increased efforts and investment to the Windsor-Essex region over the past several years, to encourage the adoption of energy efficiency processes and technologies in businesses and communities.

The IESO’s Save on Energy conservation and demand management programs provide incentives for grow lights (both retrofit and new construction) to help defray the increased capital costs of LEDs, as well as deliver longer term operational savings. In 2020, the Save on Energy Regional LED Incentive for Greenhouses received 17 applications – greatly exceeding the expected number of applications and budget. In 2020, the program committed 200 GWh of energy savings and 5 MW of demand savings. In 2021, applications for LED grow lights continue to be high, even with a lower incentive than the original 3x adder that was available in 2020 to spur up-take.⁷

In addition, a [Local Initiatives Program](#) will be developed to cost-effectively meet system needs, drive cost competitiveness, and promote consumer-driven solutions in targeted areas of the province, as identified through the IESO’s regional planning process.

Energy efficiency combined with innovation can provide an immediate and lasting impact on system reliability, help address province-wide and regional electricity needs, and support business and

⁶ Refer to the County of Lambton [Strategic Plan](#) for further details.

⁷ Refer to IESO’s CEATI’s [“Energy Management Best Practices for Cannabis Greenhouses and Warehouses”](#).

community growth. The IESO's Grid Innovation Fund has invested in innovative greenhouse pilot projects in the Windsor-Essex region to reduce peak demand while alleviating load growth. [Pilot projects](#) include smart LED lighting strategies, and using artificial intelligence to improve energy efficiency. Learnings from these projects will help inform and build capacity within the community for future demand side solutions as load continues to connect.

Section 4 illustrates the net demand growth that remains to be addressed through a bulk transmission and/or resources solution, after accounting for current energy efficiency measures implemented under existing frameworks.

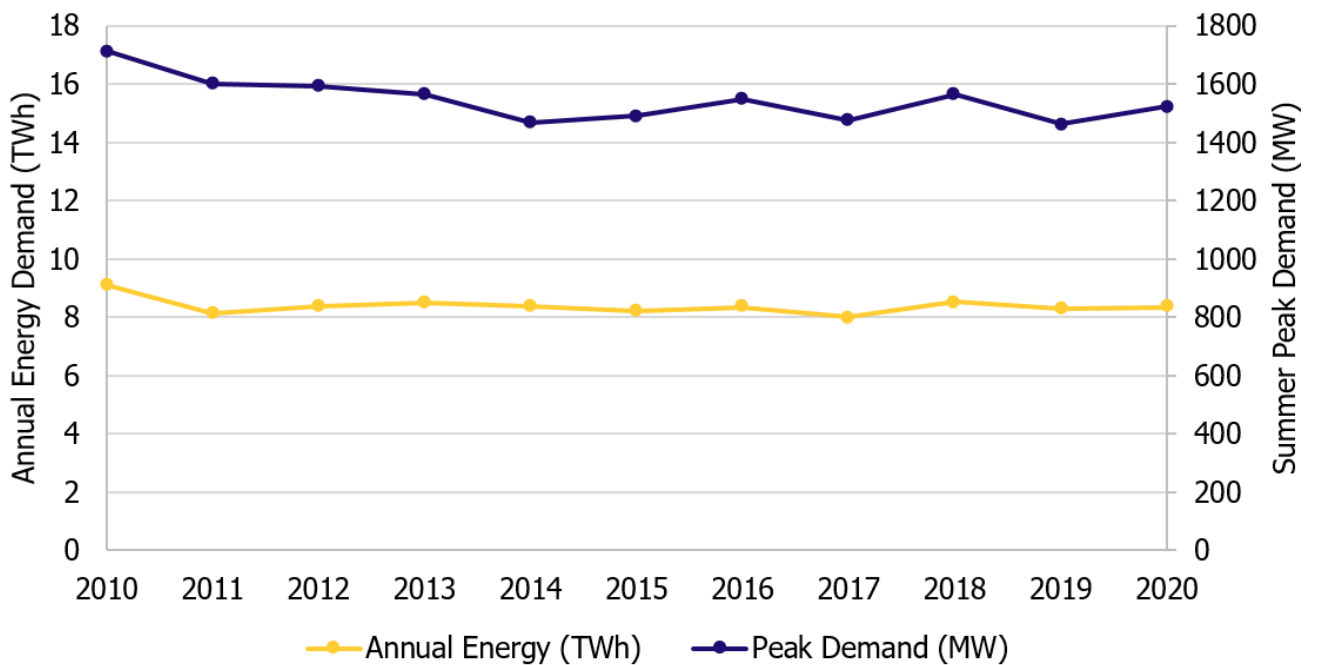
4. Demand Forecasts

This section describes the forecast demand for WOL and the Focus Area, and details of the greenhouse load forecast that is the primary driver for demand growth.

4.1 Overall West of London Demand

As described in Section 3.1, WOL is home to a diverse mixture of residential, commercial, and industrial loads, spanning two regional planning regions: Windsor-Essex, and Chatham-Kent/Lambton/Sarnia. Together, loads in this summer-peaking area have historically reached approximately 1,600 MW, with annual energy requirements of around 8 TWh. Historical demand and energy consumption in WOL are shown in Figure 3.

Figure 3 | Historical Peak Demand and Energy Consumption for West of London



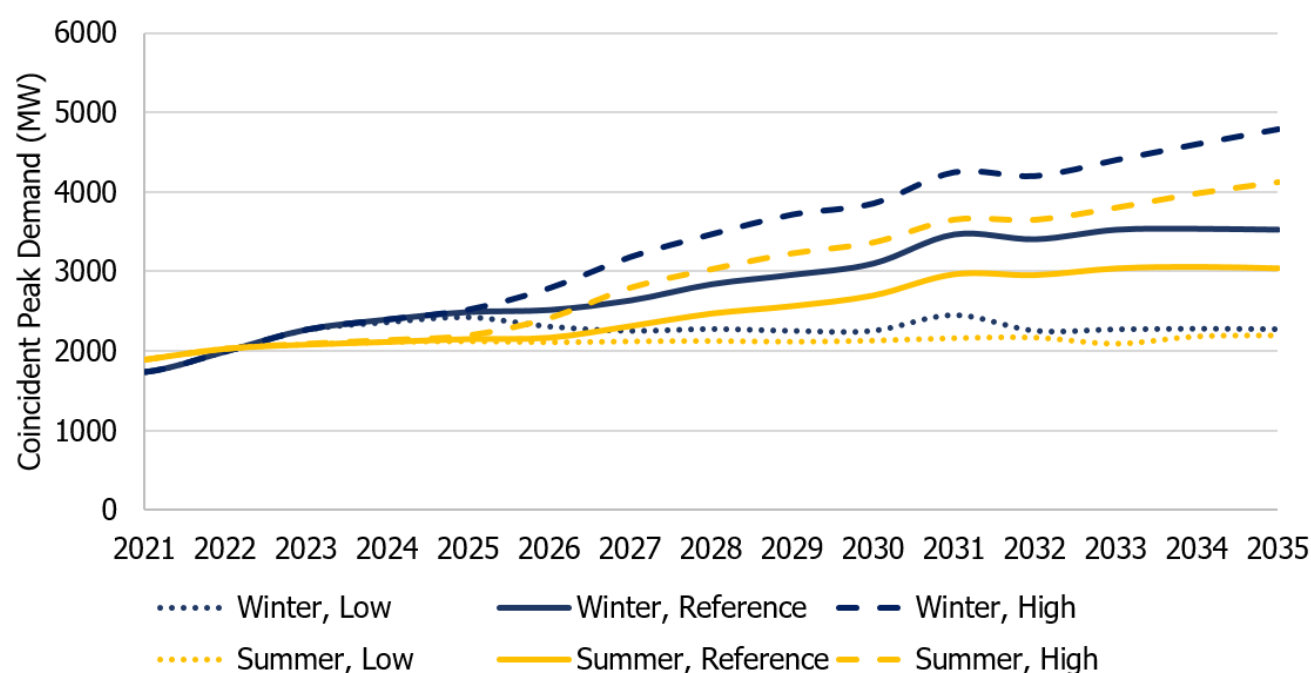
To construct the forecast for the WOL area, a number of data sets were compiled and leveraged. The 2019 Windsor-Essex IRRP planning forecast was used for non-agricultural loads in the Windsor-Essex region, combined with forecast data solicited from distributors, industrial customers, and municipalities in the Chatham-Kent/Lambton/Sarnia region in 2020. The West Zone⁸ forecast information from the Annual Planning Outlook (APO) was then used for the remaining stations

⁸ Visit the IESO's [zonal map](#) illustrating the 10 electrical zones.

defined as WOL.⁹ The regional planning forecasts were adjusted to reflect extreme weather conditions,¹⁰ and accounted for the peak capacity contribution of contracted distributed generation. The agricultural load forecast was then developed as described in Section 4.3. Given the significance of the growth in the agriculture sector, three demand scenarios (low, reference and high) were developed for greenhouse load in order to test the robustness of the plan. Together with hourly load information (see Section 4.4), these inputs allowed for three coincident peak forecasts to be estimated for all of WOL; the differences driven by the three greenhouse load forecasts.

By 2035 in the reference scenario, the peak demand in WOL is forecast to increase to about 3,500 MW in the winter and around 3,000 MW in the summer. This magnitude of load growth, in addition to the switch to a winter peak, is largely driven by the indoor agriculture expansions. Figure 4 presents the forecasts for the overall WOL area.

Figure 4 | Total West of London Forecast Scenarios¹¹



⁹ Chatham-Kent/Lambton/Sarnia is undergoing a new regional planning cycle in Q3 2021, through which the forecast may be updated. Refer to Appendix B.

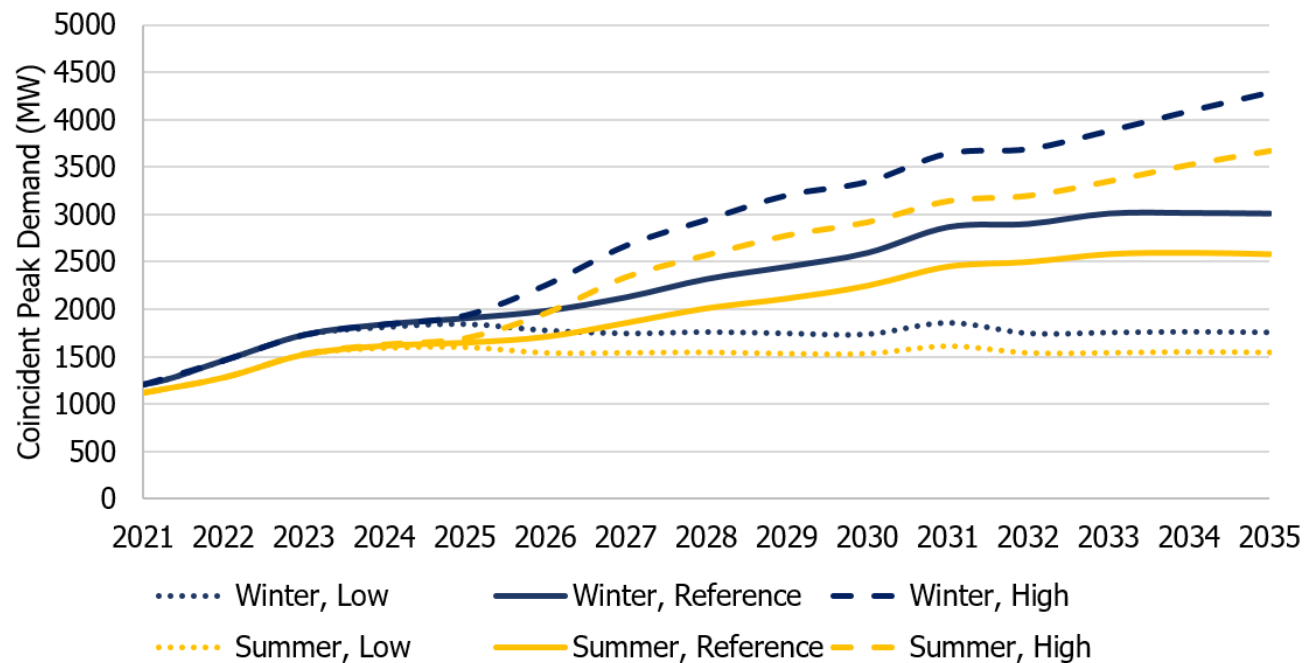
¹⁰ Regional forecasts provided by LDCs are for median weather, which are then corrected for extreme weather by adjusting the forecast to reflect how loads historically react to extreme temperatures.

¹¹ Overall West of London peak will be subject to actual coincidence as loads materialize and customer segmentation in the region shifts. Higher coincidence between agricultural and non-agricultural loads can lead to greater peak demand. The non-agricultural load shape for this bulk study is based on the APO's West Zone load shape, which is more coincident with the 2031 agricultural load than in the adjacent years, resulting in what appears to be an increased demand. Refer to Section 4.4 and Appendix B for more detailed load information.

4.2 Focus Area Demand

Forecast demand in the Focus Area is a subset of WOL load. As shown in Figure 5, in the reference scenario, coincident peak demand in the Focus Area is anticipated to reach approximately 3,000 MW and 2,600 MW in the winter and summer of 2035, respectively. Similar to WOL, three forecast scenarios are presented, reflecting the three greenhouse load forecasts.

Figure 5 | Focus Area Forecast Scenarios



4.3 Greenhouse Forecast Scenarios

The greenhouse load growth in WOL is concentrated in two areas where the indoor agricultural sector is expanding: Kingsville and Leamington, and Chatham-Kent (specifically, the community of Dresden). The greenhouse load in Kingsville and Leamington includes:

- Loads supplied by the existing Leamington tap lines which will be connected to the future Lakeshore TS;
- South Middle Road TS loads to be connected to Lakeshore TS;
- Gradual connection of an AgriPark¹²; and
- Future distribution-connected load growth in the Kingsville and Leamington geographic area.

Additionally, the greenhouse load in Chatham-Kent is comprised of two parts:

¹² AgriPark refers to an agricultural park which will act as a turn-key solution, providing facilities, equipment, and services to independent end-users/growers.

- Connection requests received by the distributor for the community of Dresden, looking to connect by 2021/2022; and
- Additional 130-230 MW of projected load growth based on the local natural gas capacity, assuming its utilization is for greenhouse facilities.¹³

Demand growth in these areas was combined with different assumptions to create three greenhouse load forecast scenarios. Inputs to these scenarios encompass:

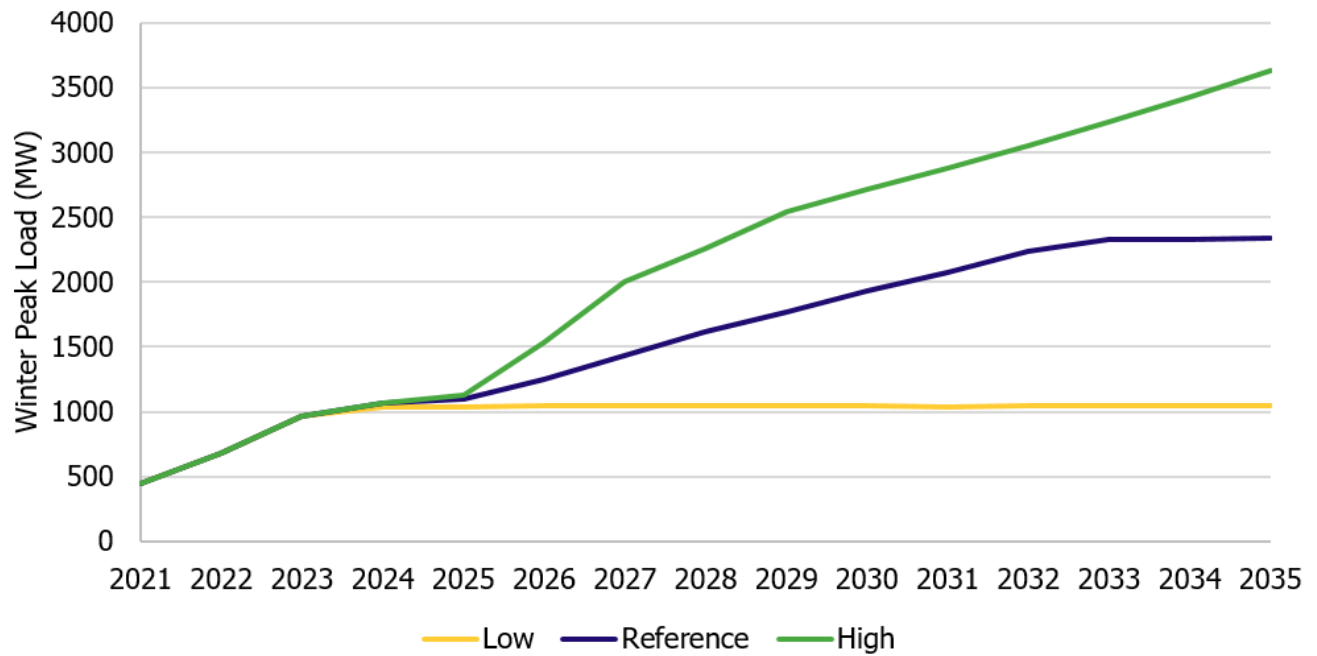
- Greenhouse load growth information received from the LDCs – primarily Hydro One, as most of the new load is in its service territory – including:
 - Customer connection requests, with details of their location, their requested capacity, and crop type (vegetable or cannabis);
 - Customer connection inquiries, with similar details mentioned above;
 - Projections of greenhouse expansions based on the available gas supply capability from Enbridge’s Chatham Pipeline expansion in the community of Dresden;
- Information received from those who have applied for an IESO System Impact Assessment (SIA) in WOL;
- Information received by the IESO from potential connection applicants who have inquired about SIAs or other feasibility assessments in WOL; and
- Historical acreage expansion rates for vegetable greenhouse growers, obtained from the Ontario Greenhouse Vegetable Growers (OGVG) Association; and
- Development time of both Windsor-Essex bulk system reinforcements,¹⁴ and new local transformer stations and supply lines required to connect new loads.

As shown in Figure 6, the forecast scenarios differ in both magnitude of total long-term greenhouse load, and the rate at which load materializes.

¹³ During the Windsor-Essex IRRP, a near-term capacity need was identified in Chatham-Kent that exceeded the existing local capacity and was driven by greenhouse customers located south of the municipality of Chatham proper. Due to the urgency and proximity of the load to the Windsor-Essex region, this need was incorporated into the 2019 Windsor-Essex IRRP. However, as a result of economic influences on demand for the proposed load, the recommended station build was not implemented by the customer.

¹⁴ Specifically, the Lakeshore transformer station and 230 kV double circuit lines from Chatham SS to Lakeshore TS.

Figure 6 | West of London Greenhouse-Only Load Forecast Scenarios, Winter



The low load scenario incorporates only the already-existing loads, facilities for which SIAs have been received,¹⁵ and confirmed load for which a preferred connection option has been studied (such as in the community of Dresden). The rate of load growth assumed for these facilities aligns directly with the forecasts from the distributor or transmission-connected customer.

The reference scenario builds upon the low scenario's assumptions and reflects additional customer connection requests received by the distributor that have not been assigned a connection point. It assumes additional vegetable greenhouse load growth near the community of Dresden using the projected rate of growth indicated by Hydro One. Subsequently, starting in 2026 (after the Chatham-Lakeshore 230 kV circuits are in-service), the remaining Kingsville and Leamington customer queue (distribution-level connection requests) is assumed to be connected in 50 MW annual increments. Simultaneously, the AgriPark load is anticipated to ramp up by 100 MW per year.

The high load scenario assumes a more aggressive and faster buildout of transformer stations and distribution lines, also starting in 2026 – possible if transmission and distribution facilities are developed in parallel. In this scenario, the magnitude of long-term greenhouse load near the community of Dresden is larger, assuming that a greater portion of projected growth is driven by more load-intensive cannabis grow lights rather than vegetable. The Kingsville and Leamington customer queue and AgriPark are still accounted for, but ramp up at a faster rate: both at 200 MW per year. The high load scenario also applies a long-term growth rate of 6% starting in 2029, after the known customer requests and distributor forecasts are met. This 6% factor is based on the historical rate of under-glass greenhouse acreage expansion in the Leamington area according to OGVG, and implies that the ratio of lit to unlit acreage in 2029 will persist in the long-term.

¹⁵ Information valid as of December 2020.

4.4 Hourly Demand Forecasts

In addition to establishing peak demand forecasts to identify bulk capacity needs, hourly forecasts were developed to inform the energy analysis (see Section 6). While real-time demand is subject to a myriad of factors – including hourly weather changes and individual customer or facility behaviour – the WOL load shape is expected to be impacted most significantly by indoor agriculture load shapes as more greenhouse customers connect over the planning horizon, until 2035 for the purposes of this study. Specifically, a key characteristic of greenhouse demand is a winter morning peak sustained over multiple hours, as growers seek to compensate for lower solar insolation with artificial lighting. This differs from non-agricultural demand in WOL, which is typically summer-peaking and highest during weekday afternoons/early evenings.

The IESO created the hourly forecasts leveraging three load shapes:

- Non-agricultural – consistent with the 2019 APO West Zone load profile;
- Vegetable, greenhouse – from load profiles developed through the 2019 Windsor-Essex IRRP and bulk study; and
- Cannabis, greenhouse – also from load profiles developed through the 2019 Windsor-Essex IRRP and bulk study.

These load shapes were aggregated according to segmentation information and location, and then scaled to reach estimated peak demand levels. The result was load profiles combined as appropriate to represent different scenarios (i.e., low, reference, or high) and different areas (i.e., West of London, Focus Area, or West of Chatham).¹⁶

4.5 Consideration of Forecast Scenarios and Sensitivities

As the indoor agriculture sector evolves and load materializes over the long-term planning horizon, it is expected that the forecast will also evolve. Uncertainties around core assumptions in the forecast give cause to study more than one scenario. Each load connection scenario developed for the West of London bulk study incorporates the most up-to-date information known at the time (2020). Each scenario also indicates a large amount of electricity demand growth concentrated in the Kingsville, Leamington, and Chatham-Kent areas, requiring further transmission reinforcements. No major impact to demand has been identified in WOL from the COVID-19 pandemic other than to further support consumer demand for local produce.

Recommendations made through this bulk study prioritize the reference scenario, but by exploring critical assumptions such as rate of growth and total magnitude of the connection queue, the needs and options analyses were also subjected to low and high load growth scenarios.

Moreover, consistent with information gathered throughout the 2019 Windsor-Essex IRRP and bulk study, stakeholders have continued to flag key sensitivities that can impact the load growth's overall magnitude and rate:

- Crop type segmentation;

¹⁶ Detailed load information can be found in Appendix B
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- Location and access to other services and infrastructure that support the indoor agriculture sector's growth (including land, labour, markets, natural gas supply, waste treatment facilities, local policies, permitting, and water supply);
- Rate of LED grow light adoption;
- Potential long-term impacts of applicable community and regional energy plans;
- Uptake of behind-the-meter generation;
- Costs (i.e., of the required services or carbon emissions); and
- Other broader trends driving greenhouse expansion (such as the desire for food security and/or year-round production, or new product/crop type categories).

These sensitivities can not only influence the amount and timing of the forecast load growth – they can also impact the seasonal and hourly assumptions. For instance, differences in lighting strategies between crop types and growers could alter forecast load profiles. While the majority of existing lit facilities use traditional high pressure sodium lighting, the advancement in the technology combined with interest in incentives mentioned in Section 3.2, indicate that adoption of LED grow light can potentially increase substantially. There is, however, still work needed to increase LED uptake in the sector. Stakeholders have indicated that the main barrier to LEDs is cost, as up-front costs are much larger for LEDs than DE-HPS and the increase in efficiency may not be as high as expected. However, costs are partially offset by the fact DE-HPS has a much shorter lifespan than LEDs. If the ratio between grow light type were to shift to a 50/50 split, as opposed to the currently-assumed majority of DE-HPS, it could defer the need dates identified in Section 6 by 1-2 years. Thus, highlighting the role conservation measures targeted to the sector could play in mitigating this need.

Stakeholders have also indicated that stalled expansion for some crop types (such as cannabis) could be offset by a switch to others (such as vegetable). As stated in Section 4.2, assumptions regarding crop type were based on information provided by the LDCs and customers. However, if the ratio of vegetable to cannabis greenhouses were to change, this would primarily impact the summer energy profile, as cannabis facilities are currently assumed to have an equal ratio between summer and winter demand, while vegetable facilities are assumed to have greater demand in the winter. Since the capacity and energy needs in this area are driven by the winter profiles, this would have a minimal impact on the needs identified.

Note that for this West of London bulk study, the greenhouse forecast scenarios (as described in Section 4.2) are not developed with a top-down approach, such as using greenhouse acreage expansion rates and estimated grow light intensity (i.e., MW/acre according to crop type). Rather, the key inputs to the forecast are the queue of load connection requests (in total MW), crop type (percentage vegetable or cannabis) according to the distributor, and information from known large, directly-connected transmission customers. These inputs were then constrained by timelines of transmission reinforcements (either already under development or assuming typical lead times). Currently, the distribution capacity in the Focus Area is fully allocated – at the existing Leamington TS DESN 1 and 2, and planned South Middle Road TS DESN 1 and 2, with expected in-service dates of Q2 2022 and Q3 2025 respectively. Therefore, all three demand forecast scenarios for greenhouse customers account for the development time of previously recommended Windsor-Essex bulk system reinforcements, and new local transformer stations and supply lines.

Beyond the factors described above (i.e., crop type segmentation, lighting technology, seasonal behaviour), the IESO notes that changes related to the amount or use of behind-the-meter generation can also influence the forecast growth. Known contracted distributed generation and transmission-connected market resources are accounted for, in either the forecast or modelled in the power flow and energy assessments. No assumptions are made regarding customers relying on already-existing behind-the-meter generation and whether they would be seeking to meet their load requirements with a grid connection instead – if this is the case, it would be expected that the customer requested a load connection with the distributor and would be included in the overall queue information. Stakeholders have indicated that these facilities could be used by customers in various ways, such as for peak-shaving, back-up supply, electricity supply until transmission reinforcements are in-service, or to help meet thermal or carbon dioxide requirements. At the time of this bulk study, no planned new behind-the-meter generation projects have been confirmed, so no impact from future activity is reflected in the load forecast.

As more greenhouses connect over the next several years, continued monitoring and conversations with customers can improve future planning forecasts.

5. Existing Supply to the Focus Area and West of London Area

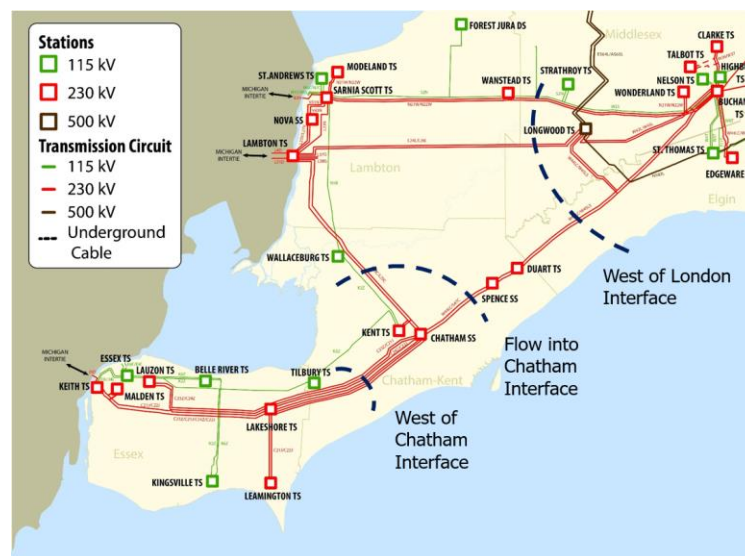
WOL is supplied by a number of internal wind and gas generation resources, as well as external resources accessed through the existing 230 kV network (connecting the area to the rest of Ontario).¹⁷ The area also encompasses the entire Michigan interconnection, which allows for imports and exports to flow through Lambton-Sarnia and Windsor to the rest of the province.

As illustrated in Figure 7, there are three main interfaces of interest:

- The Flow into Chatham (FIC) interface consisting of the 230 kV circuits, which supply the Focus Area;
- The West of Chatham (WOC) interface consisting of the existing and planned 230 kV circuits west of Chatham SS, which supply the Windsor-Essex portion of the Focus Area; and
- The WOL interface consisting of the 230 kV circuits west from London (Buchanan TS/ Longwood TS), which supply the broader WOL area.

The capability of the transmission system to deliver external resources to meet the area's needs reflects limits for all elements in-service conditions, opposed to under outage conditions, since all elements in-service conditions are more limiting in the determination of the area's need.¹⁸

Figure 7 | Map of West of London Area with Relevant Interfaces



¹⁷ The mixture of resources used to supply the region's and the province's energy needs at any given time is determined by the real-time energy market.

¹⁸ Planning standards require the deterministic assessment of the system's ability to withstand certain contingencies when all elements are in-service and when a system element is under outage. All elements in-service limits were most limiting to the area's supply in this case because under outage conditions load rejection can be armed and the need to maintain export capability is relaxed.

The following sections describe how the Focus Area and the broader WOL area are supplied.

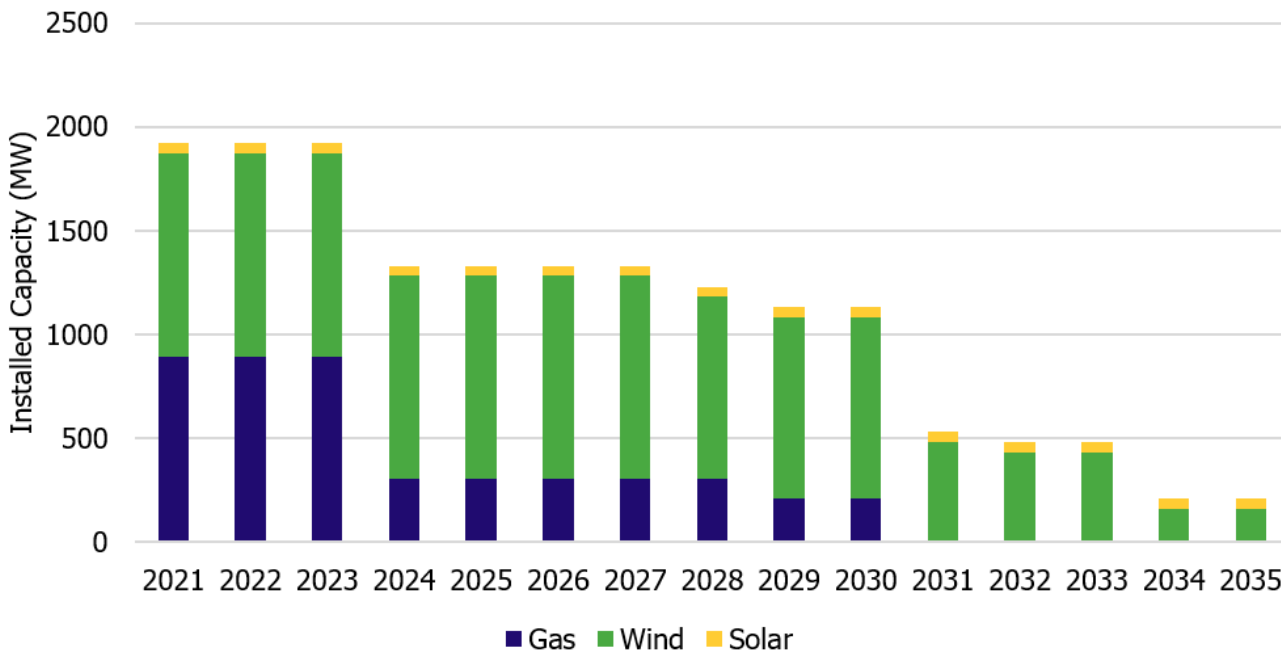
5.1 Existing Supply to the Focus Area

5.1.1 Resources Internal to the Focus Area

Transmission-connected resources in the Focus Area are currently a mixture of gas generation in Windsor, a number of wind generators in Windsor-Essex and Chatham-Kent, and a large solar installation in Windsor. These resources represent a combined total of approximately 1,900 MW of installed generation capacity, split relatively evenly between gas facilities and renewable resources, approximately 900 MW and 1,000 MW respectively.

Figure 8 shows the installed transmission-connected resource mix in the Focus Area per year, reflecting the contracted capacity as existing contracts expire through the study period.¹⁹ Over the next two decades, the majority of contracts with natural gas-fired and renewable generation are expected to expire, which was considered when identifying local supply needs. By the end of the study period in 2035, contracts for almost 1,700 MW of resources will have expired, including all natural gas-fired resources in the Focus Area.

Figure 8 | Contracted Transmission-Connected Generation Capacity in the Focus Area



¹⁹ The region also has a significant number of distribution connected resources, mainly wind and solar. The area also benefits from a number of smaller distribution connected combined heat and power generators. The impact of these distributed resources was also modelled in the study.

5.1.2 External Supply from Ontario Resources

Assuming the recommendations in the [2019 Windsor-Essex bulk study](#) are implemented, the transfer capability of the FIC transmission interface is what limits the delivery of power into the Focus Area and is dependent on the output of generation and Ontario-Michigan imports in the Lambton-Sarnia area. The transfer capability of the FIC interface is 1,350 MW and 1,200 MW, in the winter and summer respectively, when Lambton-Sarnia generation and Ontario-Michigan imports are between 0-1,500 MW. This interface is generally limited by the Lambton-to-Chatham path. When Lambton-Sarnia generation and imports are less than 0 MW (i.e., exporting with no Lambton-Sarnia resources generating) the capability to transfer power into the area is lower due to thermal limitations on the Longwood-to-Chatham path. When the Lambton-Sarnia generation and imports are greater than 1,500 MW, the capability to transfer power into the area is lower due to thermal limitations on the Lambton-to-Chatham path.

Table 1 | Summary of Limitations on the FIC Interface, Relative to the Total Lambton-Sarnia Generation and Total Winter West of London Greenhouse Demand Forecast (MW)

Lambton-Sarnia generation and Ontario-Michigan interchange²⁰	FIC Limitation
Less than 0 MW	Limit lower due to thermal limitations on the Longwood-to-Chatham path
0 – 1,500 MW	Limited by the Lambton-to-Chatham path
Greater than 1,500 MW	Limit lower due to thermal limitations on the Lambton-to-Chatham path

For the purpose of identifying supply needs in the Focus Area, the transfer capability of the FIC interface is assumed to be 1,350 MW and 1,200 MW, in the summer and winter respectively.

5.1.3 External Supply from Neighbouring Jurisdictions

The Focus Area is also interconnected with Michigan through a 230 kV interconnection, circuit J5D at Keith TS (Windsor to Detroit). The flow on this intertie typically represents 20% of the flow across the entire Ontario-Michigan interconnection, with the other three connection points located in the Lambton-Sarnia. Imports on this intertie could help supply load in the Focus Area, while exports on this intertie would increase the supply required to the Focus Area. However, since flow on the Ontario-Michigan interties are scheduled as a whole, limitations to imports on the Sarnia-Port Huron interties, for example, affect the ability for imports on the Windsor-Detroit intertie to help supply the Focus Area. In addition, the Midcontinent Independent System Operator's 2020 Planning Resource Auction for the Michigan zone cleared at the cost of new entry of \$250/MW-day. While this constraint was not reflected in the 2021 auction, it indicates that there may be limited resources that would subsequently be available to provide imports from Michigan to Ontario to meet Ontario provincial or local supply needs.

²⁰ Negative values represent exports; positive values represent generation and/or imports.
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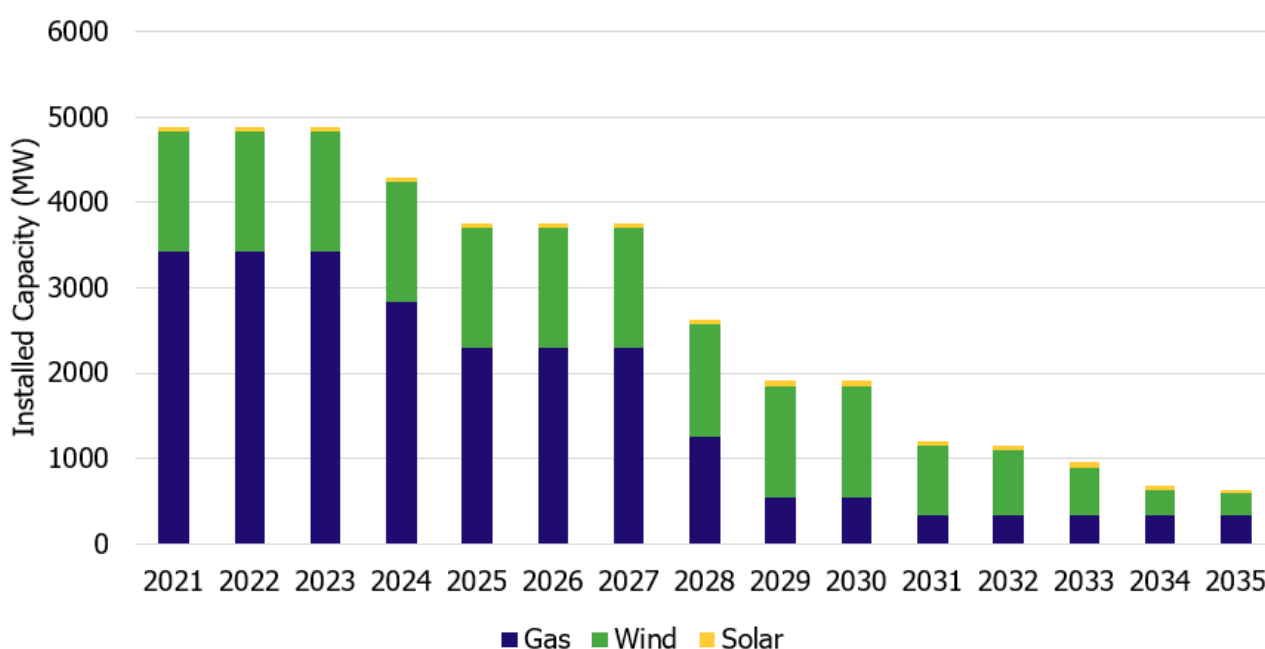
5.2 Existing Supply to the WOL Area

Supply to WOL is provided by generation located within WOL, flow west from the rest of Ontario, and flow east from the United States through the Ontario-Michigan interconnection, as outlined in the following sections.

5.2.1 Resources Internal to WOL

In addition to the transmission-connected resources in the Focus Area, the WOL area is also comprised of a significant amount of installed gas generation in Lambton-Sarnia, over 2,500 MW, and approximately 440 MW of renewable resources. In combination, these resources represent a total of nearly 5,000 MW of installed generation capacity. Figure 9 shows the installed transmission-connected resource mix in the WOL area in 2021.²¹ Over the next two decades, the majority of contracts with natural gas-fired and renewable generation are expected to expire. By the end of the study period in 2035, contracts with approximately 4,250 MW of generation will have expired.

Figure 9 | Contracted Transmission-Connected Generation Capacity in West of London



²¹ The region also has a significant number of distribution connected resources, mainly wind and solar. The area also benefits from a number of smaller distribution connected combined heat and power generators. The impact of these distributed resources was also modelled in the study.

5.2.2 External Supply from Ontario Resources

Supply to WOL from the rest of the province is provided through the WOL transmission interface comprising, the existing 230 kV transmission circuits that connect Lambton TS, Scott TS, and Chatham SS in the area to Longwood TS and Buchanan TS in the east. The current planning limit of the WOL interface (westbound) is approximately 2,350 MW and 2,100 MW in the winter and summer, respectively. Under low levels of generation in Lambton-Sarnia and high exports, the WOL interface is restricted by either the Longwood TS to Lambton TS path or the Longwood TS to Chatham SS path, for the loss of two circuits along the other path (i.e., restricted by Longwood-to-Lambton for the loss of two circuits along Longwood-to-Chatham, or vice versa).

Limitations on the supply to the Focus Area (i.e. the FIC interface) currently impact the capability of the WOL interface.

5.2.3 External Supply from Neighbouring Jurisdictions

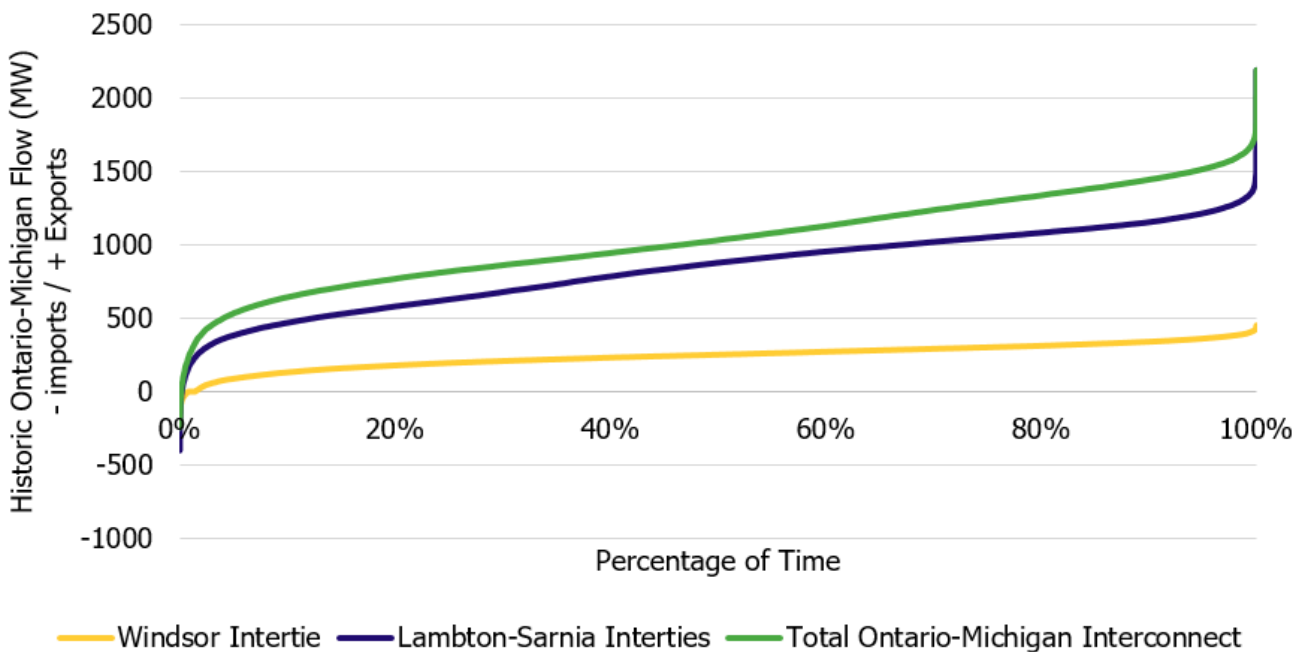
WOL is also interconnected with Michigan through four interconnection ties – a circuit J5D at Keith TS (Windsor to Detroit), as well as circuits L4D and L51D at Lambton TS and B3N at Scott TS (Sarnia to Port Huron). The interconnection between Ontario and Michigan supports import and export trade via the Ontario and Michigan real-time energy markets. Trading electricity across different markets provides operational and planning flexibility, as well as enhances the reliability, resiliency and cost-effectiveness of the electricity system.

Real-time trading provides a significant economic benefit to ratepayers, through savings when imports are scheduled instead of an Ontario asset with higher production costs, or through savings when exports are scheduled during times of surplus energy to avoid costly shutdowns or curtailments. In addition to cost savings, competitive trading also delivers an additional revenue stream for ratepayers, through intertie congestion rent.

From an operational and reliability perspective, trading electricity provides a significant amount of flexibility to address needs that emerge close to real-time and without much notice, such as unexpected generation or transmission line outages as well as changes in demand. It can act as cost-effective insurance, by relying on our neighbours to make up any potential shortfall. This was most recently illustrated by the Texas blackout event, which may have been exacerbated by the lack of interconnections with other jurisdictions if they had available capacity to provide.

The Ontario-Michigan interconnect has a combined capability of 1,650 MW for exports in the winter and summer, and 1,700/1,550 MW for imports in the winter and summer respectively, roughly split evenly among the four ties – 20% on the J5D Windsor intertie, and 80% on the Lambton-Sarnia interties. Figure 6 shows the recent historical flows on the interconnection as a whole, and the split between the Windsor-Detroit and Sarnia-Port Huron ties.

Figure 10 | Historic Ontario-Michigan Flows (All hours 2018-2020)



The Ontario-Michigan interface is subject to “loop-flows,” which represent unscheduled flows that naturally occur, influenced by the dispatch of generation (within and external to Ontario), load levels and the configuration of the interconnected network. The IESO operates to control this to within +/- 200 MW of the scheduled flow for the entire interface, but at times a portion of these loop-flows cannot be controlled. This means that the intertie circuit is likely subject to some amount of loop flow at any given time.

The current Ontario resource mix and loop flows drive a substantial amount of export flow on this intertie – export flow exceeds 1,200 MW from Ontario to Michigan 31% of peak hours,²² compared to the 1,650 MW export capability. Looking at the Windsor-Detroit intertie specifically, export flow exceeds 300 MW for 25% of peak hours, compared to the approximately 400 MW capability.

²² Peak hours are defined as 7 AM – 8 PM weekdays, not including holidays or long-term outages.
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6. Need for Additional Supply

This section describes the assessment of whether or not additional supply is required to the Focus Area and, more broadly, to the WOL area. Planning criteria were applied in accordance with North American Electric Reliability Corporation (NERC) standards and the Northeast Power Coordinating Council (NPCC) reliability directories to determine system capacity needs.²³ In the context of the bulk system, adequacy is defined as the ability to supply demand, while respecting transfer capability limits across the bulk system and interconnections.²⁴

This assessment assumed that the recommendations of the [2019 Windsor-Essex bulk study](#) were implemented – i.e. a transformer station in Lakeshore (Lakeshore TS) and a new double circuit 230 kV line between Lakeshore and Chatham (the Chatham west lines) are in place to facilitate further load supply. The capacity and energy assessments considered both the contribution of existing internal resources and resources external to the area. Distributed generation resources are accounted for in the net demand forecast presented in Section 4.²⁵

A number of key sensitivities were considered to determine the magnitude and timing of the need for additional supply capability, including considerations for three demand forecasts (low, reference, high), whether existing resources continue to operate once their contract expires, and the interchange capability between Ontario and Michigan.

As the base case for determining supply needs for the purpose of identifying options, the study assumed that resources would not be reacquired at the end of their contracts and the interchange path between Ontario and Michigan would be maintained through the ultimate solution. Typically, the system is planned to maintain export capability when all transmission elements are in service, not when transmission elements are out of service. The supply need is specified assuming resources are not reacquired because reacquiring a resource is a decision that should be made as per the IESO's Resource Adequacy Framework and should not be presupposed. These assumptions were applied to the three demand forecast scenarios, to define a Low Need, Reference Need and High Need.

Supply needs were also specified under the following sensitivities to help identify interim and near-term actions that could be taken to expedite customer connections until the mid- and long-term solutions can be determined and implemented. Each sensitivity was also applied to the three demand forecast scenarios.

- Sensitivity A: Considering resources in the study area (i.e. the Focus Area or WOL) coming off contract continue to operate, without maintaining interchange capability; and

²³ Refer to Appendix A for details on the planning assessment criteria.

²⁴ In comparison, resource adequacy, as defined in the APO and AAR also takes into account the effective capacity of each resource, reflecting allowances for resource outages.

²⁵ Refer to Appendix D for further details on the capacity and energy assessments.

- Sensitivity B: Considering resources in the study area would not be reacquired at the end of their contracts, without maintaining interchange capability.

The ability for available resources to meet system needs was evaluated based on the supply assessments presented in the following sections for the Focus Area and for WOL as a whole.

6.1 Supply Need for the Focus Area

Since demand forecasts in the Focus Area are winter-peaking, the capacity and energy requirements are defined by the winter needs. However, when analyzing needs and alternatives, checks were completed to ensure solutions also meet summer needs. In terms of locational constraints, as mentioned in Section 5, supply to the Focus Area is limited by the FIC interface.

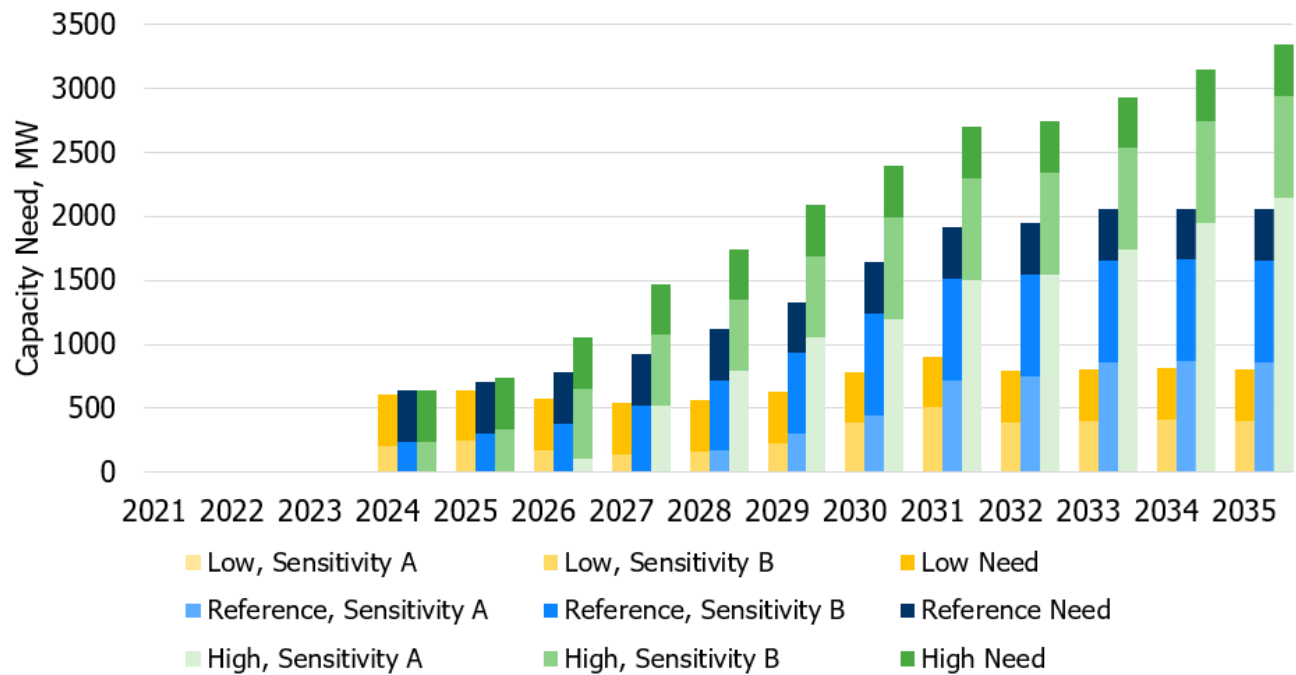
6.1.1 Capacity Need in the Focus Area

Based on the Reference Need, to supply the Focus Area until the end of the study period (2035) there is a 2,050 MW winter capacity need, which begins to emerge in 2024 as local resources reach contract expiry. The summer capacity need is generally lower than the winter capacity need, reaching approximately 1,800 MW by 2035 (Reference Need).

However, if resources are considered to be reacquired and interchange capability is not maintained, Reference Sensitivity A, a supply capacity need does not emerge until 2028, which grows to 860 MW by 2035. This indicates that utilizing existing resources and/or limiting interchange capability could address the supply capacity needs in the interim years (2024-2028) until future system reinforcements can come into service.²⁶

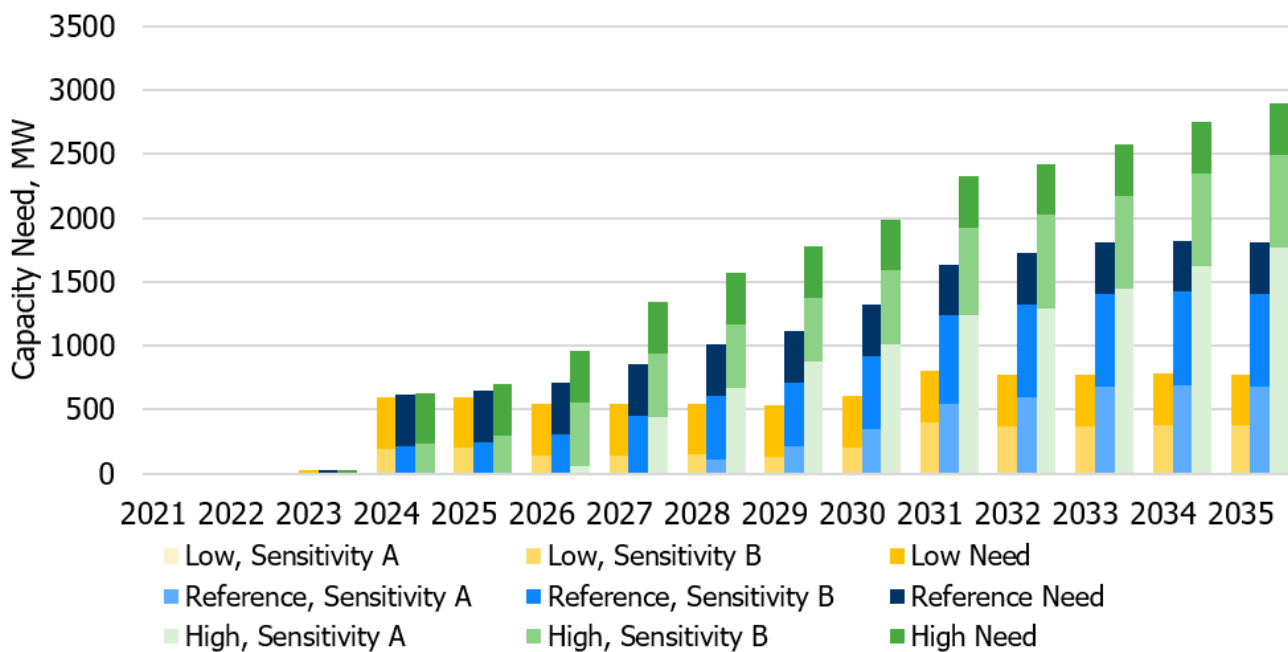
²⁶ Until West of Chatham reinforcements are implemented, the WOC interface may be more restrictive, however this is being managed by operational measures.

Figure 11 | Focus Area Capacity Need, Winter



The Focus Area capacity Reference Need in the summer is lower than the winter beyond 2023, thus actions taken to address the mid- and long-term winter needs will address the summer needs.

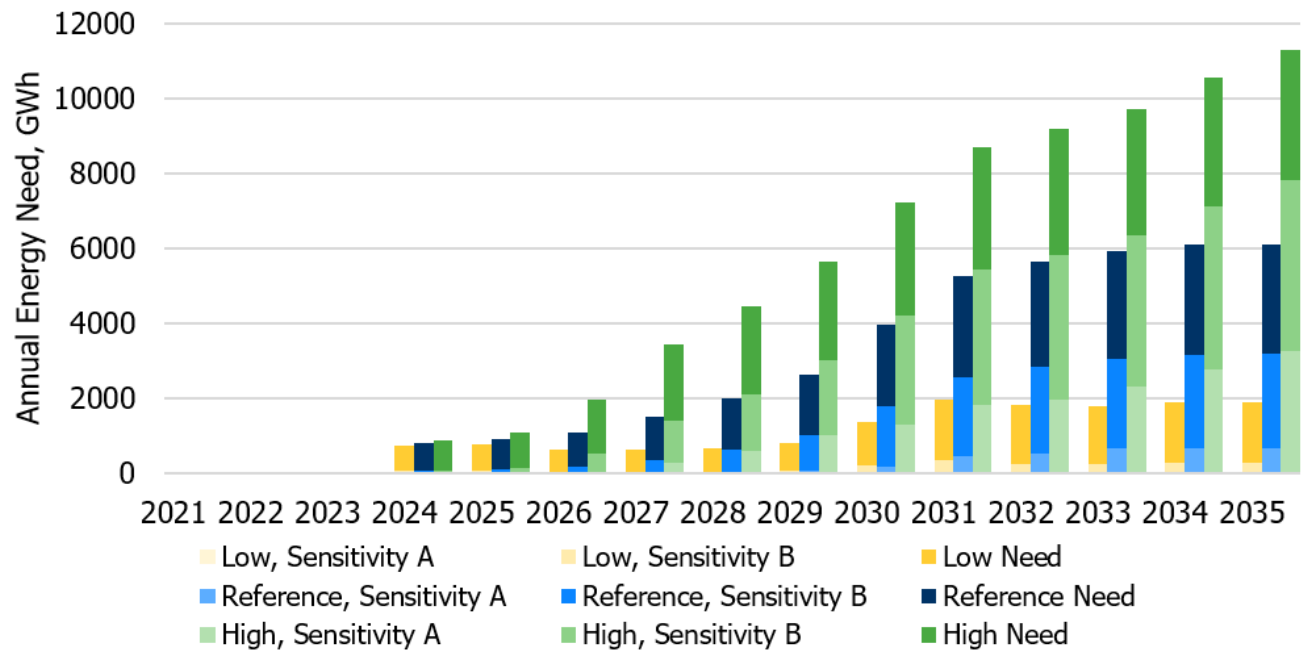
Figure 12 | Focus Area Capacity Need, Summer



6.1.2 Energy Need in the Focus Area

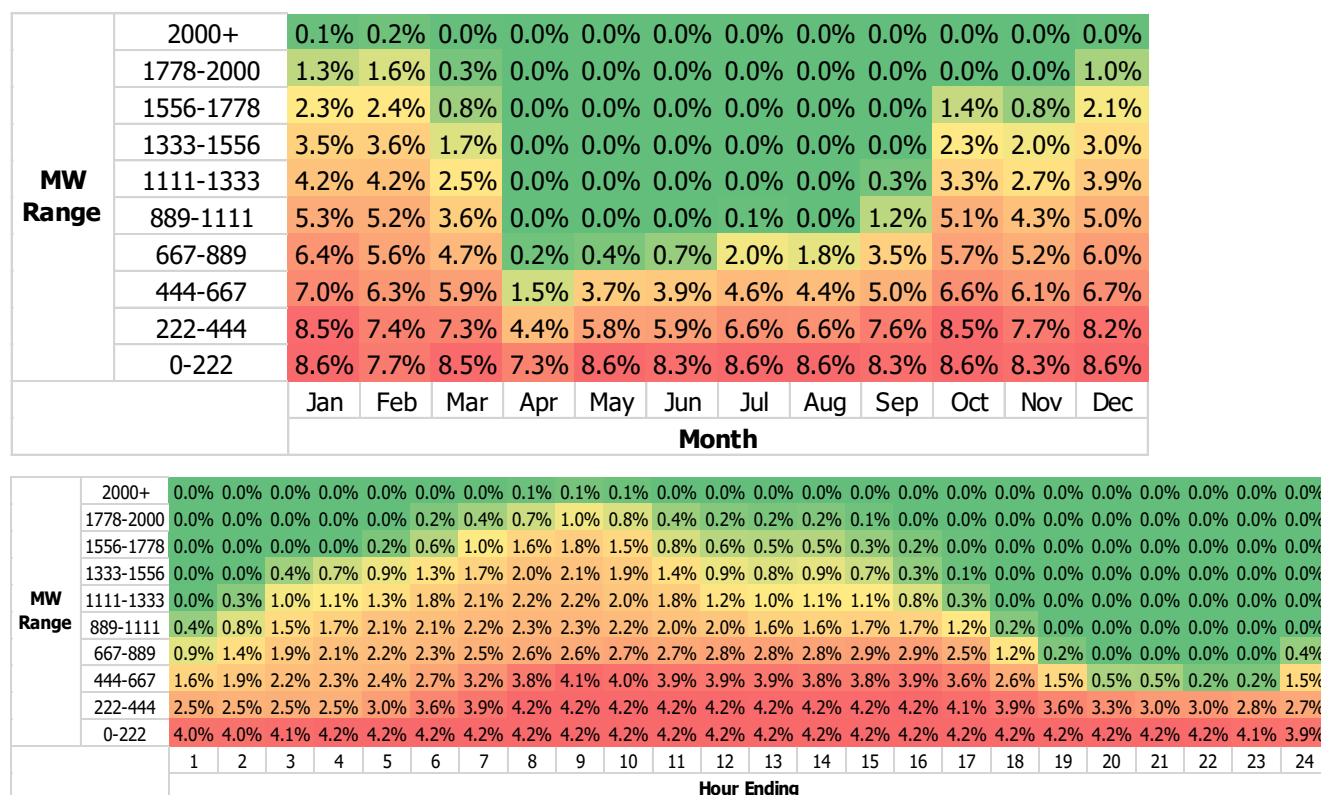
Figure 13 demonstrates that for the Reference Need there is a 6,100 GWh energy need by 2035, which begins to emerge in 2024. Considering resources reaching contract expiry without maintaining interchange capability (Reference, Sensitivity B) by 2035 there is a 3,200 GWh energy need, also emerging in 2024. This indicates there is a significant energy requirement in addition to the capacity requirement outlined in the previous section. This is largely driven by the almost 900 MW of natural gas-fired resources reaching contract expiry in the Focus Area between 2024-2031, that would otherwise be able to contribute to the energy requirements.

Figure 13 | Annual Unserved Energy for the Focus Area for Each Forecast Scenario, Under Different Generation and Export Assumptions



In addition to the annual total energy shortfall, the estimated frequency, duration, and magnitude of unserved energy events were investigated and used to inform options development. Figure 14 contains heat maps to visually demonstrate these characteristics, which were developed using the same assumptions as energy assessment presented in this section.

Figure 14 | Heat Maps Showing Possible Reference Need Energy Events for the Focus Area in 2035



Each cell in the heat map indicates the expected frequency, of all hours of unserved energy, that may occur in that specific hour or month. By 2035, some level of unserved energy is expected to occur each month, with the largest impact in winter. For instance, it is estimated that of all need events in 2035, nearly a tenth is under 222 MW in size and occur in January. The heat maps illustrate that unserved energy in an hour can be as large as + 2000 MW, but that these events are estimated to be infrequent and occurring primarily in winter mornings – such as January or February, between 8-10 AM. From an hourly perspective, a sustained need of approximately 450-650 MW is concentrated from 8 AM – 5 PM, peaking at 8-11 AM. However, the unserved energy profile shifts depending on the season. On a peak summer day, the need could be greater than 400 MW for 11 hours of the day, whereas on a peak winter day there could be only 6 hours when the need is less than 400 MW and 9 hours when the need is greater than 1,200 MW. This indicates that in addition to the capacity need, there is a need for significant and sustained energy production, particularly in the winter, which may limit the resource technologies capable of meeting these needs.

These estimated need characteristics are largely driven by hourly forecast and resource assumptions, and will be subject to real-time conditions, market dispatch, renewable generation output and customer behaviour. The heat maps provide some insight to when, how often, and how large supply needs might be, and supplement analyses completed for peak demand capacity requirements (as described previously in Section 6). Utilization of the hourly need information is further explained in Appendix D, in the context of sizing and evaluating resource options such as gas or storage facilities.

6.2 Supply Requirements for West of London

6.2.1 Capacity Requirements in WOL

Looking at WOL as a whole, there is a winter Reference Need that emerges in 2028. This WOL capacity need continues to grow throughout the study period, and is largely driven by resources reaching contract expiry by 2035, with approximately 4,250 MW coming off contract within the study period (3,100 MW of gas generation). This reflects the fact that resources WOL are critical to supply the area's current demand and to provide reliable supply to forecast growth in winter demand.

If resources are considered to be reacquired and interchange capability is not maintained, Reference Sensitivity A, a supply capacity need does not emerge for the study period – hence this sensitivity cannot be seen in Figure 15 or Figure 16 below. When considering generation coming off contract (but still not maintaining interchange capability), by 2035 there is a capacity need of 880 MW in the winter and 650 MW in the summer, which begins to emerge in 2029 (Reference Sensitivity B). The capacity need is approximately 2,500 MW in the winter and over 2,300 MW in the summer by 2035 if full interchange capability between Ontario-Michigan is maintained, which starts to emerge in 2028 (Reference Need).

Figure 15 | West of London Capacity Need, Winter

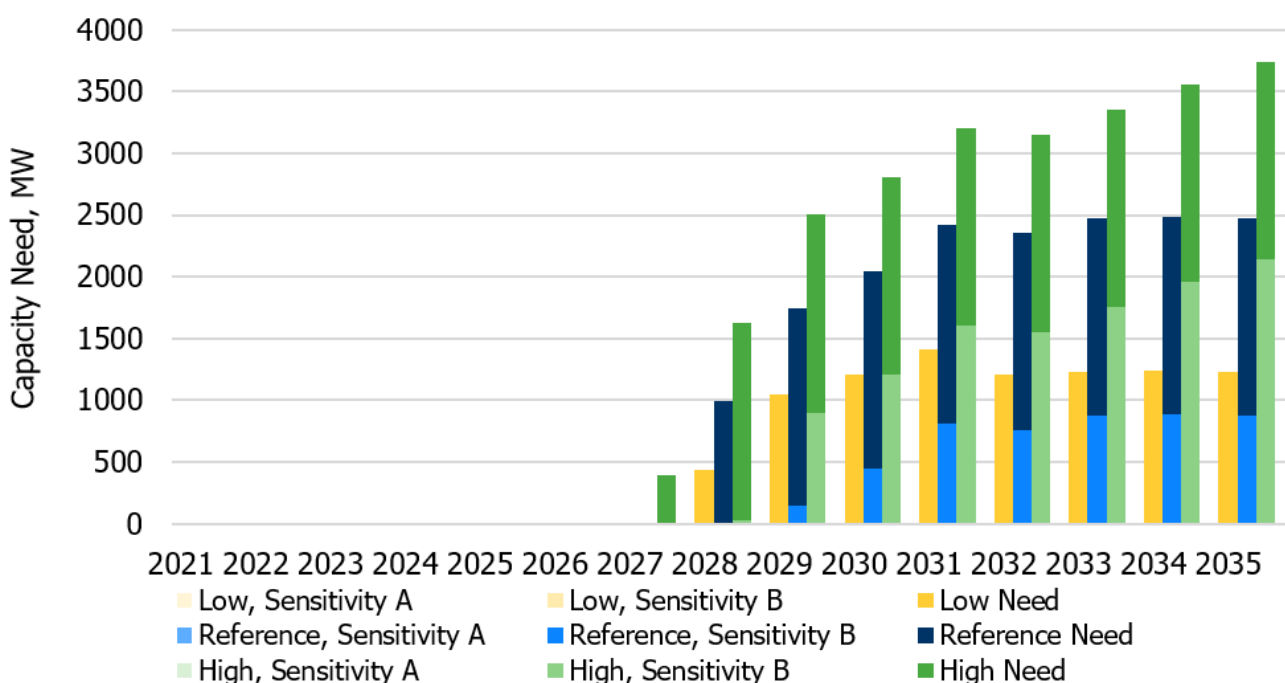
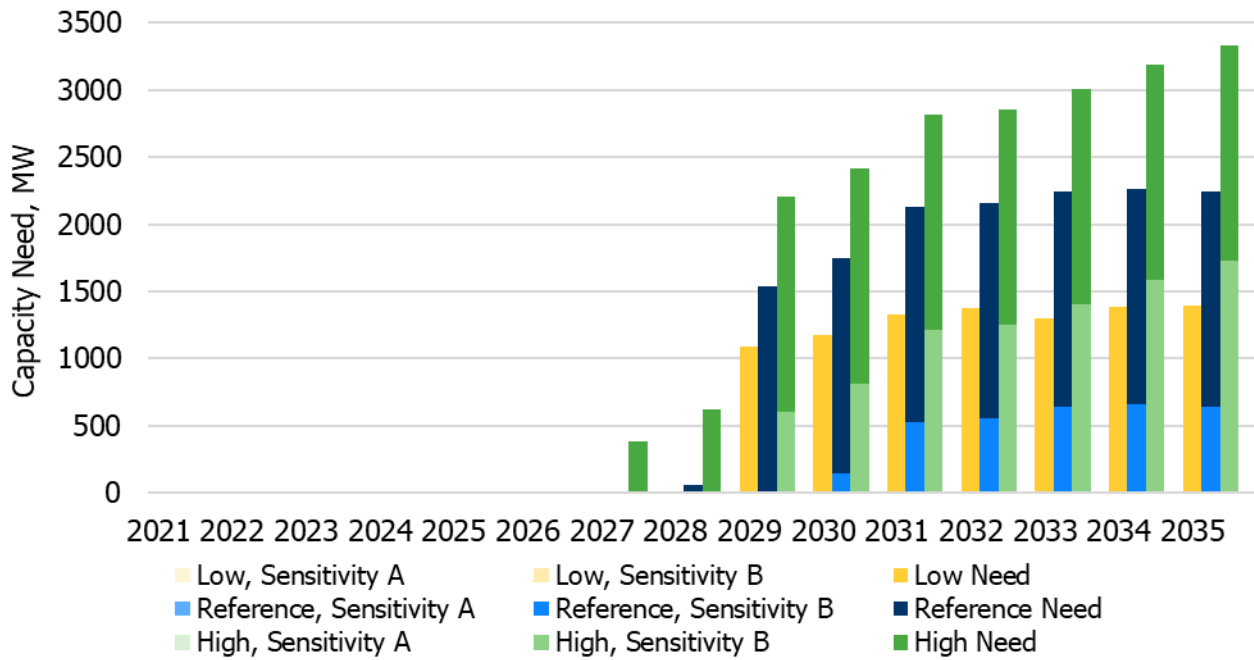


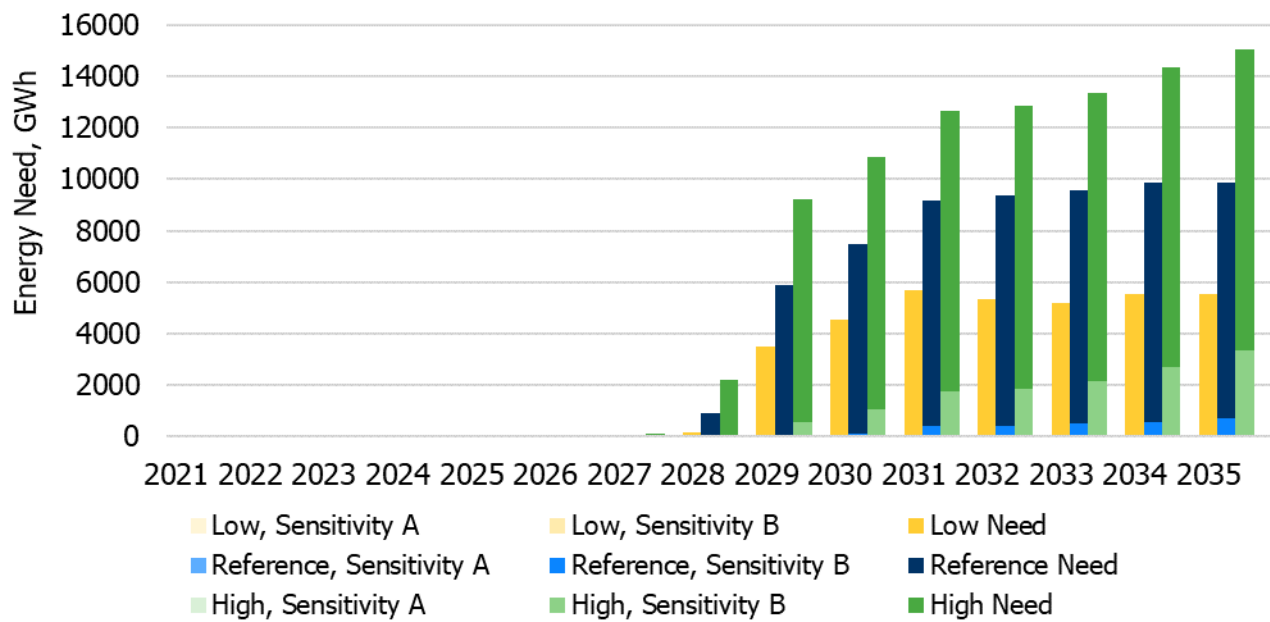
Figure 16 | West of London Capacity Need, Summer



6.2.2 Energy Requirements in WOL

Figure 17 shows that there is a 9,850 GWh Reference Need by 2035, which begins to emerge in 2028. Considering resources reaching contract expiry without maintaining interchange capability (Reference Sensitivity B) there is a 700 GWh energy need by 2035, which emerges in 2030. As expected based on the significant capacity need, there is a large energy requirement, which may impact exports while Ontario loads are peaking.

Figure 17 | Annual Unserved Energy Behind the WOL Interface for Each Forecast Scenario, Under Different Generation and Export Assumptions



7. Near- to Mid-Term Solutions

Section 6 indicated that additional supply to the Focus Area was needed to supply the forecast electricity demand from the agricultural sector. Section 6 also indicated that there is sufficient supply to the larger WOL area, if some the existing resources were reacquired and interchange capability is not maintained. Hence, this Section and Section 8 recommends the most effective solution to supplying the load in the Focus Area and then given that solution, Section 9 presents the amount of resources (existing resources that must be reacquired or new equivalent capacity) that is needed) to ensure adequate supply to the broader WOL area.

Due to the lead time required to implement solutions to meet the Focus Area's supply requirements in the near-term (2021-2027) and mid-term (2028-2029), the IESO recommended actions ahead of the publication of this report. This section provides the rationale for the actions taken by the IESO, which were:

- **Mid-Term Recommendation:** On March 26, 2021, the IESO sent a letter to the lead transmitter in the region, Hydro One, in order to inform them of the need for a new 230 kV double circuit line from Lambton TS southwards to Chatham SS (Lambton South line) and associated station facility expansions or upgrades required at the terminal stations. While Hydro One will initiate the work, engagement and related activities, it will be subject to all required Environmental Assessment, regulatory (e.g., Leave-to-Construct), and other approvals and permits; and
- **Near-Term Recommendation:** On July 19, 2021, the IESO indicated through the AAR an intention to begin bilateral negotiations for Brighton Beach Generating Station. This is an existing facility supporting the area's needs today, that has been identified as required to continue supporting this immediate localized need in the near-term until the transmission line recommended in the March 26, 2021 letter is in-service.

7.1 Near-term Options Analysis

As outlined in Section 6.1.1, a 640 MW supply need into the Focus Area emerges in 2024 based on the Reference Need – which considered resources reaching contract expiry and maintaining full interchange capability. Even if the need to maintain interchange capability is relaxed (Reference, Sensitivity B), and remedial action schemes continued to be relied on, a 240 MW supply need still emerges in 2024.

The need is immediate, triggered by a single contract expiry, and is large in magnitude due to the ongoing and forecast load connections in the Focus Area. The lead time would significantly limit potential cost-effective options (i.e. insufficient time for large transmission reinforcement or for initiating a competitive procurement). The initial magnitude of the need when it emerges and impacts of forecast growth in the area, limit the pool of technically feasible options, even if lead time were not an issue.

Reference, Sensitivity B (considering resources reaching contract expiry but not maintaining full interchange capability) illustrates the minimum capacity and energy requirements in order to defer the need from 2024 to early 2028, when transmission enhancements or other long lead time solutions could be implemented, is 525 MW of capacity and 340 GWh of energy.

In order to determine the most cost-effective way to defer the need, the following options were considered:

1. **Load transfer** – This option considers the ability to transfer load outside the Focus Area.
2. **Local resources** – In this option, the identified capacity and energy needs are met through local resources, either through existing resources whose contracts are expiring between 2024-2027 and/or an equivalent amount of new capacity located within the Focus Area.

As discussed, new transmission would not be implemented in time to meet the 2024 need date. However, load transfers would be a low cost option that could be implemented by 2024. Typically load transfers occur between adjacent or proximate supply stations via the local distribution system, or in some cases by reconfiguring the transmission system (i.e. creation or removal of normally open points (switches) on the lines which could transfer load between pockets of the transmission system). In this case, the supply need extends across the entire Focus Area (Windsor-Essex and Chatham-Kent). Currently, there is the ability to transfer up to 50 MW of the 115 kV load in the Focus Area to an existing 115 kV circuit connected to Scott TS in the Lambton-Sarnia area. However, this creates operability and low voltage concerns connecting load radially along this distance. It is preferable to retain the capability to transfer load during outage conditions for the purpose of load supply. Load transfer of any significant amount of capacity is not technically feasible, based on the lack of available transmission infrastructure to support such a long-distance transfer.

For a resource to meet the need, it must be located in the Focus Area, ideally close to the greenhouse loads and directly connected to an integrated transmission station. They must also be capable of providing a significant energy component along with the required capacity since, until further transmission reinforcements are in place, energy availability within the Focus Area will be limited and worsen as resource contracts expire. Combined with insufficient lead time to carry out a competitive procurement, reacquiring existing resources with expiring contracts presents a cost-effective and least risk solution to ensuring the area's existing and growing needs will continue to be met in 2024.

Considering existing resources supporting the Focus Area's needs today that would be coming off contract between 2024-2027, it was identified that Brighton Beach GS could address the local need while system reinforcements are being constructed to meet the identified deferred 2028 need date. Like Lennox GS, it represents the only supplier in the local area with requisite scale to address this immediate need, offering 588 MW of capacity (approximately 500 MW of unforced capacity²⁷) to support the growing loads in the Focus Area. This is an existing facility supporting the area's needs today, which will come to the end of its contract in 2024, but has been identified as being needed to ensure the reliability of the area as an interim solution to address the near-term needs.

²⁷ Unforced capacity, or UCAP is defined in the AAR as a resource's installed capacity that accounts for seasonal and ambient weather conditions, further reduced by forced outages.

As a result, it is recommended that the IESO plan to begin bilateral negotiations for Brighton Beach GS, until the mid-term recommendation is in-place. By this time, it is likely that competitive mechanisms will help address this growth, offering an opportunity for a wider range of suppliers to contribute through a medium-term or long-term mechanism to meet the mid- to long-term needs.

7.2 Mid-term Option Analysis

Similar to the near-term, the options identified to meet the mid-term needs prioritized the supply of Ontario loads, given known resource constraints – i.e., considering resources reaching contract expiry, but not maintaining interchange capability (Reference, Sensitivity B). As per the near-term options analysis, it was then assumed that resources reaching contract expiry (i.e. Brighton Beach GS) continue to operate until 2028. Thus as outlined in Section 6.1, a supply need into the Focus Area re-emerges in 2028 and grows to approximately 930 MW by 2029. This need is driven by the limitation of the FIC interface.

Thus options considered to address the mid-term needs involve improving the FIC interface limit by addressing the most restrictive path – Lambton to Chatham, or new local generation within the FIC boundary. These options are described below:

1. **Reinforce the existing Flow into Chatham interface (the Lambton South Line)** – In this option, a new 230 kV double circuit transmission line from Lambton TS to Chatham SS forms the next stage of transmission development in the area. The approximately 60-km transmission line would increase the FIC transfer capability to 2,300 MW (a 950 MW increase from 1,350 MW) and increase the deliverability of Lambton-Sarnia resources.
2. **No transmission expansion** – In this option, the identified capacity and energy needs are met through the addition of the least-cost resource alternative, located between Chatham SS and Lakeshore TS. This analysis included 950 MW of additional resources staged in as needs grow, corresponding to the increased capability achieved by the transmission reinforcement in option 1.

Both options increase the supply capability in the Focus Area by 950 MW, which more than addresses the 2029 Reference Need, Sensitivity B.

Note that in option 1, the Lambton South line addresses the upstream FIC constraint and enables the full transfer capability of the previously recommended Chatham west lines and Lakeshore TS, resulting in a WOC limit of 1,950 MW (winter capability).

Note that option 2 was evaluated considering two cost benchmarks based on resource types capable of supplying the magnitude of energy and capacity required - a new natural gas-fired simple cycle gas turbine (SCGT), and an energy storage facility.²⁸ However, the ultimate resource type could be a combination of various generation and/or storage technologies, depending on a variety of factors including the profile of energy required to meet this need, impact of demand response on greenhouse crop growth cycles, and ratepayer value.

Other options, including wind, solar, and renewables in combination with storage were considered as potential cost benchmarks for the analysis but would be more expensive than the resource options

²⁸ Refer to Appendix D for details on the resource cost assumptions.

presented.²⁹ The planned energy efficiency and use of existing distributed energy resources were incorporated into the demand forecasts. Note, as part of the addendum study for the Windsor-Essex IRRP, the IESO is working with distributors to better understand how existing distributed generation connected to their system can be better leveraged to address needs. This work, along with input from stakeholders helps to inform the ongoing regional and future bulk studies. Since there is no firm import agreement impacting the Ontario-Michigan interconnection at this time and the ability for the neighbouring jurisdiction to accommodate full imports is unknown, this was not considered as a potential solution. In addition, flow on the Ontario-Michigan interconnection is scheduled as a whole and so it can help and hinder at the same time. Imports cannot be directed to flow only onto the Windsor-Detroit tie, which would help the capacity need, but proportionally flows across the Sarnia-Port Huron ties as well, which further exacerbate the Lambton-Sarnia deliverability issues.

Due to the sustained periods of energy need (as described in Section 6), a reservoir size of over 11 times the capacity need was needed for the option 2 storage alternative, making it prohibitively expensive. As such, results of the near- to mid-term analysis presented here focused on the transmission and SCGT options comparison only.

Comparing the required near- to mid-term transmission reinforcement to the generation alternative, the Lambton South line results in a net present cost savings of approximately \$1.2B for supplying load under the reference scenario and continued use of current local resources.

These results indicate that the Lambton South line is the most economical next stage of bulk system reinforcement. Various sensitivity analyses were conducted to verify these results, yielding the same preferred solution.³⁰ Under the base cost assumptions, the resource option only starts to become a viable economic alternative when the value of system capacity is greater than \$190k/MW-year and more than 95% of the generator's capacity is considered deliverable to contribute to the overall provincial capacity need.

A reinforcement of the transmission system from Lambton TS to Chatham SS would provide additional benefits, unique to a transmission solution, beyond meeting the identified reliability requirements. While both options could help improve the deliverability of resources in the Lambton-Sarnia area, the transmission option decreases congestion of resources in Lambton-Sarnia. Analysis showed that constraints on the dispatch of resources in Lambton-Sarnia are practically eliminated with the transmission reinforcement, however the full potential to import/export across the Ontario-Michigan interconnection is still constrained. While the resource option would reduce the flow on circuits east of Chatham, which could help offset the reduced deliverability of Lambton-Sarnia resources, this would come at the expense of dispatching resources within the Focus Area to allow deliverability of Lambton-Sarnia resources (or in lieu of Lambton-Sarnia resources) at a greater cost in those hours where it would otherwise be constrained.

The Lambton South line also enables the west of Chatham reinforcements previously recommended to operate to their full capability, maximizing the benefit of these assets.³¹

²⁹ Refer to Appendix D for further details on the economic assessment methodology.

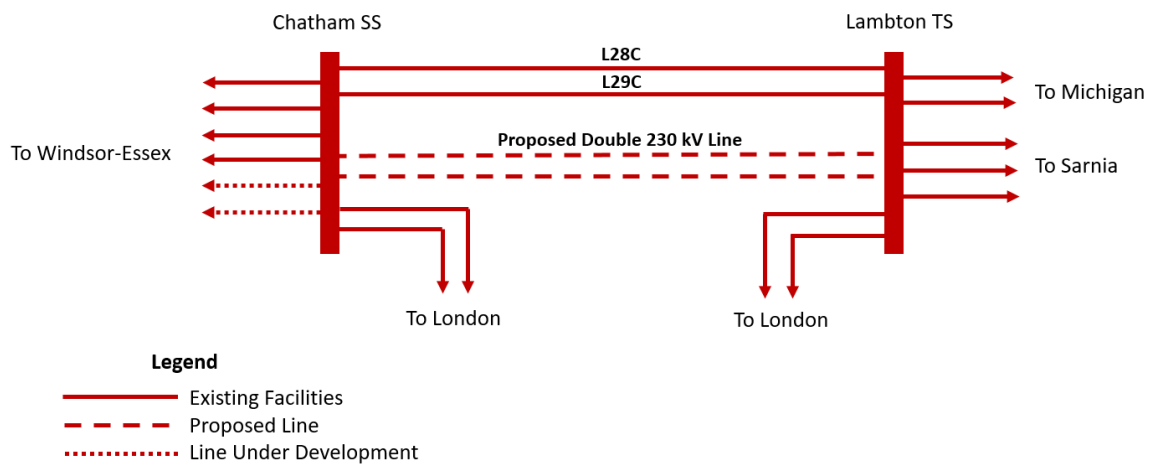
³⁰ No short circuit limitations were identified at Lambton TS, however if station upgrades are required to maintain the current solid bus operation at Lambton TS the associated cost would be within the bounds of the sensitivity analysis.

³¹ As identified in the 2019 Windsor-Essex bulk study, the full capability of the recommended Chatham West lines is currently limited by upstream constraints.

7.3 Near- to Mid-term Recommendations

Based on the analysis presented in this section, to address the near-term needs the IESO plans to begin bilateral negotiations for Brighton Beach GS in the near-term until a new 230 kV double circuit line between Lambton-Sarnia and the municipality of Chatham-Kent is constructed. This line would improve the deliverability of resources in Lambton-Sarnia, and enable up to 900 MW of supply capacity into the Focus Area. On March 29, 2021 the IESO issued a handoff letter to Hydro One, the lead transmitter in the region. The letter recommended that they initiate the work, engagement and activities, subject to seeking Environmental Assessment and Leave to Construct approvals, required to develop and construct a new 230 kV double circuit line from Lambton TS southwards to Chatham SS and associated station facility expansions or upgrades required at the terminal stations.

Figure 18 | Single line diagram of Proposed Near- to Mid-term Facilities



These recommendations address the bulk needs (Reference, Sensitivity B) in the area up to the year 2030. Loads in the Dresden area will require a new supply station connected to the recommended Lambton South line, however local considerations for load supply connections such as these will be addressed through the ongoing regional planning for Windsor-Essex and Chatham-Kent/Lambton/Sarnia.

8. Long-Term Solutions

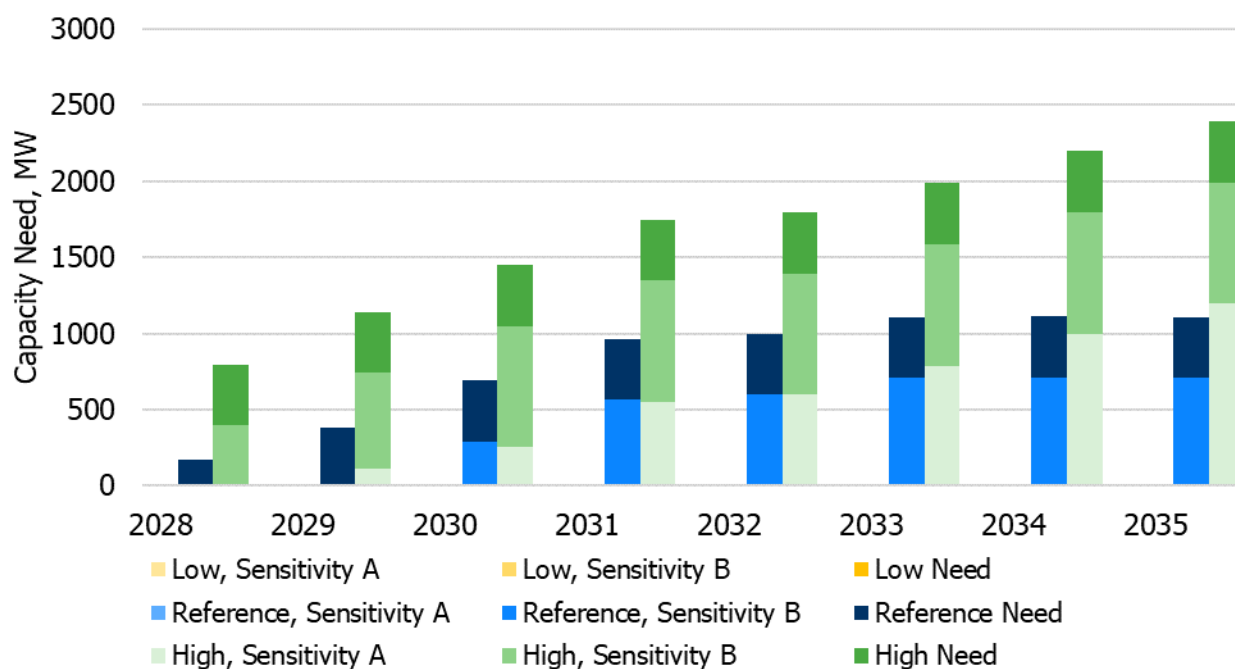
The recommendations outlined in the previous section address the supply capacity need for Reference, Sensitivity B in the area up to the year 2030. This section presents the options considered and analysis conducted to determine the recommendations to address the Reference Need for supply capacity in the Focus Area in the long-term (2030-2035).

8.1 Long-term Objectives

With the Lambton South line, for moderate levels of generation and Ontario-Michigan imports in the Lambton-Sarnia area, supply to the Focus Area is limited by the WOC interface (i.e. exceeding thermal ratings of the interface following the loss of two circuits between Chatham SS and Lakeshore TS). Under higher levels of generation and Ontario-Michigan imports in the Lambton-Sarnia area, the supply to the Focus Area is limited by the Lambton-to-Chatham path and under lower levels of generation in the Lambton-Sarnia area the supply is limited by the Longwood-to-Chatham path. These constraints correspond to a winter capability of 1,950 MW for the WOC interface and 2,350 MW for WOL.

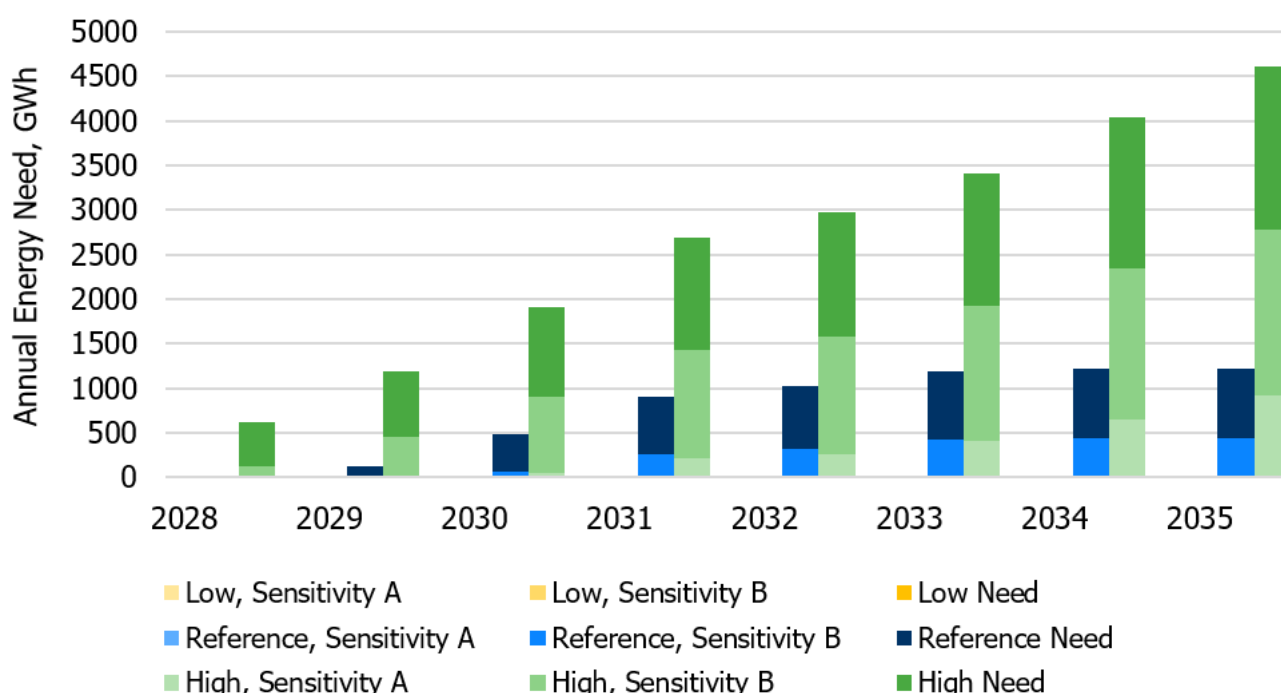
After accounting for the near- to mid-term recommendations, a 1,100 MW supply need remains by the end of the study period, as illustrated in the following figure.

Figure 19 | Winter Capacity Need for the Focus Area with the Near- and Mid-term Recommendations for Each Forecast Scenario, Under Different Generation and Export Assumptions



Correspondingly, by 2035, there remains a 1,200 GWh Reference Need, compared to the 6,100 GWh energy need without the mid-term recommendation. The reduction is due to the improved transfer capability into the area provided by the Lambton-South Line.

Figure 20 | Annual Unserved Energy for the Focus Area with the Near- and Mid-term Recommendations for Each Forecast Scenario, Under Different Generation and Export Assumptions



Two options were considered to address this long-term need for capacity in the Focus Area:

1. **Transmission expansion and local resources** – In this option, the transmission lines along the London³² to Lakeshore path are reinforced either through:
 - a. A new 230 kV double circuit transmission line from Longwood TS to Chatham SS and from Chatham SS to Lakeshore TS, with 400 MW of local resources, or
 - b. A new 500 kV single circuit transmission line from Longwood TS to Lakeshore TS, with 550 MW of local resources.

³² This refers to connection to the existing 500 kV Longwood TS situated south of Glen Oak, within Middlesex County.

For option 1a, the approximately 135-km 230 kV transmission line would increase the transfer capability into the Focus Area by 700 MW.³³ The limiting phenomena with option 1a does not change, however the corresponding limits are significantly improved.

For option 1b, the 500 kV transmission line would increase the transfer capability into the Focus Area by 550 MW (the winter transfer capability of the FIC interface increases from 2,300 MW to 2,850 MW and the WOC interface increases from 1,950 MW to 2,500 MW). The limiting phenomena with option 1b is voltage collapse for supply into WOC for the loss of the 500 kV circuit. As a result, the WOC winter transfer capability is only increased to 2,500 MW (compared to 2,750 MW with option 1a).

Since neither of these transmission options resolve the full 1,100 MW need, additional least-cost resources are needed to address the remaining capacity and energy Reference Needs. The differences in WOC limits for these two variations result in different resource requirements – 400 MW and 550 MW for option 1a and 1b respectively.³⁴

2. **No transmission expansion** – In this option, the remaining capacity and energy needs are met through the addition of the least-cost resource alternative, ideally located between Chatham SS and Lakeshore TS. This stage considered 1,100 MW of resources staged in as needs grow, corresponding to the remaining capability and energy needs under the reference scenario.

Note, when determining the long-term needs, it was assumed that existing generators coming off contract did not continue to operate. However, when costing the resource alternative for both options, reacquisition costs were used where appropriate. Long-term use of resources west of Lakeshore would require additional regional transmission reinforcements, as described in Section 9.3. Where appropriate, these costs were included in the following assessment. Refer to Appendix E for further details on the cost assumptions.

A transmission-only option was also considered in the preliminary analysis, which would require a single 500 kV circuit from Longwood to Lakeshore in addition to either of the transmission portions of options 1a and 1b. The second 500 kV circuit would help to serve additional loads beyond the reference forecast. Based on preliminary cost estimates, the transmission-only options were significantly more expensive than the options presented. To accommodate further load growth beyond the Reference Need, it was determined that there is minimal cost advantage to building both single circuits at the same time. However, constructing the single 500 kV line in option 1b to accommodate a future 500 kV circuit does warrant further consideration, as this may impact the operability and capability to address further load growth beyond the Reference Need.

³³ Note, the winter transfer capability of the WOC interface increases from 1,950 MW to 2,750 MW – an 800 MW improvement. However, depending on the wind output and connection of Dresden loads there may not be a one-to-one increase in the transfer capacity into the Focus Area. Hence, the most restrictive limits were considered.

³⁴ The exact amount of resources required for option 1 will depend on the connection arrangement of the Dresden loads, within Chatham-Kent. Optimal connection of these loads would be through a station supplied by the new Lambton South lines, which may result in lower resource requirements. However, analysis was completed assuming the worst case scenario, that loads would connect to the existing system ahead of the mid-term reinforcement. The IESO will continue to work with the applicable transmitter(s) and distributors to finalize the load configuration and long-term recommendations, to optimize value for the ratepayer. This would not impact the option 2 resource amount.

8.2 Long-term Options Analysis

Cost Considerations

This analysis uses the near- to mid-term recommendations as part of the base assumptions. Comparing the two combined transmission and resource options to the resource-only alternative, the 230 kV option (option 1a) results in a net present cost savings of approximately \$650-1,000M, while the 500 kV option (option 1b) results in a net present cost savings of approximately \$450-750M for supplying load under the reference load forecast and continued use of current local resources.

Table 2 | Summary of Long-term Options

Option	Description of Option	Cost (\$M)
1a	New double circuit 230 kV line from Longwood to Chatham to Lakeshore, and 400 MW of local resources	500 – 1,000
1b	New single circuit 500 kV line from Longwood to Lakeshore, and 550 MW of local resources	800 – 1,150
2	1,100 MW of local resources (no transmission enhancement)	1,500 – 1,600

These results indicate a combination of transmission and resources is the most cost-effective option. The differential between the 230 kV and 500 kV variations of the combined option is approximately \$200-250M.

Although Option 1a is the lower cost option, Option 1b better enables expansion if the demand for electricity in the Focus Area is higher than the Reference load growth scenario. Option 1b leaves more space at Lakeshore TS for an additional 500 kV circuit, if needed to continue to supply the area.

Resource Considerations

Acquired supply resources under these options would provide additional benefits to the system through reliability services (e.g., operating reserve) and capacity to supply provincial needs. While a gas-fired turbine has historically been the pricing benchmark for new resources in Ontario, changes to carbon pricing and community support limit the viability of this assumption. Current carbon pricing has negligible impact on costing of electricity resources in Ontario, but proposed federal policy changes could result in significant costs being passed to ratepayers. This is especially true for new resources, as they are classified differently than existing resources and as such are significantly impacted by carbon pricing. These proposed changes have been accounted for in the operating costs of the resource option. In addition, an increasing number of entities in the area (municipalities, non-governmental organizations, industry associations etc.) are calling for a phase-out of gas-fired electricity and promotion of renewable energy.

Storage, on the other hand, must rely on other energy resources to charge during low-price hours in order to provide energy when needed, behaving as a net load. Thus, storage has a higher dependence on local market signals to determine when to charge and discharge to meet the area's

needs. Even with changes to the market to provide stronger signals and more information, there is an inherent uncertainty in the forecast and system conditions, which may increase the costs of this option relative to the study assumptions.

Through various engagement activities undertaken to inform plan development including public webinars and targeted discussions with communities and stakeholders, the IESO has been made aware of various opportunities for alternative resource technologies, e.g., storage, biomass, waste-to-energy, etc., which could help meet these needs and create local jobs at the same time. In addition to this strong interest in alternative energy solutions, another key theme of the community feedback received is the impact that plan recommendations may have on economic development lands and property in the area. The combination of transmission and resources in option 1 is cost-effective, but also helps balance between the land-use impacts of new transmission corridors and local resources, the opportunities they provide to communities, and building a diverse supply within and to the region.

Despite the uncertainty regarding which resource type is the most appropriate benchmark to use, the analysis shows lower costs for the combined transmission and resource option compared to the resource or transmission-only alternatives.

8.3 Long-term Recommendations

Based on the analysis presented in this section, the IESO determined that a new single circuit 500 kV transmission line between London and the municipality of Lakeshore, along with 550 MW of local resources, is the most effective way to address the long-term capacity needs in the area. The transmission line is required to be in service by 2030. The 550 MW of local resources is the total amount required by 2035, where the requirement progressively increases up to this level starting in 2030. It can be met by reacquiring resources that exist today whose contracts have expired between now and 2035, or by acquiring new resources. This combined solution would reinforce the transfer of power towards the Focus Area and enable approximately 1,100 MW of additional capacity within the Focus Area. This preserves the option for a future additional single circuit 500 kV line to continue to supply the area if the load grows beyond the reference scenario. Similar to the near- to mid-term period, advancing either the resource or transmission portion of the long-term recommendation would allow load to connect ahead of the reference scenario and improve the deliverability of existing resources in Lambton-Sarnia earlier.

Figure 21 | Map of Proposed Long-term Transmission Path and New Local Resources



Preserving the capability for the recommended single circuit 500 kV line to accommodate a future additional circuit warrants further consideration and study, which would need to be confirmed before the Environmental Assessment is initiated. While the double circuit line would not offer an improvement in transfer capability with all elements in-service, there is potential value from a land-use and operability standpoint under a scenario where load levels remain relatively stable post 2035, or alternatively, it could help address a scenario where load grows beyond the level that two single circuit 500 kV lines could accommodate.³⁵

The Appendices of this report provide data on the forecast load, interface data and assumptions used for resource sizing. This data is provided for interested parties to better understand the long-term profile for the 550 MW of resources required and help develop solution proposals independent of, or in preparation for, upcoming IESO resource acquisition mechanisms.

Ultimately, the IESO's Market Renewal Program will provide more transparent price signals (e.g., locational marginal prices reflecting transmission congestion) that can help further drive market activities in the area which can contribute to addressing the growing needs. Furthermore, the IESO remains committed to transitioning to the long-term use of competitive resource acquisition mechanisms to meet Ontario's resource reliability needs and has developed a Resource Adequacy Framework. Details of the resource need, energy profile, locational considerations and other requirements will inform future AARs and subsequent resource acquisition strategies.

³⁵ A double circuit 500 kV line does not meet any additional capacity needs relative to the single circuit 500 kV line since transfer capability is most limited by all in-service conditions, where the loss of both a single and a double circuit line need to be respected according to NERC and NPCC standards, so would result in similar limits.

9. Implications on the Broader WOL Area and Linkages with Regional Planning

Section 7 and 8 recommend transmission enhancements and identify the amount of capacity required in the Focus Area to supply the growing demand for electricity. However, as mentioned earlier, in addition to determining the adequacy of the supply to the Focus Area, a review of the supply to larger WOL area, which encompasses the Focus Area, is necessary not only because of the load growth expected in the Focus Area, but also because there is a significant amount of supply resources within WOL and 85% have contracts expiring by the end of the decade. This section identifies the amount of capacity needed to supply the larger WOL area if the recommendations in this report are implemented and assuming that when the generation contracts expire the generation is not reacquired. To address the need for capacity, resources would be acquired as per the IESO's Resource Adequacy Framework – either through existing resources whose contracts have expired and/or an equivalent amount of new capacity located in the WOL area.

This section also identifies any remaining constraints on the capacity resources located in the WOL area to meet provincial capacity needs assuming the recommendations in Section 7 and 8 are implemented.

Finally this Section also discusses the interdependencies between this bulk plan (provincial-level) and the regional plan (local-level) being developed in parallel with LDCs in the region – through the ongoing Windsor-Essex IRRP Addendum study and Chatham-Kent/Lambton/Sarnia regional planning cycle.

9.1 Reliability of Supply to the WOL Area

If the recommendations in Section 7 and 8 are implemented, minimum generation levels within the WOL area are driven by the need to maintain export capability on the Ontario-Michigan interconnection under peak loading conditions.

With the transmission component of long-term recommendation option 1b in place, starting in 2030 new or reacquired WOL resources would be required meet the WOL need, including maintaining export capability, growing to a 1,975 MW requirement by 2035. By locating approximately 550 MW of those resources within the Focus Area the supply needs in the Focus area are also addressed. This leaves a need of 1,425 MW to be addressed in the WOL area.

These minimum resource amounts for the Focus Area, along with the remainder needed in the broader WOL area, would be new or reacquired resources and represent what would be required to meet the need out to 2035, where the requirement progressively increases up to that level starting in 2030. These WOL resource requirements would be acquired as per the IESO's Resource Adequacy Framework and can be met by reacquiring resources that exist today whose contracts will expire between now and 2035 and/or by acquiring new resources.

9.2 Deliverability of Supply in the Focus Area and WOL area to the rest of Ontario

As described in the Annual Planning Outlook (APO), there is a growing need for additional capacity in Ontario emerging in 2022, exceeding 6,000 MW in 2026 as demand increases and available capacity decreases. Generation in the Focus Area and WOL area could contribute to meeting that need and this revenue stream has been incorporated into the cost assessment of the near- to mid-term and long-term options.

9.3 Interdependency with Regional Planning

In parallel with this bulk study, transmission planning continues at the regional level through the ongoing Windsor-Essex IRRP Addendum and the Chatham-Kent/Lambton/Sarnia regional planning cycle which recently began (Q3 2021) to address remaining local customer supply needs. While the focus of this bulk study is to address bulk transfer limitations and broader energy needs in the WOL area, customer supply needs persist on the regional level and will be addressed in regional plans.

The [2019 Windsor-Essex IRRP](#) triggered an addendum study to address remaining local needs in Kingsville and Leamington. Given the rapid growth and multiple reinforcements in development, an addendum allowed integrated regional planning at the local level to continue in tandem with the WOL bulk study. The addendum is focused on enabling further distribution load connections in Kingsville and Leamington, along with addressing the remaining load restoration and security needs in Leamington. The final recommendations for the addendum are expected by Fall 2021, and will outline next steps for local supply stations and connection facilities.

The recommendations from bulk and regional planning are linked, as the outcomes of one influences the other. Depending on where the 550 MW of capacity recommended in Section 8 is located within the Focus Area, a double circuit 230 kV transmission line between Windsor and Lakeshore may be needed to address local reliability issues. Concentrating the 550 MW resource requirement entirely in Windsor or entirely in Lakeshore may necessitate a transmission reinforcement between Windsor and Lakeshore. While the ideal location for new resources to serve the growing loads would be connected to Lakeshore TS, locating approximately 100-150 MW of those resources in the Windsor area would maintain the Ontario-Michigan interconnection capability and offset the need for reinforcement between Windsor and Lakeshore. This report only points out this interdependency and has included the associated costs in the assessment of long-term options discussed in Section 8, however the Windsor-Essex IRRP Addendum will provide the details of the limitations and need.

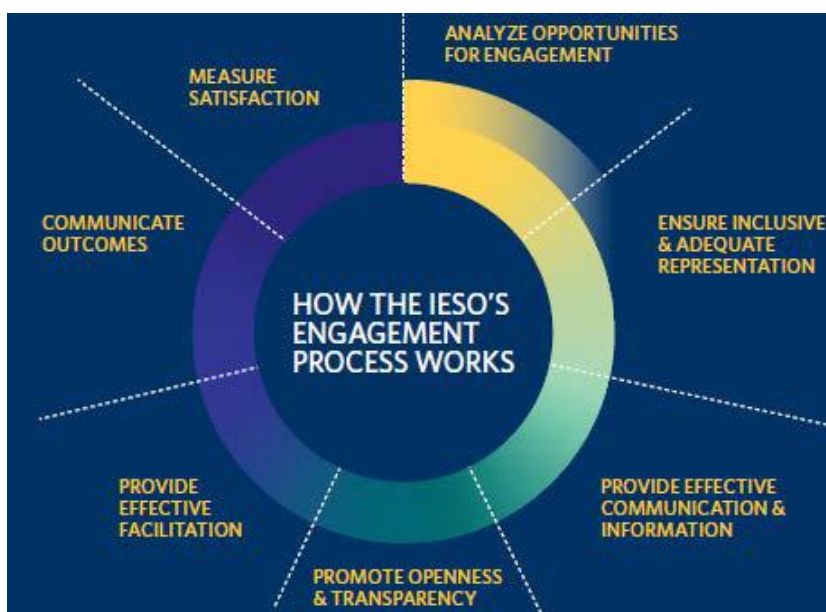
10. Engagement

The IESO is currently developing a [formalized process](#) for bulk system planning to enhance transparency and opportunities for stakeholder input. As part of that initiative, defining how stakeholders can participate in the electricity planning process and be kept informed has been identified as a critical component of the process design. Providing opportunities for input in the transmission planning process enables the views and preferences of communities and stakeholders to be considered in the development of the plan, and helps lay the foundation for successful implementation. The IESO has endeavored to encompass those principles throughout the WOL bulk work. This section outlines the engagement principles as well as the activities undertaken to date for WOL.

10.1 Engagement Principles

The IESO's [engagement principles](#) help ensure that all interested parties kept informed and enable opportunities for purposeful engagement to contribute to electricity planning initiatives such as the development of this WOL bulk plan. The IESO adheres to these principles to ensure inclusiveness, sincerity, respect and fairness in its engagements, striving to build trusting relationships as a result.

Figure 22 | The IESO's Engagement Principles



10.2 Engagement Approach

To ensure that the bulk plan reflects the needs of Indigenous communities, community members and interested stakeholders, engagement involved:

- Leveraging the [Southwest Bulk Planning Initiatives webpage](#) and [Windsor-Essex Regional Planning engagement webpage](#) on the IESO website to post updated information,

engagement opportunities, meeting materials, input received and IESO responses to the feedback;

- Regular communication with communities, stakeholders and interested parties through email, [Southwest Regional Electricity Network](#) updates, and IESO weekly Bulletin;
- Public webinars; and
- Targeted outreach throughout plan development with municipalities, customers, Indigenous communities and rights-holders, and those with an identified interest in southwest Ontario electricity issues. These discussions were instrumental in garnering feedback about increased expected economic development being driven by high greenhouse growth in Kingsville, Leamington and Dresden, as well as increased growth in residential and industrial developments.

Two public webinars were held at major junctures during bulk plan development to give interested parties an opportunity to hear about its progress and provide comments on key components including:

- Electricity demand forecast;
- Identified needs;
- Options evaluation for mid-term and long-term needs; and
- Draft long-term recommendations.

Both webinars received strong participation with cross-representation of stakeholders and municipal and Indigenous community representatives in attendance, and submitting written feedback during a 21-day comment period.

Comments received during this engagement focused on the following major themes:

- Alignment and coordination is needed with other community planning, local developments and growth plans. Future infrastructure and/or electricity supply should consider the priorities of energy and climate action plans and, in particular, alternative energy systems, renewable generation and electrification
- Consideration should be given to non-wires alternatives as part of the recommended solutions;
- Concern around potential delays in needed electricity infrastructure to enable investments and economic development;
- Consideration should be given to the land impact and minimizing the footprint of options;
- Integrated options that provide both local and broader provincial system benefit should be considered;
- Incorporate shifting economies, in particular for different resource technologies, into planning assumptions and cost benefit analysis; and
- Access to additional data used to inform the plan including to provide details on historic demand and future demand assumptions, existing and future system capabilities, and solution

assessment methodology and assumptions used to establish the need and evaluate potential solutions.

In addition to the public webinars and written comment windows, a virtual [Southwest Network meeting](#) was held to provide an overview and address questions on the new Lambton-to-Chatham transmission line that was announced in advance of this final WOL bulk plan.

Based on the discussions both on the WOL bulk plan and parallel Windsor-Essex regional planning initiative, it is clear that there is broad interest in several Southwestern Ontario communities to further discuss the potential for solutions that fully utilize existing transmission infrastructure and minimize the footprint of solutions.

Feedback received helped to guide further discussion throughout the development of this bulk plan as well as add due consideration to the final recommendations.

In response to feedback received requesting open access to data, information was provided following the second public webinar on the detail and format of data to be made available to support this bulk plan. Interested parties were able to comment on the proposed data sharing to ensure information provided is in an accessible format. Feedback informed the data that has been made available within the body of this report, the appendices, and supplemental excel files. This information will allow communities, stakeholders and interested parties to make more informed choices and plan strategically.

All background information, including engagement meeting presentations, recorded webinars, detailed feedback submissions, and responses to comments received, are available on the IESO's Windsor-Essex IRRP engagement [webpage](#).

10.3 Bringing Communities to the Table

The IESO held meetings with communities to seek input on local planning priorities and initiatives that should be taken into consideration in the development of this bulk plan. At major milestones in the bulk plan development process, targeted discussions were held with the upper- and lower-tier municipalities in the planning area to discuss identify and address any key issues of concern, including forecast electricity needs, and options for meeting those future needs. These meetings helped to inform electricity needs at the municipal/community-level, develop options and recommended solutions, and further build and strengthen local relationships for ongoing dialogue beyond this bulk process.

10.4 Engaging with Indigenous Communities

To raise awareness about the bulk planning activities underway and invite participation in the engagement process, outreach was made to Indigenous communities and rights-holders within the WOL electricity planning area throughout the development of the plan. Those invited to participate include the communities of Saugeen Ojibway First Nation, Nawash First Nation, Chippewas of the Thames First Nation, Mississaugas of the New Credit, Six Nations of the Grand River, Haundenosaunee Confederacy Chiefs Council (HCCC), Haundenosaunee Development Institute (HDI), Aamjiwnaang First Nation, Bkejwanong (Walpole Island First Nation), and Métis Nation of Ontario.

Indigenous communities and rights-holders were invited to attend a general meeting along with stakeholders in July 2021, and an Indigenous-specific meeting was held the next day in order to provide another opportunity to ask questions and obtain their input to this final bulk plan.

Without limiting general and ongoing issues that community representatives/rights-holders raise, we did not receive specific feedback on WOL. However from other engagements dating back to 2017 with community representatives, the IESO is aware of growing interest from Indigenous communities and rights holders around new electricity infrastructure, including economic participation, relationships with government and industry that help facilitate participation and protection of Aboriginal and treaty rights and the environment.

The IESO remains committed to an ongoing, effective dialogue with communities and rights-holders to help shape long-term planning in regions all across Ontario.

10.4.1 Indigenous Participation and Engagement in Transmission Development

The IESO determines the most reliable and cost-effective option after it has engaged with stakeholders, rights-holders Indigenous communities, and publishes those recommendations in the applicable regional or bulk planning report. Where the IESO determines that the lead time required to implement those solutions require immediate action, the IESO may provide those recommendations ahead of the publication of a planning report, such as through a handoff letter to the lead local transmitter in the region, for example.

As part of the overall transmission development process, a proponent applies for applicable regulatory approvals, including an Environmental Assessment that is overseen by the Ministry of Environment, Conservation and Parks (MECP). This process includes, where applicable, consultation regarding Aboriginal and treaty rights, with any approval including steps to avoid or mitigate impacts to said rights. MECP may delegate the procedural aspects of consultation to the proponent while overseeing those delegated aspects and the consultation process generally. Following development work, the proponent will then need to apply to the OEB for approval through a Leave to Construct hearing, and only if approval is granted, can it proceed with the project.

In consultation with MECP, project proponents are encouraged to engage with Indigenous communities and rights-holders on ways to enable participation in these projects.

11. Conclusions and Recommendations

This report documents the bulk plan that has been developed for the West of London area, and recommends a multi-pronged approach to address the near- to long-term supply capacity needs using a combination of transmission reinforcements, resources, and targeted energy efficiency programs.

The Chatham-to-Lakeshore line, recommended in the Windsor-Essex bulk plan, would increase the overall transfer capability of the bulk transmission system west of Chatham and allow the connection of approximately 400 MW of additional load in Kingsville-Leamington. The Lambton South line would improve the deliverability of resources in Lambton-Sarnia and enable up to 950 MW of supply capacity into the Focus Area (450 MW in Windsor-Essex). The subsequent Longwood-to-Lakeshore line would reinforce the transfer of power towards the Focus Area and enable approximately 550 MW of additional capacity within the Focus Area, or 1,100 MW of capacity in combination with the recommended 550 MW of local resources.

To supply the broader WOL area while maintaining full export capability with all elements in-service, 1,425 MW of additional capacity is needed in the WOL area by 2035, where the requirement progressively increases up to that level starting in 2030, in addition to what is recommended to supply the Focus Area.

This bulk plan has been coordinated with regional plans, with the Windsor-Essex IRRP Addendum set to be completed by fall 2021 and the planning cycle for the Chatham-Kent/Lambton/Sarnia region recently began (Q3 2021). In particular, depending on where the 550 MW of recommended local resources is located within the Focus Area a double circuit 230 kV transmission line between Windsor and Lakeshore may be needed to address local reliability issues and maintain interchange capability under all elements in-service.

For the associated long-term resource requirements, the IESO's Market Renewal Program will provide more transparent price signals (e.g., locational marginal prices reflecting transmission congestion) that can help further drive market activities in the area which can contribute to addressing the area's growing needs. As that is being implemented, the IESO remains committed to transitioning to the long-term use of competitive resource acquisition mechanisms to meet Ontario's resource reliability needs using the Resource Adequacy Framework. Details of the Focus Area and WOL resource need, energy profile, locational considerations and other requirements will inform subsequent resource acquisition strategies, and those strategies will be stated in the corresponding AARs.

For the recommended transmission solutions, the transmitter(s) seeking leave to construct will proceed with development work, including the Environmental Assessment process that is overseen by the MECP. This process includes engagement with Indigenous communities and rights-holders, community members and interested stakeholders and, where applicable, consultation regarding Aboriginal and treaty rights, with any approval including steps to avoid or mitigate impacts to said rights. The MECP may delegate the procedural aspects of consultation to the proponent while overseeing those delegated aspects and the consultation process generally. The OEB will then assess

the projects and provide final approval through the Leave to Construct process, following which the transmitter will proceed with implementation and construction.

The IESO, along with the relevant distributors and transmitters, will continue to monitor the load growth, progress of developments toward plan deliverables, conservation measures, and pace of new connections in the Focus Area and the WOL area as a whole to identify any impacts on completed or future bulk and regional plans and recommendations for the areas.

Appendix A – Planning Assessment Criteria

In developing this bulk plan, the IESO followed a number of steps including:

- Data gathering, including development of electricity demand forecasts;
- Conducting technical studies to determine electricity needs and the timing of these needs;
- Developing potential options; and
- Preparing a recommended plan including actions for the near and longer term.

Throughout this process, engagement was carried out with stakeholders interested in the area, in the form of public webinars and targeted discussions with the affected communities, local distribution companies and transmitters.

This bulk report documents the inputs, findings and recommendations developed through the process described above and provides recommended actions for the various entities responsible for plan implementation. The report helps ensure that recommendations to address near-term needs are implemented, while maintaining the flexibility to accommodate changing long-term conditions.

The overall objectives of planning are consistent among both regional and bulk planning, which are the following:

- Ensure reliability and service quality;
- Enable economic efficiency; and
- Support sector policy and decision making.

There are various reliability standards which, as the electricity system planner and operator, the IESO is obliged to meet. NERC and NPCC membership requires the bulk system be planned to consider specific operating conditions, such as peak and light load, and a set of contingencies to ensure the bulk system is planned reliably and meets standards. Additionally, the IESO is required to demonstrate its adherence to these standards through compliance reporting.

Reliability standards require the IESO to define its own performance criteria to meet under the conditions and contingencies specified. The Ontario Resource and Transmission Assessment Criteria (ORTAC) define the planning performance criteria for Ontario which are more specific and/or more stringent standards than NERC/NPCC. The IESO also considers operational issues and solutions that simultaneously consider bulk system reliability needs, regional needs, and assets reaching end of life, as appropriate.

The study used the planning criteria in accordance with events and performance as detailed by:

- NERC TPL-001 “Transmission System Planning Performance Requirements” (TPL-001),
- NPCC Regional Reliability Reference Directory #1 “Design and Operation of the Bulk Power System” (Directory #1), and
- IESO Ontario Resource and Transmission Assessment Criteria (ORTAC).

In addition to meeting established criteria and standards, the IESO also seeks to enable economic efficiency and support sector policy. Bulk system planning has a role in ensuring policy objectives can be incorporated with maximum benefit to ratepayers, and in identifying opportunities for improving overall system economics, especially in a competitive environment. This includes seeking economic opportunities, such as reducing losses, congestion, or other service costs, facilitate intertie/trade requirements, and providing timely and relevant information to market participants to enhance their participation and decision making leading to greater market efficiency and competition. It also includes supporting policy implementation affecting the power grid, such as sensitivity analysis of the economic impact of carbon pricing policies on congestion costs, as well as considering community energy plans and goals.

Appendix B – Load Forecast Data

The following datasets are included in this section and are also available in the excel file provided:

- Overall annual West of London peak forecasts
 - Table 3 & 4: Total coincident low, reference, and high scenarios for summer (May through October) and winter (January through April, November, December)
- Focus Area peak forecasts
 - Table 5 & 6: Total coincident low, reference, and high scenarios for summer (May through October) and winter (January through April, November, December)
- Annual station (those without greenhouse loads) peak forecasts, by region
 - Table 7 & 8: Summer and winter peak planning forecast in the Windsor-Essex region
 - Table 9 & 10: Summer and winter peak planning forecast in the Chatham-Kent/Lambton/Sarnia region
- Annual greenhouse peak forecasts
 - Table 11 & 12: Total West of London coincident low, reference, and high scenarios for summer and winter
 - Table 13 & 14: Peak demand forecast for West of London stations with greenhouse load for summer and winter
 - Table 15: Peak segmentation assumptions for West of London stations with greenhouse load

Refer to the excel file provided for the following datasets:

- Table 16: Forecast West of London greenhouse hourly load profiles (2021, 2035)
- Table 17: Forecast West of London total hourly load profiles (2021, 2035)
- Table 18: Historical hourly Leamington DESN 1 and DESN 2 station load profiles (2020)

Overall West of London Forecasts

Table 3 | Total Coincident Winter West of London Peak Demand Forecast (MW)

Forecast Scenario	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Low	1730	1989	2264	2362	2426	2307	2253	2277	2253	2254	2454	2254	2273	2281	2275
Reference	1730	1989	2264	2391	2484	2511	2630	2834	2953	3095	3461	3400	3520	3532	3521
High	1730	1989	2265	2393	2517	2787	3179	3464	3713	3852	4245	4198	4399	4599	4786

Table 4 | Total Coincident Summer West of London Peak Demand Forecast (MW)

Forecast Scenario	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Low	1893	2030	2081	2111	2120	2108	2119	2124	2115	2128	2158	2166	2090	2181	2192
Reference	1893	2030	2081	2115	2151	2168	2313	2470	2564	2697	2963	2952	3036	3056	3037
High	1893	2030	2093	2139	2198	2417	2796	3028	3228	3364	3651	3648	3801	3980	4121

Focus Area Forecasts

Table 5 | Total Coincident Winter Focus Area Peak Demand Forecast (MW)

Forecast Scenario	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Low	1204	1458	1728	1810	1843	1775	1744	1759	1744	1736	1857	1744	1754	1762	1755

Forecast Scenario	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Reference	1204	1458	1728	1838	1901	1979	2123	2316	2446	2592	2863	2897	3007	3013	3007
High	1204	1458	1729	1840	1935	2255	2673	2946	3206	3349	3648	3694	3886	4096	4293

Table 6 | Total Coincident Summer Focus Area Peak Demand Forecast (MW)

Forecast Scenario	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Low	1124	1284	1526	1593	1601	1542	1543	1549	1534	1535	1613	1542	1544	1553	1547
Reference	1124	1284	1526	1617	1650	1711	1858	2011	2114	2249	2449	2498	2580	2595	2580
High	1124	1284	1533	1631	1697	1960	2341	2570	2777	2916	3137	3194	3345	3519	3665

Annual Station Peak Forecasts, by Region

Table 7 | Winter Planning Peak Demand Forecast for Windsor-Essex Region Stations with No Greenhouse Load (MW)³⁶

Station	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Belle River TS	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49
Crawford TS	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
Essex TS	36	36	34	33	33	32	32	32	32	32	32	33	33	33	33

³⁶ No changes to these forecasts (net and coincident) have been made since the [2019 Windsor-Essex IRRP](#).
West of London Bulk Transmission Report, 23/09/2021 | Public

Station	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Industrial Customer #1	36	36	34	33	33	32	32	32	32	32	32	32	32	32	33
Industrial Customer #2	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Industrial Customer #3	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Industrial Customer #4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Industrial Customer #5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Keith TS	66	65	64	62	61	61	61	60	60	60	60	60	60	60	60
Lauzon DESN 1	80	79	77	75	74	73	73	73	73	73	73	73	73	74	74
Lauzon DESN 2	70	70	70	70	69	69	69	69	68	68	68	68	68	68	68
Malden TS	104	104	101	100	99	98	98	98	98	98	98	98	98	98	99
Tilbury TS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tilbury West DS	14	14	14	14	14	14	14	15	15	15	15	15	15	15	16
Walker MTS #2	39	39	38	37	36	36	36	36	36	36	36	36	36	37	37
Walker TS #1	37	37	35	34	33	33	33	33	33	33	33	33	33	33	34

Table 8 | Summer Planning Peak Demand Forecast for Windsor-Essex Region Stations with No Greenhouse Load (MW) ³⁷

Station	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Belle River TS	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61
Crawford TS	62	61	60	60	59	59	59	59	59	59	59	59	59	60	60
Essex TS	47	46	46	46	45	45	45	45	45	45	45	46	46	46	46
Industrial Customer #1	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29
Industrial Customer #2	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Industrial Customer #3	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Industrial Customer #4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Industrial Customer #5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Keith TS	58	57	57	57	57	56	56	56	56	56	56	56	57	57	57
Lauzon DESN 1	126	124	123	122	121	121	120	120	120	121	121	121	122	122	122
Lauzon DESN 2	88	88	87	87	87	87	86	86	86	86	86	86	86	86	86
Malden TS	143	141	141	140	139	139	139	139	139	139	139	140	140	140	141
Tilbury TS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

³⁷ No changes to these forecasts (net, coincident, and corrected for extreme weather) have been made since the [2019 Windsor-Essex IRRP](#).
West of London Bulk Transmission Report, 23/09/2021 | Public

Station	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Tilbury West DS	17	17	17	17	18	18	18	18	18	18	18	19	19	19	19
Walker MTS #2	49	48	48	47	47	47	47	47	47	47	47	47	48	48	48
Walker TS #1	47	47	46	46	45	45	45	45	45	45	46	46	46	46	46

Table 9 | Winter Planning Peak Demand Forecast for Chatham-Kent/Lambton/Sarnia Region Stations with No Greenhouse Load (MW) ³⁸

Station	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Industrial Customer #1	43	43	43	35	35	35	35	35	35	35	35	35	35	35	35
Duart TS	7	7	7	7	7	7	7	7	7	7	8	8	8	8	8
Forest Jura DS	5	5	5	5	5	5	5	5	5	5	5	5	5	6	6
Industrial Customer #2	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Industrial Customer #3	0	0	0	12	12	12	12	12	12	12	12	12	12	12	12
Kent TS	135	136	138	139	140	141	143	144	145	146	148	149	150	151	153
Lambton TS	58	58	58	59	59	59	59	60	60	60	60	60	61	61	61
Modeland TS	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72

³⁸ These forecasts account for the expected peak contribution of distributed generation, and are coincident for the Chatham-Kent/Lambton/Sarnia region.
West of London Bulk Transmission Report, 23/09/2021 | Public

Station	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Industrial Customer #4	17	19	19	19	19	19	19	19	19	19	19	19	19	19	19
Industrial Customer #5	16	31	31	31	31	31	31	31	31	31	31	31	31	31	31
Industrial Customer #6	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
Industrial Customer #7	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Industrial Customer #8	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
St. Andrews TS	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65
Industrial Customer #9	53	53	53	53	53	53	53	53	53	53	53	53	53	53	53
Wallaceburg TS	29	30	30	30	31	31	31	31	32	32	32	33	33	33	34
Wanstead TS	40	41	42	42	43	43	44	44	45	46	46	47	47	48	48
Wonderland TS	59	60	61	62	63	64	64	65	66	67	68	69	70	71	72
Industrial Customer #10	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

Table 10 | Summer Planning Peak Demand Forecast for Chatham-Kent/Lambton/Sarnia Region Stations with No Greenhouse Load (MW) ³⁹

Station	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Industrial Customer #1	45	45	45	38	38	38	38	38	38	38	38	38	38	38	38
Duart TS	14	14	14	14	14	14	15	15	15	15	15	15	15	15	16
Forest Jura DS	19	20	20	20	21	21	21	22	22	22	23	23	23	23	24
Industrial Customer #2	57	57	57	57	57	57	57	57	57	57	57	57	57	57	57
Industrial Customer #3	0	0	0	12	12	12	12	12	12	12	12	12	12	12	12
Kent TS	156	158	160	161	162	164	165	167	168	170	171	173	174	176	177
Lambton TS	66	66	67	67	67	67	68	68	68	68	69	69	69	69	70
Modeland TS	97	97	97	97	97	97	97	97	97	97	97	97	97	97	97
Industrial Customer #4	18	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Industrial Customer #5	16	33	33	33	33	33	33	33	33	33	33	33	33	33	33
Industrial Customer #6	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
Industrial Customer #7	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9

³⁹ These forecasts account for the expected peak contribution of distributed generation and extreme weather, and are coincident for the Chatham-Kent/Lambton/Sarnia region.
West of London Bulk Transmission Report, 23/09/2021 | Public

Station	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Industrial Customer #8	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31
St. Andrews TS	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
Industrial Customer #9	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
Wallaceburg TS	38	39	39	40	40	40	41	41	42	42	43	43	43	44	44
Wanstead TS	47	47	48	49	49	50	51	51	52	52	53	54	54	55	55
Wonderland TS	97	98	100	101	102	104	105	106	108	109	111	112	113	115	116
Industrial Customer #10	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

Annual Greenhouse Forecasts

Table 11 | Total Winter West of London Greenhouse Demand Forecast (MW)

Forecast Scenario	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Low	443	685	964	1038	1035	1042	1045	1044	1046	1047	1035	1047	1045	1045	1046
Reference	443	685	964	1068	1095	1252	1436	1615	1767	1935	2073	2234	2333	2333	2334
High	443	685	964	1068	1126	1533	1997	2258	2543	2711	2874	3046	3229	3423	3628

Table 12 | Total Summer West of London Greenhouse Demand Forecast (MW)

Forecast Scenario	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Low	366	590	833	892	890	895	898	897	899	900	890	900	899	898	899
Reference	366	590	833	916	938	1065	1214	1359	1483	1618	1729	1860	1941	1940	1941
High	366	590	839	930	985	1315	1699	1918	2149	2288	2419	2559	2708	2865	3031

Table 13 | Gross Winter Peak Demand Forecast for West of London Stations with Greenhouse Load (MW)

Station	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Kingsville TS*	123	123	124	124	124	124	124	125	125	125	125	125	125	125	125
Leamington DESN 1*	202	205	205	205	205	205	205	205	205	205	205	205	205	205	205
Leamington DESN 2	203	206	206	206	206	206	206	206	206	206	206	206	206	206	206
South Middle Road DESN 1	-	157	206	206	206	206	206	206	206	206	206	206	206	206	206
South Middle Road DESN 2	-	-	181	206	206	206	206	206	206	206	206	206	206	206	206
Remainder of greenhouse forecast, reference (not yet assigned to a station)	-	80	130	210	240	390	571	752	902	1067	1217	1367	1467	1467	1467
Remainder of greenhouse forecast, high (not yet assigned to a station)	-	80	130	210	271	671	1132	1394	1677	1844	2018	2180	2364	2557	2762

*Station load contains both agricultural and non-agriculture load

Table 14 | Gross Summer Peak Demand Forecast for West of London Stations with Greenhouse Load (MW)

Station	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Kingsville TS*	89	93	93	93	93	93	94	94	94	94	94	94	94	94	94
Leamington DESN 1*	143	143	143	143	143	143	143	143	143	143	143	143	143	143	143
Leamington DESN 2	59	59	60	61	61	61	61	61	61	61	61	61	61	61	61
South Middle Road DESN 1	-	73	86	106	106	106	106	106	106	106	106	106	106	106	106
South Middle Road DESN 2	-	-	65	66	88	94	94	94	94	94	94	94	94	94	94
Remainder of greenhouse forecast. reference (not yet assigned to a station)	106	256	420	482	484	600	746	892	1014	1148	1269	1390	1472	1472	1472
Remainder of greenhouse forecast, high (not yet assigned to a station)	106	256	426	496	531	850	1231	1451	1680	1818	1959	2089	2239	2397	2562

*Station load contains both agricultural and non-agriculture load

Table 15 | Peak Segmentation Assumptions for West of London Stations with Greenhouse Load

Station	Non-Agriculture	Vegetable	Cannabis
Kingsville TS	30%	36%	34%
Leamington DESN 1	30%	52%	18%
Leamington DESN 2	-	74%	26%

Station	Non-Agriculture	Vegetable	Cannabis
South Middle Road DESN 1	-	29%	71%
South Middle Road DESN 2	-	53%	47%
Remainder of greenhouse forecast (not yet assigned to a station)	-	76%	24%

Appendix C – Supply Need Data

Refer to the excel file provided for the forecasted hourly supply need for the following scenarios:

- Table 19: Near-term Supply Need: Flow into Chatham Reference, Sensitivity B Need (2024, 2027)
- Table 20: Mid-term Supply Need: Flow into Chatham Reference, Sensitivity B Need (2028, 2029)
- Table 21: Long-term Supply Need: Flow into Chatham Reference Need with mid-term recommendations; Lambton South line (2030, 2035)

Reference Need refers to the base case for determining supply needs for the purpose of identifying options, which assumes that to supply the reference demand forecast, resources would not be reacquired at the end of their contracts and the interchange path between Ontario and Michigan would be maintained. Sensitivity B considers resources in the study area would not be reacquired at the end of their contracts, without maintaining interchange capability.

Appendix D - Assessment of Supply

The IESO assessed supply to the Focus Area and WOL based on two assessments, capacity and energy. This will be detailed further in the following sections.

Capacity Assessment

A deterministic approach was used to evaluate the need for additional capacity behind the FIC, WOC, and WOL interfaces. A need was identified where the annual coincident load forecast exceeded the total installed capacity of transmission-connected gas generation in winter or summer (discounted by seasonal derates) and the internal and Ontario-Michigan interface transfer limits.

For example, in the Focus Area a Reference capacity supply need is identified when the Focus Area demand plus exports on the Windsor-Detroit intertie, is larger than the Focus Area generation resources (900 MW, less derates and contract expiry) plus the transmission capacity into the Focus Area (i.e., on the FIC interface).

Similarly, a WOL Reference capacity supply need is identified when the WOL demand plus exports on the entire Ontario-Michigan interconnection, is larger than the WOL generation resources plus the transmission capacity into WOL from the rest of the province. When resolving the WOL needs, the location of resources within the Focus Area impacts their effectiveness at meeting the need due to internal constraints within the WOL area. Where impactful, these locational constraints are identified.

The assessment considered the installed capacity of transmission-connected gas generation in winter or summer (discounted by seasonal derates). To be conservative, needs were not discounted by contributions from wind or solar, since these resources cannot be dispatched up, and the output is variable. This variability cannot be accounted for through the deterministic calculations. Most critically, wind generation is higher during off peak periods and therefore not well correlated with gas generation.

Energy Assessment

A deterministic approach was taken to evaluate the need for energy behind the FIC, WOC, and WOL interfaces. A need was identified when the hourly coincident load forecast (plus exports, as appropriate based on the study scenario) exceeded the total installed capacity of transmission-connected gas generation in winter or summer (discounted by seasonal derates) and the transmission interface transfer limits. This unserved energy is another indication of the magnitude of a need behind a transmission interface and also informative of its duration. Similar to the capacity assessment, needs were not discounted by contributions from wind or solar.

Appendix E – Economic Assessment Assumptions

The following is a list of the assumptions made in the economic analysis:

- The net present value (NPV) of the cash flows is expressed in 2020 CAD.
- The USD/CAD exchange rate was assumed to be 0.78 for the study period.
- The NPV analysis was conducted using a 4% real social discount rate. Sensitivities at 2% and 8% were performed.
- An annual inflation rate of 2% is assumed.
- The assessment was performed from an electricity consumer perspective and included all costs incurred by project developers, which were assumed to be passed on to consumers.
- The existing supply resources described in Section 5 were reflected in the analysis. Mid-term analysis assumed that the near-term recommendation is in-place until 2028. Beyond 2028, the mid- and long-term analysis assumed all existing resources in the Focus Area and WOL coming off contract do not continue to operate to better assess the full scope of options required.
- The NPV study period for the mid-term extended from the start of 2028, the year that the solution would need to be in service, to the end of 2097, when a transmission asset replacement decision would be required. Similarly, the NPV study period for the long-term was from 2030 to 2099. For the long-term generation-only alternative, capital injection was estimated as a percentage of overnight capital costs (12%) to extend resource life a further 10 years.
- Reacquisition costs were assumed to be 80% of the facilities' net revenue requirement as the baseline assumption. A sensitivity of 80-20% of the facilities' net revenue requirement was assessed for reacquisition costs. Actual reacquisition costs would be determined through subsequent resource acquisition mechanisms.
- The life of the station upgrades was assumed to be 45 years; the life of the line was assumed to be 70 years; and the life of the SCGT generation and storage assets was assumed to be 30 years and 10 years respectively. The life of the storage asset was based on a capacity of 3,600 cycles, which is assumed to be used to serve the local need first, and then global energy and ancillary services for the rest of the year. Cost of asset replacement were included where necessary to ensure the same NPV study period.
- Development timelines for transmission was assumed to be 6-8 years; development timelines for generation and storage were assumed to be 3 years following a procurement.
- Capital costs for the transmission options were determined based on \$2-3M/km estimates for a new double circuit 230 kV line, \$2-4.5M/km estimates for a new single circuit 500 kV line, and a \$30-35M/station estimate for station upgrade costs required to terminate the new

circuits or add an autotransformer. This was informed by the 2015 SECTR and Bruce-by-Milton cost estimates in the Leave to Construct application evidence on file with the Ontario Energy Board, as well as the input received from Hydro One. A 50% contingency was assumed for the purpose of this analysis.

- Capital cost for the transmission reinforcement between Windsor and Lakeshore required to maintain resources west of Lakeshore (as described in Section 9.3) was included for resource alternatives exceeding 600 MW. A sensitivity of +/- 20% was assessed on the capital and ongoing fixed costs for generation.
- All long-term solutions will require voltage control devices, preferably in the form of small capacitors and reactors throughout the area and/or automatic regulation in the form of a static var compensator. Since this was common to all options, these costs were not factored into this analysis.
- Costs for additional transformation in the 500 kV yard at Longwood TS were included in the long-term option 1a assessment to enable sufficient voltage support and power transfer from the 500 kV bus to the 230 kV bus. Note, this could alternatively be resolved through additional reactive capacity or reconfiguration of the existing transformers in the 500 kV switchyard at Longwood TS.
- The size of the resource option was determined by the capacity needs presented in Section 6. This showed a 2,050 MW capacity need over the 15-year assessment period. Based on the capability of the mid-term transmission option, this was split into 950 MW and 1,100 MW requirements for the mid-term and long-term respectively. Within each assessment, this was staggered into multiple separate units to align with the need growth, and optimize the resource option, so as not to overbuild capacity before it is needed.
- A SCGT was identified as one of the lowest-cost resource alternatives. The estimated overnight cost of capital assumed is about \$800-900/kW (2020 CAD) depending on the unit size, based on escalating values from a previous study independently conducted for the IESO.
- Natural gas prices were assumed to be an average of \$4/MMBtu throughout the study period
- An energy storage facility was identified as another low-cost resource alternative. Total energy storage system costs are composed of capacity and energy costs (i.e. energy storage devices are constrained by their energy reservoir). The estimated overnight cost of capital assumed is about \$1000-1300/kW (2020 CAD) depending on the storage capacity to energy requirement, based on escalating Ontario-specific values from a previous study independently conducted for a collection of entities including the IESO.
- Sizing of the storage solution was based on meeting the peak capacity and peak energy requirements for the local reliability need, such that the reservoir size is capable of using existing gas resources to sufficiently charge to meet the hours of unserved energy.
- Sizing of the storage option for the purposes of this analysis was conducted assuming perfect foresight, i.e. demand is predictable and so the facility knows exactly when and how much energy is needed and charges ahead of time, sometimes requiring multiple days to charge, in order to supply that need.

- Resources were assumed to be sited at the preferred location, at Lakeshore TS or between Lakeshore TS and Chatham TS, up to the capability of the existing system. Costs to address existing short circuit limitations at Leamington TS and Lakeshore TS which limit the amount of resources that can be added at the preferred location were included in the assessments, as appropriate.
- The reference demand forecast is presented in Section 4.3. Sensitivities to test the impacts of the low and high growth scenarios on the NPV were performed. Once the need in each scenario surpassed the capability of the transmission solutions being evaluated (i.e., 950 MW in the mid-term and 1,100 MW in the long-term), the demand was flat lined for the purposes of the production cost analysis. While NPVs were calculated based on the life of the longest asset (70 years), holding demand at the respective mid-term and long-term values ensures an equal comparison of options to continue to meet the reference scenario load.
- The magnitude of demand growth in this area exceeds the capability of energy efficiency or demand response to cost-effectively reduce the needs, and were therefore not considered as alternatives, but is considered further through ongoing regional planning in the area.
- System capacity value was \$128k/MW-year (2020 CAD) based on an estimate for the cost of the marginal new resource (Net CONE), a new SCGT in southwestern Ontario, with a sensitivity of +/- 25% assessed.
- Production costs were determined based on energy requirements to serve the local reliability need, assuming fixed operating and maintenance costs of \$22-32/kW-year for gas-fired resources and \$14/kW-year for storage, variable operating and maintenance costs of \$3-6/MWh and a heat rate of 7-10 MWh/MMBtu for gas-fired resources.
- Carbon pricing assumptions are based on the proposed federal carbon price increase, from \$50/tonne in 2022 to \$170/tonne by 2030, and applied to a facility's production. Existing generators emitting above their carbon allowance pay the federal carbon price on those emissions. A sensitivity of up to +225% was assessed on the carbon costs for the gas-fired generation option to assess the risk of potential policy changes to the current carbon pricing strategy.
- The cost of constraining the generation alternative to produce energy for a local need versus the cost of system supply was considered.
- Reduction of the system cost of an ancillary service, such as operating reserve (OR), was also considered.
- A resource's potential contribution to system needs, outside of serving the local needs, was assessed based on the deliverability of that resource's remaining capacity to province's load center. A sensitivity of +/- 16% was assessed on the system benefit of a resource.