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Susan Frank

Vice President and Chief Regulatory Officer
Regulatory Affairs



BY COURIER

March 28, 2012

Ms. Kirsten Walli
Secretary
Ontario Energy Board
Suite 2700, 2300 Yonge Street
P.O. Box 2319
Toronto, ON.
M4P 1E4

Dear Ms. Walli:

EB-2012-0082 – Hydro One Networks' Section 92 – Lambton to Longwood Transmission Upgrade Project– Application and Evidence

I am attaching two (2) copies of the Hydro One Networks' Application and Prefiled Evidence in support of an Application pursuant to Section 92 of the Ontario Energy Board Act for an Order or Orders granting leave to upgrade 70 km of transmission line facilities in the west of London area.

An electronic copy of the complete application has been filed using the Board's Regulatory Electronic Submission System (RESS) and the proof of successful submission slip is attached.

Hydro One Networks' contacts for service of documents associated with this Application are listed in Exhibit A, Tab 1, Schedule 1.

Sincerely,

ORIGINAL SIGNED BY SUSAN FRANK

Susan Frank

Attach.

c. Nancy Marconi (electronic only)

ONTARIO ENERGY BOARD

In the matter of the *Ontario Energy Board Act, 1998*;

And in the matter of an Application by Hydro One Networks Inc. for an Order or Orders granting leave to construct new transmission line facilities (“Lambton to Longwood Transmission Upgrade Project”) in southwestern Ontario, west of London, Ontario.

APPLICATION

1. The Applicant is Hydro One Networks Inc. (“**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 Ontario Energy Board (“**the Board**”) pursuant to Section 92 of the *Ontario Energy Board Act, 1998* (“**the Act**”) for an Order or Orders granting leave to upgrade approximately 70 kilometers of transmission line facilities in the west of London area. These facilities are required to:
 - a) increase transfer capability and enable the connection of additional renewable generation to the transmission grid to contribute to meeting the Long Term Energy Plan’s target of 10,700 MW of installed non-hydroelectric renewable capacity by 2018;
 - b) enhance the deliverability of system resources to enable the area’s transmission system to transfer generation not consumed locally; and

1 c) ensure that Hydro One is compliant with the amendments to its transmission
2 licence conditions approved by the Lieutenant Governor in Council on
3 February 9, 2011, and issued under Section 28.6 of the Act on February 28,
4 2011.

5
6 3. The proposed transmission line facilities between Lambton TS and Longwood TS in
7 southwestern Ontario will include the following upgrade work on Hydro One's
8 existing transmission facilities:

9
10 a) upgrade approximately 70 km of existing 230 kV double circuit transmission
11 line between Lambton TS and Macksville Junction with a new higher capacity
12 conductor; and

13 b) replace existing insulators and associated hardware.

14
15 The proposed in-service date is December 2014.

16
17 4. The project will use the existing towers on the transmission corridor from Lambton
18 TS to Longwood TS which consists of provincially-owned properties, easement rights
19 on private properties and municipal road corridors. No new permanent land rights are
20 required; but some temporary access rights are required to construct the proposed
21 facilities. A map showing the general location of the proposed facilities is provided in
22 **Exhibit B, Tab 2, Schedule 2.**

23
24 5. The Independent Electricity System Operator ("IESO") has carried out a System
25 Impact Assessment ("SIA") of the proposed facilities and concluded that the
26 installation of the new conductors is not expected to have a material adverse impact
27 on the IESO-controlled grid. The SIA is filed as **Exhibit B, Tab 6, Schedule 2.**

- 1 6. Hydro One has completed a Customer Impact Assessment (“**CIA**”) in accordance
2 with its customer connection procedures, and the results confirm there are no adverse
3 impacts on transmission customers as a result of this project. The CIA is filed as
4 **Exhibit B, Tab 6, Schedule 3**.
5
- 6 7. The total cost of the project is \$40 million. The details are provided in **Exhibit B,**
7 **Tab 4, Schedule 2**. The project economics, as filed in **Exhibit B, Tab 4, Schedule 3,**
8 estimate that the project will result in a 1 cent increase in the network pool rate and
9 have a minimal impact (0.01%) on the overall average Ontario consumer’s electricity
10 bill.
11
- 12 8. The Lambton to Longwood Transmission Upgrade Project is expected to have no
13 significant environmental impacts, and it has accordingly been screened out under the
14 *Class Environmental Assessment for Minor Transmission Facilities* (“**Class EA**”)
15 approved by the Ministry of the Environment (“**MOE**”). The Class EA screening
16 process is described in **Exhibit B, Tab 6, Schedule 1**.
17
- 18 9. Hydro One has consulted stakeholders in the Lambton to Longwood area to identify
19 potential concerns associated with the construction of the proposed transmission
20 facilities. The feedback received from stakeholders was considered and incorporated
21 into the preparation of this Application. The stakeholder consultation process is
22 described in **Exhibit B, Tab 6, Schedule 4**. Hydro One will continue to
23 communicate with stakeholders and the local community to ensure that potential
24 concerns during the construction and commissioning stages of the proposed facilities
25 are addressed.
26
- 27 10. Hydro One is undertaking the procedural aspects of consultation with potentially-
28 affected First Nations and Métis communities on behalf of the Crown, however, the

Ministry of Energy stated that it was not aware of any Métis communities in the area. Hydro One has therefore contacted the First Nations communities identified by the Crown to provide notification of the project and to extend an offer to meet to discuss the project with Hydro One. Details on the First Nation and Métis consultations process is filed in **Exhibit B, Tab 6, Schedule 5**.

11. This Application is supported by written evidence which includes details of the Applicant's proposal for the transmission upgrade work. The written evidence is prefiled as attached and may be amended from time to time prior to the Board's final decision on this Application. Further, the Applicant may seek meetings with Board Staff and intervenors in an attempt to identify and reach agreements to settle any issues arising out of this Application.

12. Hydro One requests a written hearing for this proceeding.

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

a) The Applicant:

Mr. Pasquale Catalano
Regulatory Coordinator
Hydro One Networks Inc.

Mailing Address: 8th Floor, South Tower
483 Bay Street
Toronto, Ontario
M5G 2P5

1 Telephone: (416) 345-5405

2 Fax: (416) 345-5866

3 Electronic access: regulatory@HydroOne.com

4

5 b) The Applicant's counsel:

6

7 Michael Engelberg

8 Assistant General Counsel

9 Hydro One Networks Inc.

10

11 Mailing Address: 15th Floor, North Tower

12 483 Bay Street

13 Toronto, Ontario

14 M5G 2P5

15 Telephone: (416) 345-6305

16 Fax: (416) 345-6972

17 Electronic access: mengelberg@HydroOne.com

EXHIBIT LIST

Exh Tab Schedule Contents

A **Administration**

1	1	Application
2	1	Exhibit List
3	1	Summary of Prefiled Evidence
4	1	Procedural Orders/Affidavits/Correspondence
5	1	Notices of Motion

B **Applicant's Prefiled Evidence**

1	1	Project Location and Existing Transmission System
	2	Map of Existing Facilities
	3	Schematic Diagram of Existing Facilities
	4	Need for the Proposed Facilities Attachment 1: December 22, 2010 Letter from Minister of Energy to Hydro One Chair Attachment 2: February 17, 2011 Letter from Minister of Energy to OEB Chair Attachment 3: June 30, 2011 Letter from OPA to Hydro One
	5	OPA Evidence on Need and Alternatives
2	1	Description of the Proposed Facilities

<u>Exh</u>	<u>Tab</u>	<u>Schedule</u>	<u>Contents</u>
		2	Map of Proposed Facilities
		3	Schematic Diagram of Proposed Facilities
		4	Cross Section of the Tower Types - Existing and Proposed
3		1	Alternatives Considered
4		1	Project Costs, Economics, and Other Public Interest Considerations
		2	Project Costs
		3	Project Economics
		4	Other Public Interest Considerations
5		1	Construction and Project Administration
		2	Table Showing Construction and In-Service Schedule
6		1	Other Matters / Agreements / Approvals
		2	IESO's System Impact Assessment
		3	Customer Impact Assessment
		4	Stakeholder and Community Consultation
			Attachments 1 -3: Letters to Municipalities, MPP, Government Ministries and Agencies
			Attachment 4: Health Canada Fact Sheet on EMF
			Attachment 5: Newspaper Notification of Project
			Attachment 6: Post Card to Property Owners

<u>Exh</u>	<u>Tab</u>	<u>Schedule</u>	<u>Contents</u>
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			Attachments 7 & 8: Display Panel and Comment Form at PIC
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5			First Nations & Métis Engagement
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			Attachment 1: September 1, 2011 Letter to First Nation Communities
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			Attachment 2: January 4, 2012 Letter to First Nation Communities
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6			Land Matters
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			Attachment 1: Lambton TS to Macksville Jct. Corridor Map
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			Attachment 2: Off Corridor Temporary Access and Access Road
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			Attachment 3: Temporary Construction License Agreement
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			Attachment 4: Damage Claim Agreement and Release
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SUMMARY OF PREFILED EVIDENCE

Hydro One Networks Inc. (“**Hydro One**”) is applying to the Board for an order granting leave to upgrade transmission line facilities in the west of London Area pursuant to Section 92 of the *Ontario Energy Board Act, 1998* (“**the Act**”).

The proposed facilities, to be constructed, owned and operated by Hydro One are as described in **Exhibit B, Tab 2, Schedule 1** (Description of the Proposed Facilities).

The planned in-service date for the proposed line and station facilities is December 2014. A map showing the location of the proposed transmission facilities is provided in **Exhibit B, Tab 2, Schedule 2**.

The need for the project is driven by the Government’s policy objectives of incorporating 10,700 MW of non-hydroelectric renewable generation resources by 2018, including fulfilling the remaining phases of the Ontario Government’s agreement with the Korean Consortium. In addition, the amendments made to Hydro One’s transmission licence in 2011 require Hydro One to proceed with developing and seeking approval, in accordance with the scope and timing recommended by the Ontario Power Authority (“**the OPA**”), to upgrade one or more existing transmission lines west of the City of London. The OPA has determined that in order to support the Government’s above-noted policy objectives, the proposed project is required, is cost-effective and can be in service to meet the timing requirements set forth in the Long Term Energy Plan (“**LTEP**”). Further evidence on need is found in **Exhibit B, Tab 1, Schedule 4** and **Exhibit B, Tab 1, Schedule 5**.

The Independent Electricity System Operator (“**IESO**”) has granted approval for this project in an expedited System Impact Assessment report filed as **Exhibit B, Tab 6, Schedule 2**.

1
2 Hydro One has completed a Customer Impact Assessment (“**CIA**”) in accordance with its
3 customer connection procedures, and the results confirm there are no adverse impacts on
4 transmission customers as a result of this project. The CIA document is filed as **Exhibit**
5 **B, Tab 6, Schedule 3**.

6
7 The total cost of the project is estimated to be \$40 million. The proposed new
8 transmission facilities will be included in the network pool revenue requirement. Details
9 of the project economics are filed in **Exhibit B, Tab 4, Schedule 3**.

10
11 The design of the proposed facilities is in accordance with good utility practice and meets
12 the requirements of the *Transmission System Code* for licensed transmitters in Ontario.

13
14 The proposed project will have minimal environmental impact and has been screened out
15 under the *Class Environmental Assessment for Minor Transmission Facilities* in
16 accordance with standard process. The screen-out letter was filed with the Ministry of
17 the Environment on March 9, 2012. Hydro One will follow the Ministry’s
18 recommendations on environmental issues. Details on the environmental assessment
19 process are filed in **Exhibit B, Tab 6, Schedule 1**.

20
21 Hydro One has consulted with property owners and stakeholders in the west of London
22 area, including the Counties of Lambton and Middlesex and the municipalities of St.
23 Clair, Enniskillen, Brooke-Alvinston and Adelaide-Metcalf, Southwest Middlesex and
24 Strathroy-Caradoc. The purpose of the consultation was to identify potential concerns
25 associated with the construction activities of the proposed transmission facilities. The
26 feedback received from stakeholders was considered and incorporated into the
27 preparation of this Application. Details regarding the consultation process are filed as
28 **Exhibit B, Tab 6, Schedule 4**. Hydro One will continue to work with the local

1 community and landowners and will ensure that potential concerns identified as part of
2 the Environmental Approvals process and during the construction phase are addressed.

3
4 Hydro One is undertaking consultation with First Nations communities on behalf of the
5 Crown. The Ministry of Energy identified eight First Nations communities but stated that
6 it was not aware of any Métis communities in the area. Hydro One has therefore
7 contacted each of the First Nations communities identified and has taken steps to follow
8 up with them on any concerns that they may have in reference to this project. Further
9 information on Hydro One's consultation process for First Nations and Métis is filed in
10 **Exhibit B, Tab 6, Schedule 5.**

11
12 A detailed construction schedule is filed as **Exhibit B, Tab 5, Schedule 2.** This schedule
13 assumes Board approval of the leave to construct application under Section 92 of the Act
14 by August 2012. This should enable Hydro One to meet the anticipated December 2014
15 in-service date.

16
17 Hydro One requests a written hearing for this proceeding and submits that the evidence
18 supports granting the requested Order based on the following grounds:

- 19
- 20 • The need to improve the transfer capability in the West of London area by
21 replacing approximately 70 km of existing double-circuit 230 kV transmission
22 line between Lambton TS and Longwood TS has been established;
 - 23 • The project will help meet the Government's policy objectives of incorporating
24 10,700 MW of non-hydroelectric renewable generation resources by 2018;
 - 25 • There are no adverse system or customer impacts from the project;
 - 26 • The project will be fully compliant with the relevant codes, rules and licences;
 - 27 • There will be a minor (0.01%) customer total bill impact as a result of the new
28 line facilities.

1 In order for the proposed project to proceed, it must be considered to be in the “public
2 interest”. Subsection 96(2) of the Act specifies that, for section 92 purposes, “the Board
3 shall only consider the interests of consumers with respect to prices and the reliability and
4 quality of electricity service” and “where applicable and in a manner consistent with the
5 policies of the Government of Ontario, the promotion of the use of renewable energy
6 sources.”

7
8 Hydro One submits that the proposed facilities are in the public interest because:
9

- 10 • The existing capability of the transmission system west of London is not
11 sufficient to transmit the additional renewable generation that is forecast in the
12 future;
- 13 • The Lambton to Longwood Transmission Upgrade Project is a cost-effective
14 solution to achieving this objective;
- 15 • The need for the west of London upgrade was referenced in the Government’s
16 Long Term Energy Plan and Supply Mix Directive and as such is consistent with
17 Government policy; and
- 18 • There will be no material impact on the price of electricity.
19

20 For the reasons provided above, Hydro One respectfully submits that the proposed
21 transmission line facilities should be approved under section 92 of the Act. Accordingly,
22 Hydro One requests an Order from the Board pursuant to section 92 of the Act granting
23 leave to construct the proposed transmission line facilities.

1

2

PROCEDURAL ORDERS / AFFIDAVITS / CORRESPONDENCE

3

1

2

NOTICES OF MOTION

3

PROJECT LOCATION AND EXISTING TRANSMISSION SYSTEM

1.0 PROJECT LOCATION

The transmission project described in **Exhibit B, Tab 2, Schedule 1**, is located in southwestern Ontario. The transmission elements of this project extend from Lambton Transformer Station located south of the City of Sarnia in Lambton County to west of Longwood Transformer Station (“TS”) in Middlesex County. The L24L/L26L line passes through two counties (Lambton and Middlesex) and six municipalities (St. Clair, Enniskillen, Brooke-Alvinston, Southwest Middlesex, Adelaide-Metcalf and Strathroy-Caradoc) (see Figure 1 below).

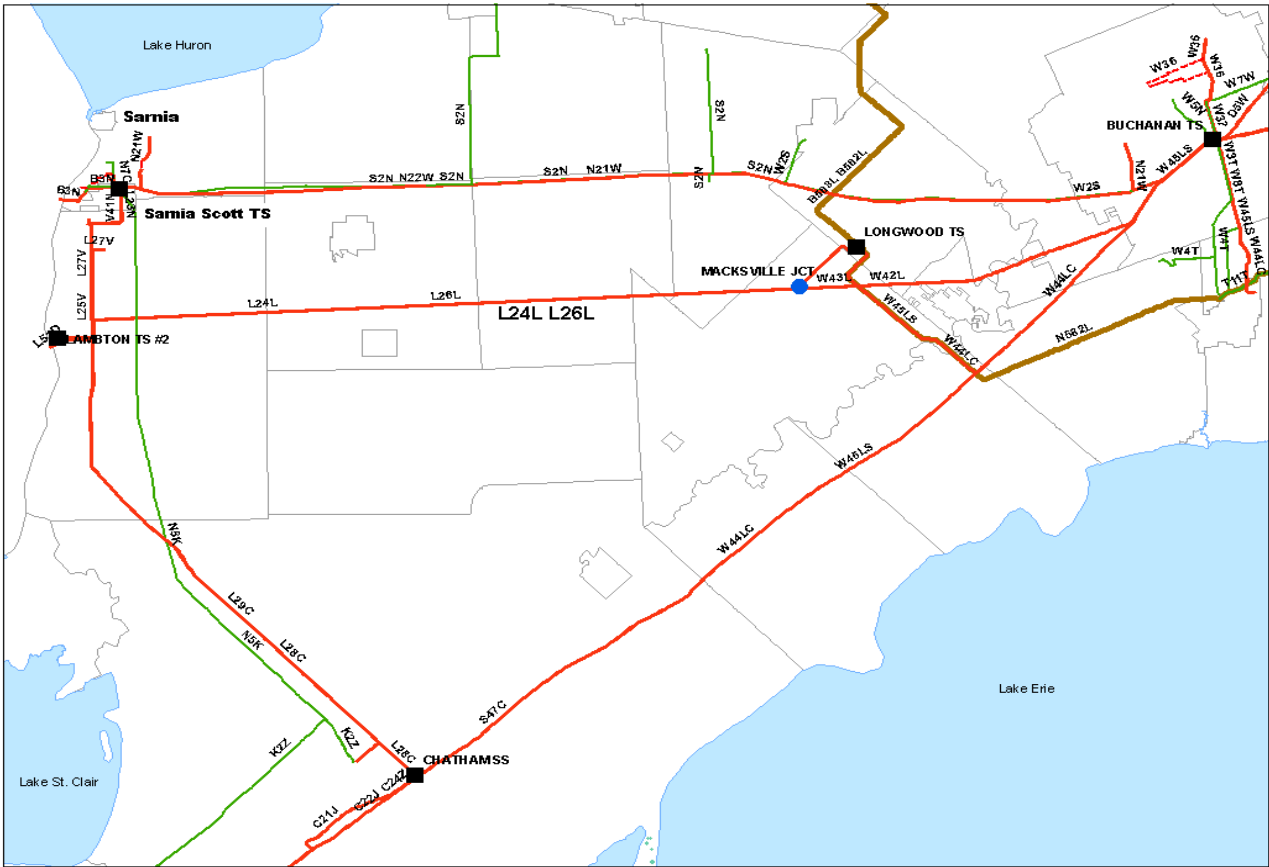


Figure 1

Source: Hydro One TLGIS

1 A geographical map of the existing transmission facilities is provided in **Exhibit B, Tab**
2 **1, Schedule 2**. The schematic electrical diagram of the Lambton to Longwood area
3 facilities is provided in **Exhibit B, Tab 1, Schedule 3**.

4
5 **2.0 EXISTING TRANSMISSION FACILITIES IN SOUTHWESTERN**
6 **ONTARIO**

7
8 The generation capacity in southwestern Ontario is mainly a mix of nuclear, gas-fired,
9 coal-fired and renewable sources. The larger generating stations are Bruce GS,
10 Nanticoke GS, Lambton GS and Beck GS. The area also includes major load centers
11 such as Hamilton, London, Windsor and Kitchener-Waterloo-Cambridge-Guelph
12 (“**KWCG**”).

13
14 The transmission assets in southwestern Ontario connect the major generation and load
15 centers in the region to the interconnected grid. Almost half of the generating capacity in
16 the region supplies the energy needs of other parts of the Province. The transmission
17 system in this area is designed and placed to support this concentration of generation
18 capacity, respecting physical constraints such as voltage stability and thermal limits. This
19 is a tightly interconnected system, where the availability and performance of each major
20 element (especially the 230 kV facilities) can affect the integrity of the entire network
21 and neighboring jurisdictions.

22
23 As per the Long Term Energy Plan (“**LTEP**”), there will be many changes and additions
24 to the generation resources of southwestern Ontario. Nuclear refurbishment at Bruce GS
25 will increase the nuclear capacity in the area to 7,100 MW. Approximately 3,400 MW of
26 the total existing gas-fired generation in Ontario is located in southwestern Ontario.
27 About 1,000 MW of existing coal-fired generation capacity remains in service at
28 Lambton GS today and could be converted to gas-fired in the future. Currently there is

1 1,400 MW of existing wind and 300 MW of existing solar and bioenergy generation
2 projects.

3
4 **2.1. Transmission Resources in Lambton to Longwood Area**
5

6 The existing transmission capacity of the 230 kV circuits, between Sarnia-Scott TS,
7 Lambton TS and Chatham SS to Longwood TS and Buchanan TS, is approximately
8 1,840 MW. These transmission circuits comprise the Flow East Toward London
9 (“FETL”)¹ interface. The existing non-renewable and renewable generation in this area
10 is incorporated into the grid via 230 kV transmission lines as follows:

- 11 • The 230 kV Chatham SS x Spence SS double-circuit tower line, S47C and
12 W44LC;
- 13 • The 230 kV Spence SS x Longwood TS and Buchanan TS double-circuit tower
14 line, W44LC and W45LS;
- 15 • The 230 kV Longwood TS x Buchanan TS double-circuit tower line, W42L and
16 W43L;
- 17 • The 230 kV Lambton TS x Longwood TS double-circuit tower line, L24L and
18 L26L;
- 19 • The 230 kV Chatham SS x Lambton TS double-circuit tower line, L28C and
20 L29C;
- 21 • The 230 kV Sarnia Scott TS x Buchanan TS double-circuit tower line, N21W and
22 N22W;
- 23 • The 230 kV Lambton TS x Nova SS double-circuit tower line, L23N and L25V;
- 24 • The 230 kV Lambton TS x Nova SS single-circuit tower line, L27V;
- 25 • The 230 kV Nova SS x Sarnia Scott TS double-circuit tower line, L23N and
26 V41N; and
- 27 • The 230 kV Nova SS x Sarnia Scott TS single-circuit tower line, V43N.

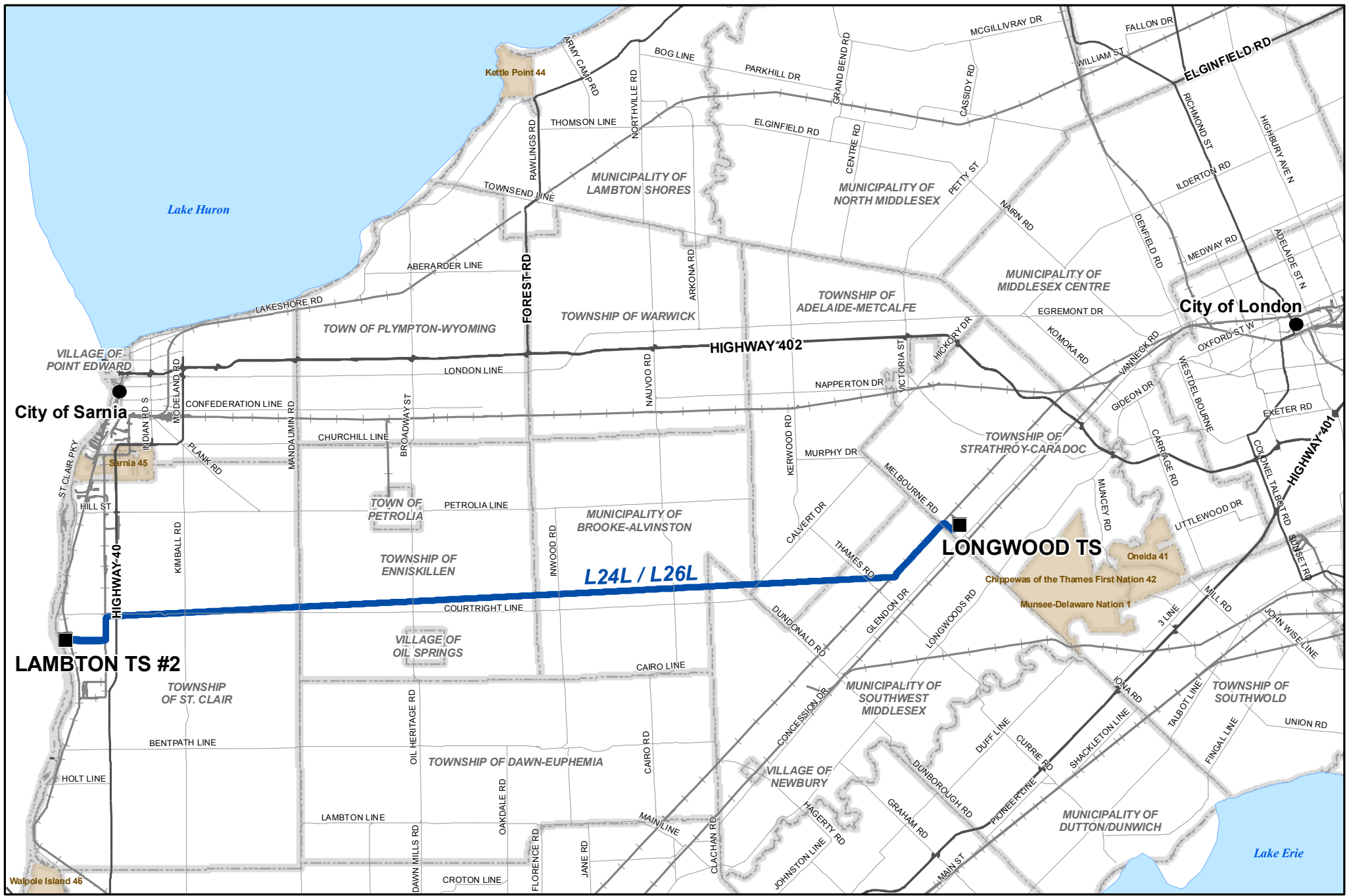
¹ FETL is further described in Exhibit B, Tab 1, Schedule 5, Section 2.4.1, page 6

1 Major 230 kV facilities in southwestern Ontario include transformer and switching
2 stations at Chatham SS, Longwood TS, Lambton TS, Buchanan TS and Sarnia Scott TS.
3 See Figure 1 in this exhibit for a detailed map of the existing transmission facilities.
4
5 These circuits have about 1,840 MW of transmission capacity to deliver the output from
6 the existing generation. The maximum transmission capacity is based on applicable
7 reliability standards outlined by the North American Reliability Council (“**NERC**”), the
8 Northeastern Power Coordinating Council (“**NPCC**”), and Ontario’s Independent
9 Electricity System Operator (“**IESO**”).

1

2

Map of Existing Facilities



Date: July 26, 2011
Produced By: Inergi LP, GIS Services
Map10-13_WestOfLondon_ProjectStudyArea_Lambton_Longwood

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NOT TO BE REPRODUCED OR REDISTRIBUTED CONFIDENTIAL TO HYDRO ONE NETWORKS INC.



— 230kV Existing Transmission Line

— Municipal Boundary

— Lakes

— First Nations Reserves

— Major Highways

— Roads

— Railway

■ Transformer Stations

● Cities

Lambton TS to Longwood TS Reconductoring

MAP OF EXISTING FACILITIES

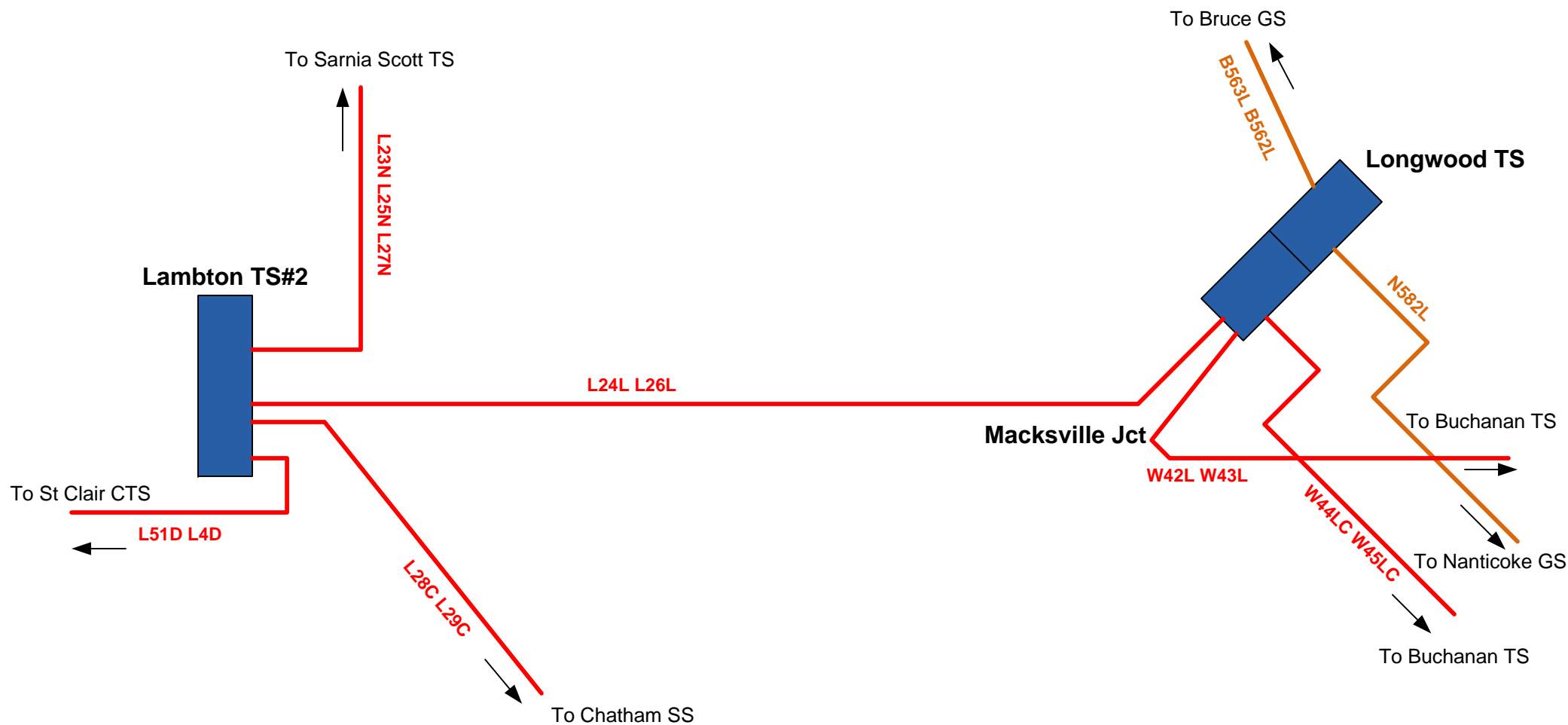


0 5 10 km

1

2

Schematic Diagram of Existing Facilities



SCHEMATIC DIAGRAM OF EXISTING FACILITIES

NEED FOR THE PROPOSED FACILITIES

1.0 BACKGROUND

In May 2009, the Government of Ontario enacted the *Green Energy and Green Economy Act, 2009*, focusing on promoting new renewable resources in Ontario and providing the necessary transmission and distribution infrastructure to enable these resources to connect and deliver their output to consumers.

This was followed by the Ministry of Energy's release of the Long Term Energy Plan ("LTEP") on November 23, 2010. The LTEP identified five priority transmission projects, which included reconductoring circuits West of London with an in-service date in 2014.

On December 22, 2010 the Chair of Hydro One received a letter from the Minister of Energy asking Hydro One to immediately proceed with the necessary planning and development work to advance three of the priority projects. These projects are: devices to enhance transfer capability in Southwestern Ontario such as series or static var compensation; upgrading existing line(s) west of London; and a new transmission line west of London (see **Exhibit B, Tab 1, Schedule 4, Attachment 1**).

On February 17, 2011 the Minister of Energy directed the Ontario Energy Board ("the Board") to amend the transmission licence conditions of Hydro One to include a requirement that Hydro One immediately develop and seek approvals for the three above-noted projects (see **Exhibit B, Tab 1, Schedule 4, Attachment 2**) and work co-operatively with the Ontario Power Authority ("the OPA") to establish the project's scope and timing. The scope and timing were to accord with the OPA's recommendations

1 in that regard. These licence amendments were made by the Board on February 28, 2011
2 and corrected on March 1, 2011.

3
4 In a letter to Hydro One dated June 30, 2011, the OPA provided its recommendation on
5 the scope and timing of the west of London line upgrade project. The OPA
6 recommended that Hydro One reconductor the double circuit lines from Longwood TS to
7 Lambton TS (L24L and L26L). The upgrade will enable the connection of approximately
8 500 MW of additional renewable generation in the West of London area and increase
9 regional network transfer capability. The upgrade is required to be in service by
10 December 31, 2014 (see **Exhibit B, Tab 1, Schedule 4, Attachment 3**).

11 12 **2.0 NEED**

13
14 In addition to the LTEP, the Minister's Directive to the Board and the subsequent
15 amendments to Hydro One's transmission licence, as well as the OPA's recommendation
16 letter of June 30, 2011, all of which provided a preliminary indication of the need for the
17 project, the OPA has provided additional and more extensive evidence regarding need
18 and alternatives. This evidence is filed at **Exhibit B, Tab 1, Schedule 5**.

19
20 Hydro One agrees with the OPA's evidence.

1
2 **Project Need Attachments**
3

4
5 The following letters are attached:

- 6 • Attachment 1 – December 22, 2010 Letter from Minister of Energy to Hydro One
7 Chair
8 • Attachment 2 – February 17, 2011 Letter from Minister of Energy to OEB Chair
9 • Attachment 3 – June 30, 2011 Letter from OPA to Hydro One

Ministry of Energy

Office of the Minister

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Ministère de l'Énergie

Bureau du ministre

4^e étage, édifice Hearst
900, rue Bay
Toronto ON M7A 2E1
Tél. : 416 327-6758
Téléc. : 416 327-6754



DEC 22 2010

Mr. James Arnett
Chair, Hydro One Inc.
483 Bay Street
Toronto, ON M5G 2P5

Dear Mr. Arnett: *Jim*

I write to you to in furtherance of the government's Long-Term Energy Plan for the province, and to update the letter sent to you on September 21, 2009 by my predecessor regarding the immediate planning, development and implementation of a series of transmission projects in anticipation of the province's Feed-in-Tariff (FIT) program.

Transmission Priorities in Southwestern Ontario

The Long-Term Energy Plan identifies three key priority projects in Southwestern Ontario that further the goals of the *Green Energy Act, 2009* and ensure value for Ontario's ratepayers. These are projects where the Ontario Power Authority (OPA) has recommended development work should be accelerated given their immediate and demonstrated importance to the cost-effective connection of renewable energy in the province, and the lead-times associated with the projects. They are also projects that are central to Hydro One's operation of the transmission system. These include:

- Southwestern Ontario Series Compensation
- Reconductoring Sarnia to London circuits
- New transmission line West of London

The first two projects are proposed with the advice of the OPA because they will enable significant amounts of new renewable generation, both economically and sooner than it takes for new lines to be built. The new transmission line West of London ensures the long-term continuity of the province's Feed-in-Tariff program, particularly in an area of substantial cost-effective renewable generation potential.

I would ask that Hydro One immediately proceed with the necessary planning and development work to advance these three projects in an expedited timeframe, in continued consultation with the OPA and the Independent Electricity System Operator (IESO).

.../cont'd

MicroFIT and Small-Scale FIT Projects

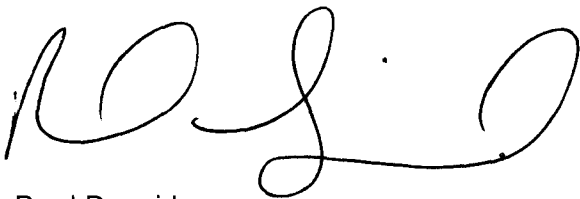
The Long-Term Energy Plan highlights that Ontarians' tremendous response to the microFIT and small-scale FIT (capacity allocation exempt) programs means that applications are outpacing needed upgrades to the grid. In order to begin addressing this situation I ask that Hydro One immediately develop a plan to prioritize cost-effective upgrades to its systems that will safely and reliably accommodate additional renewable energy from these types of small generation projects, with a focus on the areas where system limits are affecting existing applicants. This plan should be implemented expeditiously, including seeking the necessary approvals as soon as practical, to minimize the potential for unnecessary delays for project proponents.

Also in light of the above situation for microFIT and capacity allocation exempt projects, the government recognizes the impact transmission system constraints can have on downstream Local Distribution Companies (LDCs). I would ask Hydro One to communicate proactively with downstream LDCs affected by transmission limitations to ensure that comprehensive and accurate responses are available to prospective generation proponents seeking to connect to the distribution system.

I am looking forward to Hydro One's leadership in building critical transmission infrastructure for the province and ensuring the continued success of the FIT program. I trust that accelerated progress will be made on each of these projects in particular, given their importance to the Long-Term Energy Plan.

Thank you for your attention to this matter.

Sincerely,

A handwritten signature in black ink, appearing to read 'Brad Duguid', with a stylized, flowing script.

Brad Duguid
Minister

ATTACHMENT 2

Ministry of Energy

Office of the Minister

4th Floor, Hearst Block
900 Bay Street
Toronto ON M7A 2E1
Tel.: 416-327-6758
Fax: 416-327-6754

Ministère de l'Énergie

Bureau du ministre

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900, rue Bay
Toronto ON M7A 2E1
Tél. : 416 327-6758
Téléc. : 416 327-6754



FEB 17 2011

MC-2011-694

Ms Cynthia Chaplin
Chair
Ontario Energy Board
PO Box 2319
2300 Yonge Street
Toronto ON M4P 1E4

Dear Ms Chaplin:

Enclosed is a copy of a Minister's Directive issued under Section 28.6 of the *Ontario Energy Board Act, 1998* approved by the Lieutenant Governor in Council on February 9th, 2011. The Directive requires the Board to amend Hydro One's transmission licence conditions, in accordance with the terms of the Directive, with the requirement that Hydro One immediately proceed with three transmission projects in Southwestern Ontario as well as transmission station work to facilitate the connection of small scale renewable generation facilities.

I would appreciate the Board proceeding to take the appropriate steps to implement the attached Directive.

Sincerely,

A handwritten signature in black ink, appearing to read 'Brad Duguid'.

Brad Duguid
Minister



Ontario
Executive Council
Conseil des ministres

Order in Council Décret

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

Sur la recommandation du soussigné, le lieutenant-gouverneur, sur l'avis et avec le consentement du Conseil des ministres, décrète ce qui suit:

WHEREAS the Ontario Government's Long-Term Energy Plan identified five priority transmission projects recommended by the Ontario Power Authority (OPA) to proceed for accelerated development in order to accommodate new renewable electricity generation, support system reliability and enable new load growth;

AND WHEREAS the OPA recommends three of these projects for accelerated development in Southwestern Ontario given their immediate and demonstrated importance to the cost-effective connection of renewable energy to the electricity grid;

AND WHEREAS the Long-Term Energy Plan outlines Ontario's vision of continuing to move towards a safe, modern and reliable electricity system with a balanced, clean and cost-effective supply mix delivered through a prudently expanded and maintained transmission and distribution network;

AND WHEREAS the Long-Term Energy Plan commits Hydro One and others to facilitate the connection of small-scale renewable energy generation facilities by working with existing micro-Feed-in Tariff (microFIT) applicants and Feed-in Tariff (FIT) applicants who are considered to be Capacity Allocation Exempt, in areas where there are technical challenges;

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 of the *Ontario Energy Board Act, 1998*, as amended by the *Green Energy and Green Economy Act, 2009*, relating to the connection of renewable energy generation facilities to a transmitter's transmission system or a distributor's distribution system;

NOW THEREFORE the Directive attached hereto, is approved.

Recommended:

Minister of Energy

Concurred:

Chair of Cabinet

Approved and Ordered:

FEB 09 2011

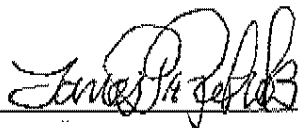
Date

Lieutenant Governor

O.C./Décret 163/2011

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Authority Verified
Compétence vérifiée



Please print name
Nom en lettres
moulées s.v.p.

James P.H. Rehob

Telephone
Téléphone

(416) 325-6676

Recommended by the
Management Board of Cabinet on
Recommandé par le Conseil de
gestion du gouvernement le

Secretary
Secrétaire

O.C./Décret

MINISTER'S DIRECTIVE

TO: THE ONTARIO ENERGY BOARD

I, Brad Duguid, hereby direct the Ontario Energy Board pursuant to section 28.6 of the *Ontario Energy Board Act, 1998* (the "Act") as follows:

1. The Board shall amend the licence conditions of Hydro One Networks Inc.'s ("Hydro One")'s transmission licence to include a requirement that Hydro One proceed to do the following related to the reasonable expansion and upgrading of the transmission system to accommodate the safe connection of renewable energy generation facilities,:

(i) immediately develop and seek approvals for the following projects:

- (a) Upgrading existing line(s) west of London
- (b) A new line west of London;

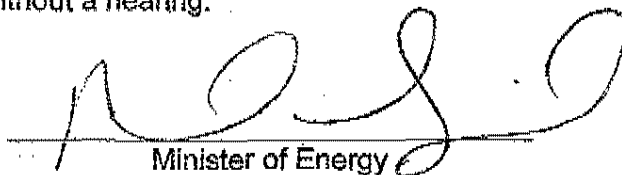
(ii) immediately develop and implement the following projects:

- (a) Device(s) to enhance transfer capability, such as series or static var compensation, or other similar devices, in Southwestern Ontario
- (b) Increase short circuit and/or transformer capacity at up to fifteen (15) of the Licensee's transmission stations, to enable the connection of small-scale (capacity allocation exempt small embedded generation facility or micro-embedded generation facility as defined in the Board's Distribution System Code dated January 1, 2011) renewable energy generation facilities during the forty-eight (48) month period commencing on the date of this Licence Amendment;

(iii) immediately work in co-operation with the Ontario Power Authority (OPA) to establish the scope and timing of the projects identified in (i) and (ii). The scope and timing of the projects shall accord with the recommendation(s) of the OPA.

The OPA's recommendations shall be made in the course of the OPA's transmission planning activities conducted in accordance with its objects, as well as those of the OPA's transmission planning activities which are identified in a Directive to be issued by the Minister of Energy to the OPA in early 2011 pursuant to subsection 25.30(2) of the *Electricity Act, 1998* (the "Supply Mix Directive")

2. The board shall make the amendments to the transmission licence of Hydro One without a hearing.



Minister of Energy



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Toronto, Ontario M5H 1T1
T 416-967-7474
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June 30, 2011

Mr. Mike Penstone
Vice President, Transmission Project Development
Hydro One Inc.
483 Bay Street
Toronto, Ontario M5G 2P5

Dear Mike,

Re: West of London Transmission Upgrade Priority Project

In its Decision and Order dated February 28, 2011, the Ontario Energy Board (OEB) amended the transmission license of Hydro One Networks Inc. (Hydro One) in accordance with the Minister's Directive, dated February 17, 2011, to the Ontario Energy Board. The transmission license amendment includes, among other things, a requirement that Hydro One develop and seek approvals for an upgrade of one or more existing transmission lines west of the City of London. The Directive further stated that Hydro One was to "immediately work in co-operation with the Ontario Power Authority (OPA) to establish the scope and timing on the projects identified...", and that "the scope and timing of the projects shall be in accordance with the recommendations of the OPA".

The purpose of this letter is to provide Hydro One with a recommendation on the scope and timing of the west of London transmission line upgrade project. As stated in the government's Long Term Energy Plan (LTEP), this project is needed to add renewable generation to the grid, in order to meet the LTEP target of 10,700 MW of installed non-hydroelectric renewable capacity by 2018. The Supply Mix Directive received by the OPA on February 17, 2011 states that the OPA shall include this project in the Integrated Power System Plan.

The existing bulk transmission system in the west of London area consists of three double circuit 230 kV transmission lines connecting Sarnia, Lambton and Chatham respectively with the Longwood and Buchanan transformer stations near London. There are also 230 kV circuits connecting Sarnia and Lambton, Lambton and Chatham, and Longwood and Buchanan. This system is shown in Figure 1.

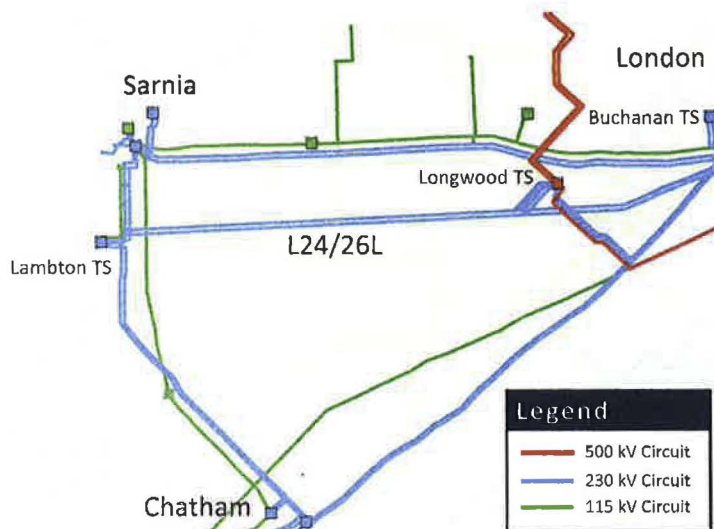


Figure 1 - West of London Transmission System

Power transfer into the London area from the west is limited by the thermal capability of the three transmission lines connecting the London area stations with Sarnia, Lambton and Chatham. Once the new Bruce-Milton transmission line comes into service, these circuits will limit the amount of additional renewable generation that can be connected in the west of London area. Upgrading one of the three circuits will increase transfer capability, and enable the connection of additional renewable generation. The upgrade project will maximize the capability of the system and require less lead time than a new transmission line.

The OPA recommends that Hydro One Networks Inc. proceed with reconductoring approximately 70 km of the two 230 kV circuits (L24/26L) from Lambton to Longwood with a higher ampacity conductor rated approximately 1700-1900 A (LTE capability at 35°C, 4km/hr wind speed). The upgrade project will enable the connection of approximately 300-500 MW of additional renewable generation in the west of London area, depending on such factors as generators' locations and system conditions. The required in-service date for the upgrade is December 2014. The OPA will continue working regularly with Hydro One to review progress and provide any further assistance in order to enable the successful project completion by the required in-service date.

The OPA's studies indicate reconductoring the Lambton to Longwood transmission line will provide the greatest capability to incorporate additional renewable generation west of London. The OPA has also worked closely with Hydro One's staff over the past several months to review the cost and feasibility of reconductoring alternatives. Based on this information, the OPA has identified this reconductoring project as the best alternative to meet the upgrade requirements, including the LTEP target in-service date of 2014. Should the final project specifications determined by Hydro One result in a conductor rating outside the 1700 - 1900 A range, Hydro One will seek the OPA's confirmation of the suitability of the rating for meeting project objectives.

Regards,

Amir Shalaby
Vice President, Power System Planning
Ontario Power Authority

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Ontario Power Authority's Evidence
Lambton to Longwood Transmission Upgrade

Lambton to Longwood Transmission Upgrade

March 2012



ONTARIO
POWER AUTHORITY



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Table of Contents

1	Executive Summary.....	2
2	The Existing System West of London	2
2.1	West of London Transmission System	2
2.2	West of London Demand	3
2.3	West of London Supply Resources.....	4
2.4	Current Capability of the West of London Transmission System	5
2.4.1	Flow East Towards London (FETL) Interface	6
2.4.2	Limitations on Deliverability of System Resources	7
2.4.3	Congestion	8
2.4.4	Summary: Deliverability and Congestion.....	9
3	Rationale for the Lambton to Longwood Transmission Upgrade Project	9
3.1	Future Generation West of London	9
3.1.1	Future Renewable Generation.....	10
3.1.2	Other Future Resources	15
3.2	Assessment of Transmission Options for Increasing Transfer Capability West of London	16
4	Resources Enabled by the Lambton to Longwood Transmission Upgrade Project	17
4.1	Additional Generation Enabled.....	17

1 Executive Summary

The OPA recommends that Hydro One improve the transfer capability in the West of London area by replacing approximately 70 km of existing double-circuit 230 kV transmission line between Lambton TS and Longwood TS with a higher ampacity conductor. The purpose of the project is to satisfy government policy relating to renewable resource incorporation and to increase deliverability of system resources.

The existing transmission system's capability is insufficient to meet the government's policy objectives of incorporating 10,700 MW of non-hydroelectric renewable generation resources by 2018, including fulfilling the remaining phases of the Ontario Government's agreement with the Korean Consortium (scheduled for commercial operation between 2014 and 2016). The proposed Lambton to Longwood transmission upgrade project is a cost effective way of assisting the government in satisfying these objectives and can be completed by 2014, consistent with the target in-service date outlined in the Long Term Energy Plan ("LTEP") and the targeted commercial operation dates of the Korean Consortium agreement.

As well, the proposed upgrades will enhance deliverability of system resources. The West of London transmission area contains a significant amount of existing and contracted electricity supply resources and the potential to develop large amounts of thermal and renewable resources in the area is limited by the current transmission system. For these resources to be efficiently and reliably utilized to supply Ontario's need for energy and capacity, the area's transmission system must be capable of transferring generation not consumed locally. Further, based on deliverability analysis, there is approximately 100 MW of transmission transfer capability remaining for peak capacity, and based on congestion analysis, there is room for approximately 300 MW of additional generation before the OPA's 5% congestion threshold is exceeded.

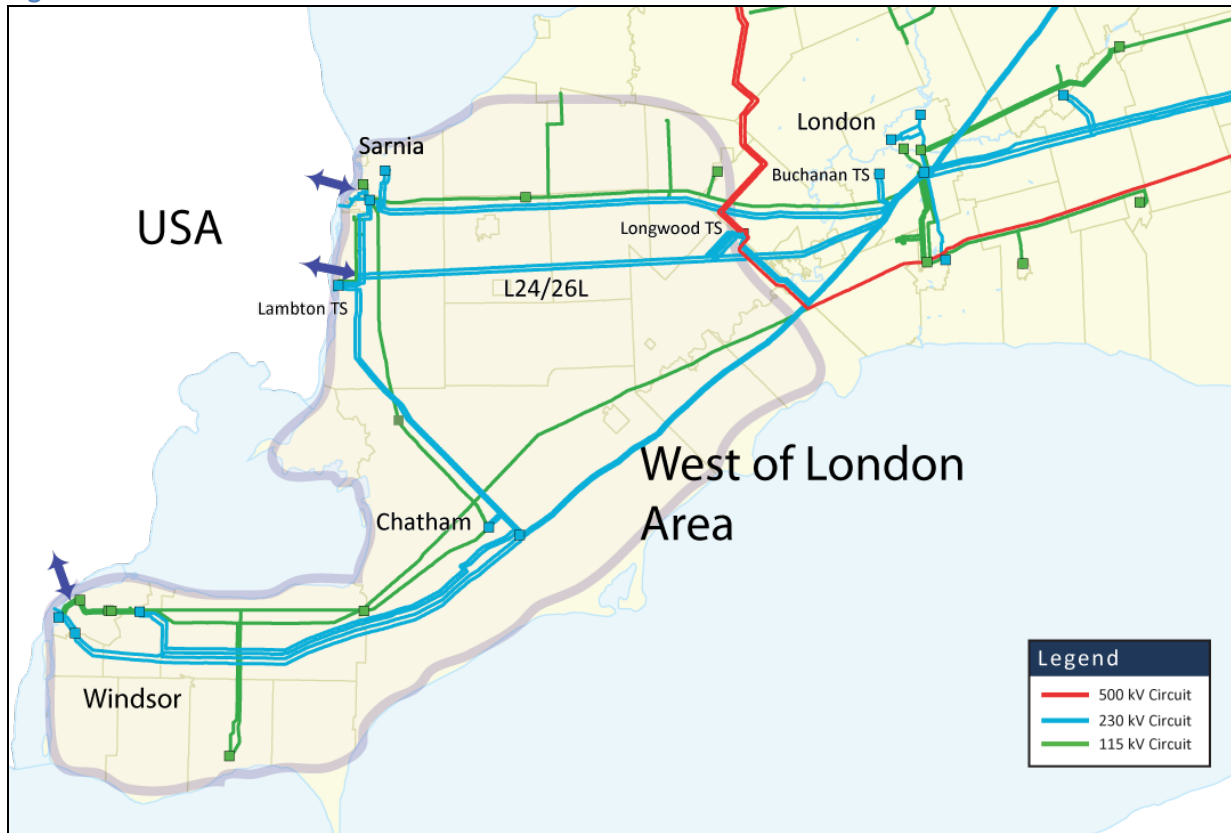
2 The Existing System West of London

The West of London transmission area ("West of London") is an important region in Ontario due to the significant amount of electricity supply resources located in the area. For these resources to be efficiently utilized to supply Ontario's need for energy and capacity, the transmission system must be capable of transferring generation not consumed locally.

2.1 West of London Transmission System

The West of London area includes three 230 kV transmission lines connecting London with Sarnia, Lambton and Chatham respectively (as shown in Figure 1). There are also transmission lines connecting Sarnia with Lambton and Lambton with Chatham. West of London is connected to the rest of the Ontario system via Buchanan and Longwood transformer stations, while the interconnections at Windsor, Sarnia and Lambton form an important link between Ontario and several US markets, including Michigan, New York, PJM and the Midwest.

Figure 1: West of London Area



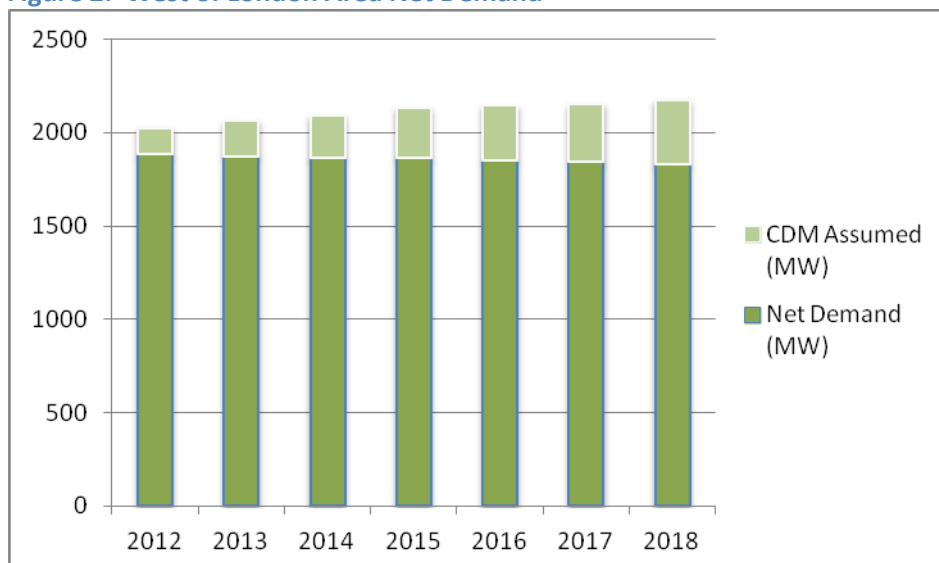
Source: OPA

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2 2.2 West of London Demand

3 The West of London area contains several large load centres, including Windsor, Chatham and Sarnia.
4 As shown in Figure 2, net-demand in the area is expected to remain relatively flat at about 1,850 MW
5 over the next several years.

Figure 2: West of London Area Net Demand



Source: OPA

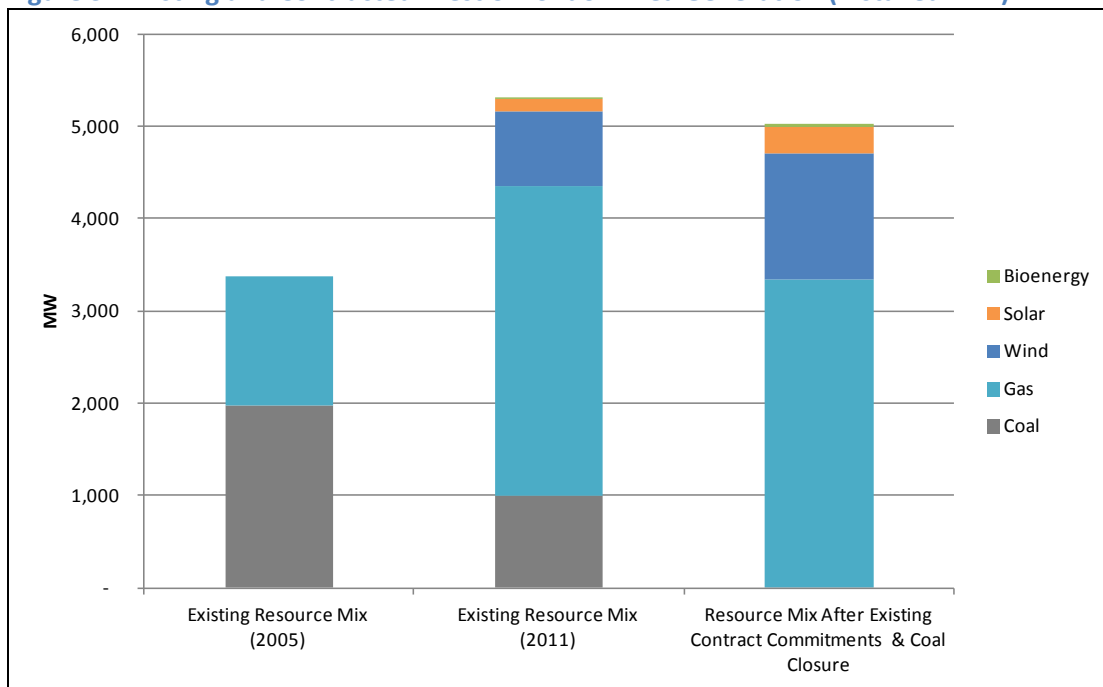
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2.3 West of London Supply Resources

The West of London area has substantial installed generation capacity. Figure 3 provides an overview of the installed resources based on existing and contracted generation.

2

Figure 3: Existing and Contracted West of London Area Generation (Installed MW)



Source: OPA

5

1 *Gas generation* - Ontario has approximately 9,600 MW of existing gas-fired generation. Approximately
2 3,400 MW of this existing capacity is located in the West of London area. Most of this consists of large
3 scale combined-cycle gas turbine capacity; however there are also combined heat and power resources,
4 non-utility generators, as well as industrial on-site generation and load displacement. These gas
5 resources are located in two main clusters, one in the Windsor area, and the other in the Sarnia-
6 Lambton area.

7 *Coal generation* - In addition to this gas-fired generation, the West of London area also has significant
8 coal-fired generation capacity at Lambton Generating Station ("GS"). While the phase-out of this
9 generation began in 2010 with the retirement of Lambton GS units 1 and 2, 1,000 MW of coal-fired
10 generation capacity remains in-service today. This remaining generation is planned to cease operation
11 by the end of 2014, however a decision on whether to convert these units to natural gas operation is
12 expected during 2012. If converted, these units would provide up to approximately 1,000 MW of
13 additional gas-fired generation for peaking purposes.

14 *Renewable generation* - Finally, the West of London area also contains significant renewable generation
15 resources (predominantly wind). To date there are approximately 1,400 MW of existing and contracted
16 wind generation projects in the West of London area, the majority of which are located in the vicinity of
17 Chatham. Approximately 300 MW of solar and bioenergy projects have also been committed. This
18 renewable generation capacity has been contracted through a number of procurement initiatives, such
19 as the Renewable Energy Supply competitive procurements and the province's Feed-in-Tariff ("FIT")
20 program.

21 *Operability* - The operation of the existing West of London generation resources will be impacted by
22 changes to Ontario's power system. Near-term changes in Ontario's supply mix will be dominated by
23 the planned phase out of coal-fired generation by 2014, the addition of significant amounts of
24 renewable generation, followed by a period of nuclear refurbishment. As stated in the Government's
25 Long Term Energy Plan and the Supply Mix Directive ("SMD"), nuclear power will continue to contribute
26 approximately 50% of Ontario's electricity supply. This will require the refurbishment of existing nuclear
27 capacity at Bruce nuclear generating station ("NGS") and Darlington NGS. The refurbishment process will
28 result in a decline in available baseload generation until the refurbished units are returned to service,
29 and an associated increase in the use of gas-fired generation, including the facilities located in the West
30 of London area. Increased gas-fired generation usage will also be required to complement intermittent
31 generation resources added to the Ontario system.

32 **2.4 Current Capability of the West of London Transmission System**

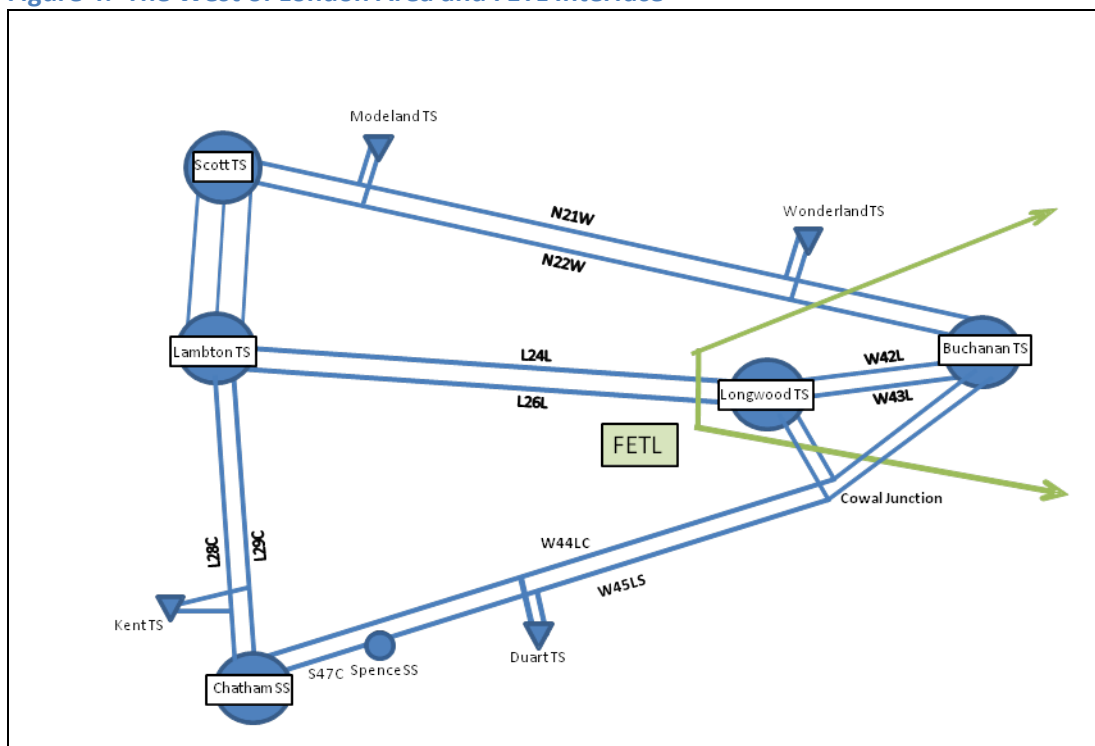
33 The bulk transmission network, consisting of 230 kV and 500 kV facilities in Ontario, is the
34 'superhighway' of the transmission system, linking generation supply with customers. When operated
35 as part of an interconnected network, the ability of individual lines to transfer power depends on the
36 physical relationship between them. As such, the transfer capability between two transmission areas is
37 often lower than the sum of the thermal capacities of the individual transmission lines making up the
38 interface. An interface limit is determined through load flow analysis using recognized contingencies
39 along with load and generation assumptions that reflect typical system conditions.

2.4.1 Flow East Towards London (FETL) Interface

As described in Section 2.1, the West of London area includes six 230 kV circuits carried on three double-circuit transmission lines connected to stations in the London area. The 'Flow East Towards London' ("FETL") interface measures the ability to transfer or export power from the West of London area to the London area, where a strong transmission hub exists to transmit this power to the rest of the Ontario grid. Specifically, the FETL interface consists of the six 230 kV circuits (N21W, N22W, L24L, L26L, W44LC and W45LS) measured on the west side of the main London area transformer stations (Longwood TS and Buchanan TS). Today, power flow between West of London and the rest of the Ontario transmission system is currently restricted by the Bruce system due to the interaction between the two systems, which converge in the London area. By the end of 2012, the new Bruce-Milton transmission line connecting the Bruce NGS with the Milton switching station is expected to come into service and relieve this limitation. After the Bruce-Milton transmission line comes into service, the ability of the large capacity of gas and wind resources in the West of London area to contribute to Ontario's supply needs will remain limited by the transfer capability across the FETL interface. This transfer capability is limited by the thermal ratings on these six circuits. More details about these limitations can be found in Section 3.2.

For the West of London system with Bruce-Milton in-service, the FETL interface has a limit of about 1,840 MW under summer conditions. This is the maximum power transfer permitted with all facilities in-service, so that after the most critical contingency, tested under NPCC criteria, all facilities are within their long-term emergency ratings. At other times of the year the FETL limit is higher due to the cooling effect on the transmission lines provided by lower ambient temperatures.

Figure 4: The West of London Area and FETL Interface



Source: OPA

Limited transfer capability impacts the West of London system in two ways: by restricting the deliverability of firm capacity and by affecting the level of congestion on this transmission path. These two measures of system capability are further described in the following sections.

2.4.2 Limitations on Deliverability of System Resources

When transmission capability is limited it may not be possible to utilize all the installed capacity in a constrained area for meeting system demand.

For system capacity planning, the percentage of installed generation capacity which is expected to be available at the time of the system's peak is determined for each resource. This is referred to as the "capacity contribution" of the resource. The total generation capacity required on the system must be capable of meeting the peak hour requirement, plus an operating reserve margin.

The OPA uses a method for calculating the effective load carrying capability to determine the capacity contribution of wind and solar resources. This method takes into account typical forced outage rates for dispatchable resources, as well as resources' availability during on-peak and off-peak hours. Wind and solar generation have a lower capacity contribution, reflecting their intermittent nature compared to dispatchable gas-fired resources, which are typically expected to have a high capacity contribution.

Based on existing and contracted generation the existing West of London transmission system is nearly fully utilized at peak. There is approximately 100 MW of remaining capability for additional peak

capacity. Thus, without transmission reinforcement West of London, the further addition of supply resources in this area will not contribute to meeting system capacity requirements.

2.4.3 Congestion

Congestion occurs when generation is dispatched inefficiently (i.e. out of economic merit order) due to insufficient transmission capability. Congestion can occur at any time through the year, depending on the demand and generation mix. Some level of congestion indicates that the system is being well utilized, whereas too much congestion adversely impacts reliability and the economic use of contracted resources. For contracting purposes, the OPA has adopted a 5% congestion threshold with no intertie transfers. That is, the OPA will not contract for new resources in an area unless congestion (i.e., out of merit dispatch) will be limited to 5% of the time (438 hours per year). This approach aims to maintain a reasonably uncongested system to ensure the efficient use of contracted resources, while at the same time ensuring the transmission system is well utilized.¹

Wind generation is an intermittent resource, limited by fuel (wind) availability. For wind energy modelling, the OPA uses location specific, simulated hourly wind energy production data based on historic wind monitoring. Based on the wind regime in southwestern Ontario, wind generation is higher during off peak periods and therefore not well correlated with gas generation.

Due to the large amount of installed gas capacity, assumptions about future gas utilization (primarily the annual capacity factor for the combined cycle gas facilities in West of London) are important parameters for congestion studies for West of London. Combined cycle gas plants function as intermediate resources, capable of accommodating changes in Ontario's available capacity which may occur due to nuclear outages or higher than expected demand growth. These are marginal energy resources for which the capacity factor can vary year to year to accommodate medium range planning uncertainties and Ontario's changing supply mix.

Future combined cycle generation use will be determined by broader system conditions, including demand level and the amount of available nuclear baseload generation. The OPA's West of London congestion analysis is based on the year 2018, which according to current refurbishment planning will be typical of the period of low available nuclear capacity between 2018 and 2022. During this period, the province will rely on a higher contribution from dispatchable resources, such as combined cycle gas generation. Other resources in the West of London area, including customer generation, demand response potential, and imports/exports could also have a significant impact on congestion.

¹ The OPA calculates and forecasts congestion for a given year using an 8760 hour duration curve approach. Duration curves of the unconstrained dispatch (with transmission limitations removed) for summer, winter and shoulder periods are generated using a commercially available network simulation tool (UPLAN), based on demand profiles and resource data. The level of congestion on the system is the percentage of time these duration curves exceed the corresponding levels of transfer capability. In this case, the FETL limit for each period.

Based on existing and contracted generation which will be in-service in 2018 (as described in Section 2.3), the OPA has forecast congestion on the existing West of London system at 3.4% in 2018 (298 hours).

2.4.4 Summary: Deliverability and Congestion

The existing transmission system limits the development of large amounts of renewable potential in this area, as well as the potential for thermal resource development or expansion. After existing and contracted generation, the existing West of London system will be nearly fully utilized from a deliverability perspective, with about 100 MW of transmission transfer capability remaining for peak capacity. Based on congestion analysis, there will be room for approximately 300 MW of additional non-hydroelectric renewable generation before reaching the 5% congestion threshold (the exact amount of generation which can be accommodated will depend on the type of generation contracted).

3 Rationale for the Lambton to Longwood Transmission Upgrade Project

The capability of the transmission system West of London is insufficient to support the achievement of province-wide generation policy objectives, specifically the incorporation of 10,700 MW of non-hydroelectric renewable generation resources by 2018, including fulfilling the remaining phases of the Government's agreement with the Korean Consortium (scheduled for commercial operation between 2014 and 2016). Transmission improvements West of London are a cost effective solution for meeting these objectives. These transmission improvements will also increase the deliverability of system resources.

The need for the West of London transmission upgrade was referenced in the Government's Long Term Energy Plan and Supply Mix Directive ("SMD"), which identified this upgrade as one of five priority transmission projects required for, among other things, renewable generation incorporation. The LTEP and SMD set a target completion date for the West of London upgrade of 2014 and directed the OPA to define and make recommendations on the scope and timing of this upgrade in the Integrated Power System Plan.

The OPA recommends, for reasons described in more detail below, that the reconductoring of certain transmission circuits West of London is a cost-effective solution to facilitate the Government's policy objectives. The recommended reconductoring project maximizes the use of the existing transmission system, and will provide increased capability for additional renewable generation at a reasonable cost. This is a preferable solution to enabling renewable resources in other areas of the province where wind resources are of poorer quality, and where the necessary transmission upgrades would cost significantly more and cannot be implemented within the timeframe necessary to meet the 2018 target and/or the 2014-2016 schedule for implementing the remaining phases of the Korean Consortium agreement.

3.1 Future Generation West of London

A number of procurement processes are anticipated to add generation, such as renewable generation and gas-fired generation, as well as conservation resources in the West of London area. These additions

1 drive the need to increase the transfer capability of the West of London system beyond the existing
2 capability.

3 **3.1.1 Future Renewable Generation**

4 The LTEP and SMD established goals for the level of installed generation resources in the province;
5 including a target for non-hydroelectric renewable generation (i.e. wind, solar, and bioenergy) by 2018.
6 This target stated that "...the OPA shall plan for 10,700 MW of renewable energy capacity, excluding
7 hydroelectric, by 2018".²

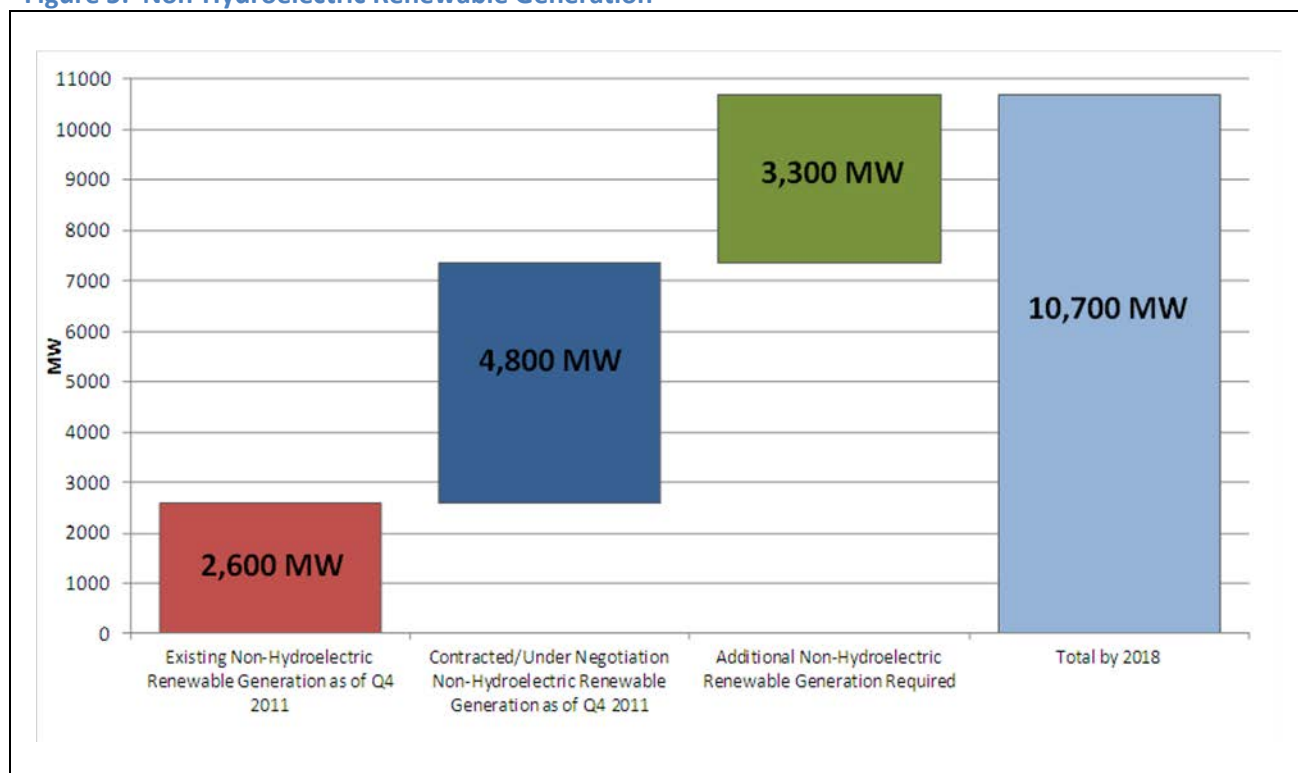
8 Ontario has a strong base of existing non-hydroelectric renewable resources. By the end of 2011, nearly
9 2,600 MW of wind, solar and bioenergy was in-service throughout the province and expected to
10 contribute to the 2018 target.

11 In addition to these in-service renewable generation projects, by the end of 2011 the OPA had executed
12 contracts, or was in the process of negotiating power purchase agreements, with a number of non-
13 hydroelectric renewable generation developers. The majority of these contracted resources (over 70%)
14 were committed through the OPA's Feed-in Tariff program (FIT and microFIT). The OPA anticipates that
15 there will be some natural attrition to these FIT and microFIT projects through the duration of the
16 project development process. Taking this natural attrition into consideration, a total of approximately
17 4,800 MW of additional non-hydroelectric renewable generation projects are expected to be in-service
18 by 2018.

19 Figure 5 provides a summary of how the existing and contracted/under negotiation non-hydroelectric
20 renewable generation projects contribute to the achievement of the 10,700 MW target, taking into
21 account the potential for project attrition.

² February 17, 2011 Supply Mix Directive issued to the OPA by the Minister of Energy

Figure 5: Non-Hydroelectric Renewable Generation



Source: OPA

*Values have been rounded to the nearest 100 MW

As indicated in Figure 5, approximately 3,300 MW of additional non-hydroelectric renewable generation will be required by 2018 in order to achieve Ontario's 10,700 MW target. As explained in more detail below, the OPA expects that this remaining 3,300 MW will be satisfied in part through the existing FIT program (approximately 1,900 MW) and in part through the implementation of the remaining three phases of the Government's agreement with the Korean Consortium (approximately 1,400 MW). Further, the OPA expects that a substantial portion of the remaining FIT and Korean Consortium projects will be located in the West of London area because of its high quality wind resources and the limitations and impediments to development in other areas of the province.

FIT Project Development

Since its launch in late 2009, the FIT program has been the main vehicle for procuring renewable generation in Ontario. Significant FIT interest exists to fill the 3,300 MW gap. Province-wide, over 7,500 MW of large scale non-hydroelectric FIT applications did not receive contracts following their capability assessment. The West of London area accounted for nearly 1,000 MW of these applications and is expected to be an important area for achieving the non-hydroelectric renewable generation target.

Korean Consortium Project Developments

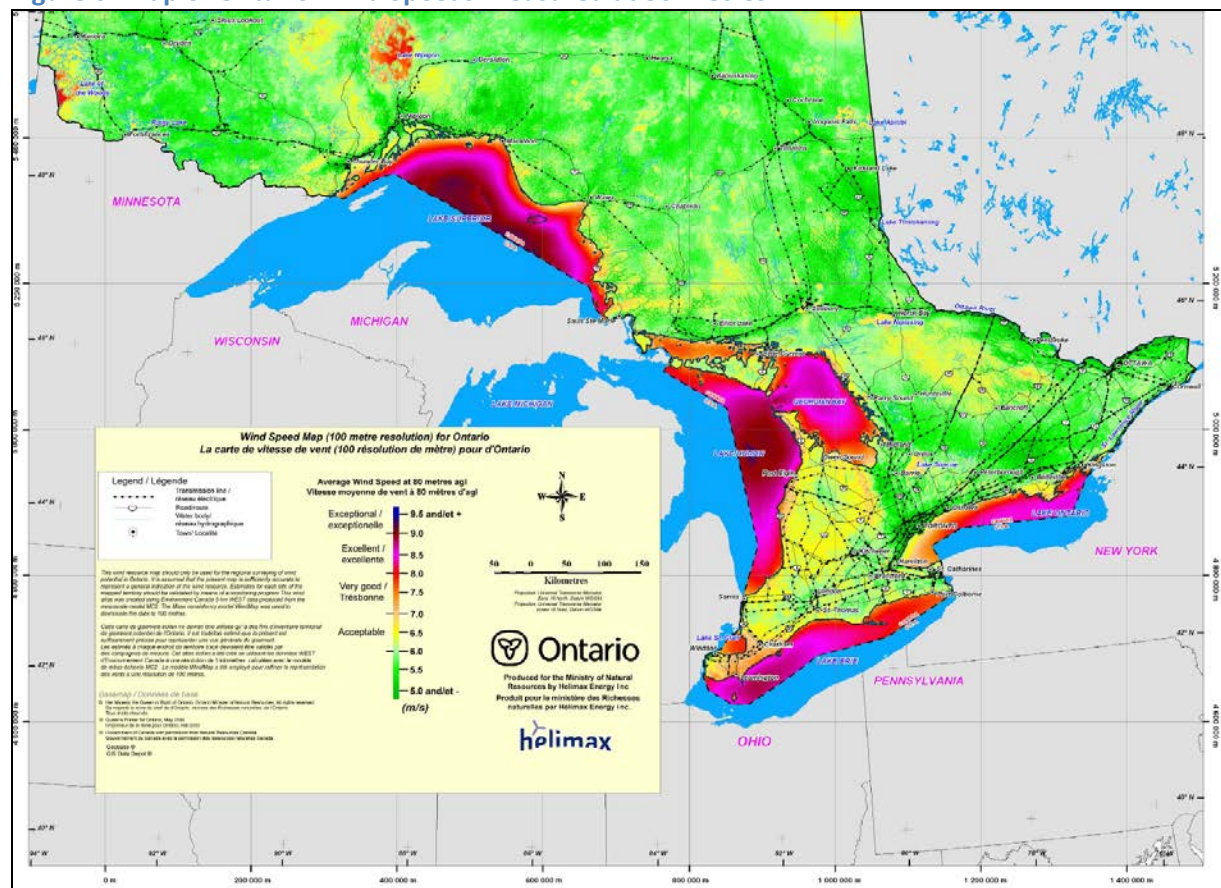
In addition to the FIT program, on January 21, 2010, the Government of Ontario announced that it had negotiated an agreement with a consortium, comprised of Samsung C&T Corporation and the Korea

Power Electric Corporation (collectively, the “Korean Consortium”), for the construction of 2,500 MW of renewable energy generation: 2,000 MW of wind and 500 MW of solar over five phases. Power Purchase Agreements for Phases 1 and 2 were completed in 2011,³ and are included in the contracted resources shown in Figure 5. However, approximately 1,100 MW of Korean Consortium wind and 300 MW of Korean Consortium solar (which will contribute to meeting the 10,700 MW target) remain to be contracted, with targeted commercial operation dates over the 2014 to 2016 period. Resource potential and access to the transmission system will influence where these large scale developments locate.

Wind Potential in West of London Area

Ontario’s wind atlas provides an indication of the high quality wind resources throughout the province. Figure 6 provides an overview of Ontario’s wind speeds, measured at 80 metres above ground, for the portion of the province south of the 50th parallel. This figure shows a greater density of higher wind speeds in the West of London and Bruce areas compared to the remainder of the province.

Figure 6: Map of Ontario Wind Speeds Measured at 80 Metres



Source: <http://www.mnr.gov.on.ca/en/Business/Renewable/2ColumnSubPage/276957.html>

³ <http://www.powerauthority.on.ca/news/power-purchase-agreements-signed-korean-consortium>

1 Given the high quality wind resources and the significant FIT interest expressed in the region, it is
2 anticipated that the West of London area will play an important role in meeting the 10,700 MW non-
3 hydroelectric renewable generation target. To enable the incorporation of additional renewable
4 generation in the West of London area, however, improvements to the transfer capability of the West of
5 London transmission system would have to be made.

6 *Transmission Upgrades to Enable Further Renewable Development in the West of London Area*

7 The OPA recommends that Hydro One replace approximately 70 km of existing double-circuit 230 kV
8 transmission line between Lambton TS and Longwood TS with a higher ampacity conductor. This work
9 can be completed by 2014, consistent with the target in-service date outlined in the LTEP, and in time to
10 meet the targeted commercial operation dates of the Korean Consortium agreement.

11 It is the OPA's view, for the reasons stated below, that transmission upgrades to the West of London
12 area are a more cost effective way of contributing to meeting the Government's 2018 10,700 MW non-
13 hydroelectric renewable target and fulfilling the needs of the Korean Consortium than other
14 alternatives. In particular, it is the OPA's opinion that this would be more cost effective than
15 incorporating non-hydroelectric renewable generation in other areas of the province.

16 *Alternatives to the Lambton to Longwood Transmission Upgrade Project*

17 The connection of additional non-hydroelectric renewable generation elsewhere in the province was
18 considered as an alternative to the West of London area. For the purposes of this comparison, four
19 alternative regions were considered: Northern Ontario, Eastern and Central Ontario, the Bruce area, and
20 the Niagara and London area.

21 *Northern Ontario*

22 There is significant interest in non-hydroelectric renewable generation development in Northern
23 Ontario. Based on the OPA's 5% congestion threshold, the existing transmission system serving a
24 portion of the Northeast (the areas to the north and east of Sudbury, as well as the in the vicinity of
25 Sudbury) can accommodate up to approximately 200 MW to 300 MW of additional non-hydroelectric
26 renewable generation. The system in the remainder of the Northeast, as well as the Northwest, has
27 reached its capability and cannot accommodate further generation additions.

28 The existing capability of the Northeast is insufficient to meet the 10,700 MW non-hydroelectric target.
29 In order to enable additional generation beyond this level, the construction of a new north-south
30 transmission line would be required. Any such line would be significantly longer than the Lambton to
31 Longwood transmission upgrade (approximately four times the distance), resulting in a significantly
32 higher project cost and environmental impact. The significant distance and challenging development
33 work and approvals associated with this transmission line would also require a relatively long project
34 lead time, which would likely make this option unable to meet the 2018 target. Finally, given the
35 dispersed nature of Northern Ontario's renewable resource potential, it is likely that additional
36 transmission facilities within the North would also be required to accommodate additional non-
37 hydroelectric renewable generation. These incremental facilities would further add to the total cost of
38 this alternative. Accordingly, development in Northern Ontario was not considered further as an

alternative to the Lambton to Longwood transmission upgrade project for meeting Ontario's 2018 renewable generation target.

Eastern and Central Ontario

Significant interest in solar generation development has been identified in eastern and central Ontario. While the existing system could accommodate some transmission connections, such as the remaining three phases of Korean Consortium solar developments (approximately 300 MW), the addition of new transformer stations and collector systems would be required to enable the primarily distribution connected FIT interest in the area. This work could enable between approximately 500 MW and 1,000 MW of non-hydroelectric renewable generation projects, however, at a higher total project cost and level of risk than the Lambton to Longwood transmission upgrade project. Resources in the east and central areas tend to be more dispersed than in the West of London area, and accordingly, multiple station and collector system upgrades would be required; coordination and cost allocation issues around these investments could also affect the feasibility of this alternative. Additionally, expansion in eastern Ontario would enable the addition of primarily solar capacity for meeting the 10,700 MW target, rather than wind generation development in the West of London area. Accordingly, developments in eastern and central Ontario were not considered further as an alternative to the Lambton to Longwood transmission upgrade project.

Bruce Area

An additional priority transmission expansion project, the installation of devices such as series or static var compensation in Southwestern Ontario, has been identified to capitalize on the resource potential in the Bruce area. The OPA has identified a 350 MVar static var compensator as the recommended option to Hydro One. Upon completion, approximately 450 MW of additional non-hydroelectric renewable generation is expected to be enabled in the Bruce area, approximately 250 MW from the addition of the SVC. This incremental capability, however, is insufficient to meet the Government's 10,700 MW target, or the remaining Korean Consortium developments. To enable additional non-hydroelectric renewable generation developments beyond this level, additional reinforcement, such as series compensation, would be required. Due to higher cost and technical complexity of this additional reinforcement, further development in the Bruce area was not considered as an alternative to the Lambton to Longwood transmission upgrade project.

Niagara/ London Area

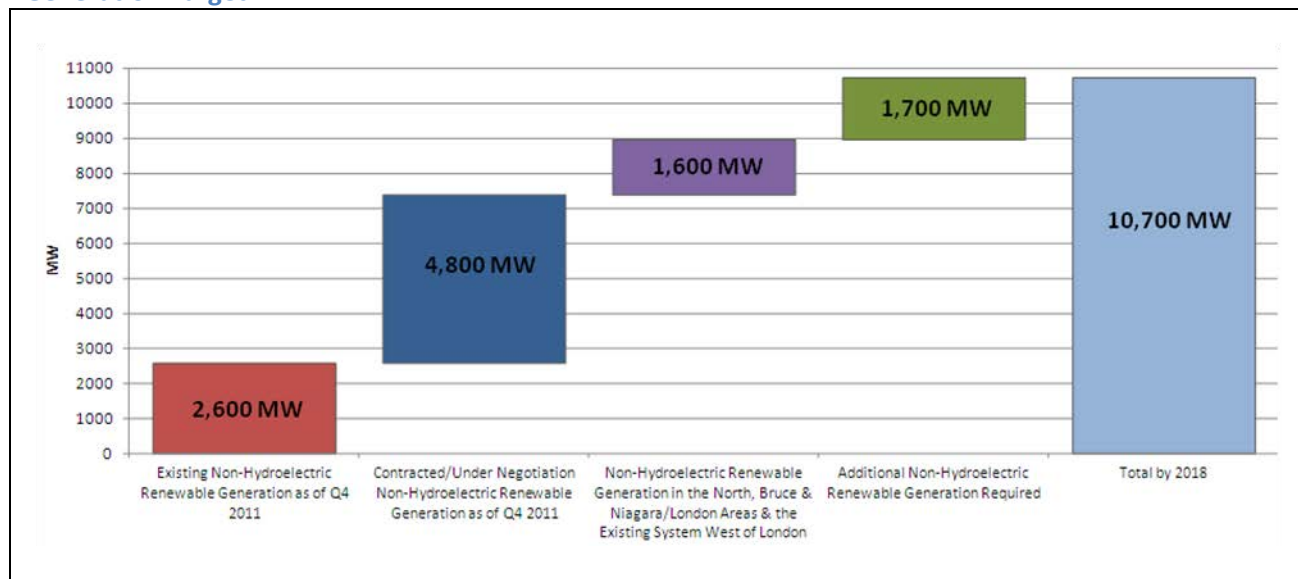
In contrast to the West of London and Bruce areas, the Niagara/London transmission area has a relatively low level of resource potential. The combination of lower wind speeds and limited FIT interest (only 350 MW of non-hydroelectric FIT applications failed their initial assessments in this area) make developments in the Niagara/London area insufficient to meet the Government's 10,700 MW target, or the remaining Korean Consortium developments. Accordingly, the Niagara/London area was not considered further as an alternative to the Lambton to Longwood transmission upgrade project.

Conclusion

Figure 7 provides an overview of the remaining non-hydroelectric renewable generation required to meet the 10,700 MW target based on the existing and contracted/under negotiation non-hydroelectric

1 renewable generation capacity in Ontario, as well as the transmission system capability for non-
 2 hydroelectric renewable generation described above for the Bruce, North, East/Central and
 3 Niagara/London areas.

Figure 7: Renewable Generation Required to meet 10,700 MW Non-Hydroelectric Renewable Generation Target



Source: OPA

*Values have been rounded to the nearest 100 MW

4
 5 As shown in Figure 7, approximately 1,700 MW of additional non-hydroelectric renewable generation is
 6 required to meet the 2018 target. It is the OPA's view that the Lambton to Longwood transmission
 7 upgrade project is a cost effective way of contributing to filling this gap, as well as fulfilling the needs of
 8 the Korean Consortium.

9 **3.1.2 Other Future Resources**

10 In addition to the development of further renewable generation in the West of London area through the
 11 Korean Consortium projects and the FIT program, there are a number of other potential resources, such
 12 as additional gas-fired generation, higher levels of imports, or additional conservation resources, that
 13 could benefit from the increased transfer capability provided by the Lambton to Longwood transmission
 14 upgrade project.

15 **Additional Gas-Fired Generation**

16 The Clean Energy Standard Offer Program (CESOP) is an ongoing procurement process to help achieve
 17 Ontario's target of 1,000 MW of high efficiency combined heat and power. Since program launch, a
 18 number of combined heat and power applications have been received for the West of London area. In
 19 order to obtain an OPA contract, these applications are subject to the CESOP evaluation process, and
 20 require sufficient transfer capability in the West of London area.

1 A decision in regards to the conversion of existing coal-fired generation facilities in the West of London
2 area to natural gas could also increase the level of gas-fired generation supply in the region. As outlined
3 in the Supply Mix Directive, a decision by the Government on the conversion of some, or all, of the
4 remaining units at Lambton GS will be made in 2012. Should the Government wish to proceed with the
5 conversion of Lambton GS, up to 1,000 MW of new gas-fired generation would be added in the West of
6 London area. The existing system West of London (taking into account the retirement of coal-fired
7 generation) is insufficient to accommodate this additional generation, however the increased transfer
8 capability provided by the Lambton to Longwood transmission upgrade project could enable some of
9 this generation.

10 *Additional Imports*

11 As previously discussed, the West of London system is connected to several US markets through
12 interconnections at Windsor, Sarnia and Lambton. These interties are used on a continuous basis for
13 both the import and export of generation. By increasing the transfer capability of the West of London
14 system, the reconductoring project will decrease the number of hours where inter-tie flow causes
15 congestion in the region.

16 *Additional Conservation and Demand Management*

17 Within the West of London area a number of opportunities exist for the achievement of conservation
18 and demand management, such as customer-based generation and energy efficiency measures. While
19 achievement of the provincial conservation targets is assumed when determining the estimated level of
20 congestion in the region, opportunities exist for higher levels of conservation and demand management
21 penetration within the West of London area. Since these measures reduce the demand in the West of
22 London area, a corresponding increase in the amount of generation transferred out of the region occurs.
23 The Lambton to Longwood transmission upgrade project would improve the ability of the transmission
24 system to transfer this power to the rest of the province.

25 **3.2 Assessment of Transmission Options for Increasing Transfer Capability** 26 **West of London**

27 As described in Section 2.4.1, the FETL limit is used to represent the level of transfer capability out of the
28 West of London area. Contingency analysis, based on Northeast Power Coordinating Council ("NPCC")
29 criteria, has been used to identify the limiting elements which must be remedied in order to increase the
30 FETL limit. Transmission improvements other than those required to address the identified limitations
31 will not increase the FETL limit or result in improved transfer capability. Table 1 (below) shows the
32 sequence of FETL transfer capabilities and limitations for congestion analysis. Reconductoring the
33 Lambton to Longwood transmission line will increase the FETL limit from 1,840 MW to 2,000 MW.

Table 1: FETL Interface Limits and Contingencies for Congestion Analysis

	FETL - Summer (MW)*	Limiting Element	Contingency
Existing System	1840	L24L/L26L (Lambton-Longwood)	N21W+N22W
With L24L/L26L upgrade	2000	N21/22W (Scott-Buchanan)	L24L+L26L

Source: OPA

*For the purposes of congestion studies, ambient conditions of 30°C and 4 km/hr wind speed have been used.

Due to the serial nature of transmission limitations in this area, alternative projects such as upgrading the Scott-Buchanan circuits (NxW), would not increase the FETL limit as the Lambton-Longwood circuit limitation is reached first. An upgrade to the NxW line has not been recommended at this time, as Hydro One has indicated it is a more challenging and costly project compared to the Lambton to Longwood transmission upgrade project. Further reconductoring or other upgrade projects will be considered as an alternative for subsequent transmission expansion to meet future resource requirements.

The main alternative to this upgrade project would be a new transmission line. New transmission lines require approximately five to seven years of lead time for development work, approvals and construction, and have significant risk of delay. A new line in the West of London area would not be available in time to meet the 2014-2016 target in-service dates for the remaining phases of the Korean Consortium agreement; nor would it support pacing of allocation under the FIT program to meet the 10,700 MW target by 2018.

4 Resources Enabled by the Lambton to Longwood Transmission Upgrade Project

By increasing transfer capability to enable additional renewable generation in the West of London area, the proposed Lambton to Longwood transmission upgrade project will contribute to meeting the province's renewable energy target. In addition, it will increase the deliverability of firm capacity from the West of London area to the rest of the province.

4.1 Additional Generation Enabled

The Lambton to Longwood transmission upgrade project will enable about 500 MW of renewable generation based on the 5% congestion threshold; this is in addition to the 300 MW of renewable

1 generation which can be accommodated on the existing system West of London. These estimates are
2 based on assumptions about future system conditions, as well as the type and location of generation
3 enabled. At the time of resource procurement, updated system information may result in a higher or
4 lower congestion level, affecting the amount of renewable generation which can be contracted.

5 Hydro One has estimated the cost of the Lambton to Longwood transmission upgrade project to be
6 approximately \$40 million. If 500 MW of renewable resources were to be enabled this would result in a
7 transmission investment of approximately \$80/kW. For comparison, the new 500 kV Bruce-Milton
8 transmission line will cost approximately \$200/kW to enable a mix of nuclear and renewable generation.
9 Due to the short lead time requirement for a reconductoring project, this capability to integrate
10 renewable generation will be available in time to ensure commitments to integrate renewable
11 generation as part of the Government's Long Term Energy Plan can be met.

12 The upgrade will also benefit the system by increasing the area's ability to deliver peak capacity by
13 approximately 100 MW. This is in addition to the 100 MW of remaining capability for peak capacity
14 described in Section 2.4.2, which is available on the post Bruce-Milton system. Capacity deliverability is
15 a separate measure of system efficiency from the congestion threshold described above, based on peak
16 system conditions. This additional capacity could be provided by new renewable generation (based on
17 its capacity contribution) and/or new gas generation. The potential to utilize more capacity West of
18 London could be an alternative to additional peaking resources elsewhere in the province.

DESCRIPTION OF PROPOSED FACILITIES

1.0 PROPOSED FACILITIES

Hydro One proposes to increase the transmission capacity of the 230 kV circuits L24L and L26L between Lambton TS and Macksville Junction (southwest of Longwood TS) in order to reliably transmit all additional renewable generation forecast in the area. Maps indicating the geographic location and schematic diagrams of the proposed facilities are provided in **Exhibit B, Tab 2, Schedule 2** and **Exhibit B, Tab 2, Schedule 3** respectively. Illustrations of the transmission towers along this corridor are provided in **Exhibit B, Tab 2, Schedule 4**. The IESO's System Impact Assessment ("SIA") is filed in **Exhibit B, Tab 6, Schedule 2**. The Customer Impact Assessment ("CIA"), a report outlining the effects of increasing the thermal capacity of the L24L/L26L circuits on neighbouring customers, is filed in **Exhibit B, Tab 6, Schedule 3**.

The proposed upgrade will meet the requirements set out by the OPA in its letter dated June 30, 2011 (see **Exhibit B, Tab 1, Schedule 4, Attachment 3**) and will also ensure that Hydro One is compliant with the directive from the Minister of Energy in the letter to the Board dated February 17, 2011 (see **Exhibit B, Tab 1, Schedule 4, Attachment 2**) and conditions implemented by the OEB (EB-2011-0055 February 28 2011) to Hydro One's transmission licence. The need for the proposed upgrade is described in **Exhibit B, Tab 1, Schedules 4 and 5**.

This application is seeking OEB approval for the following upgrade work on Hydro One's existing transmission facilities:

- Upgrade approximately 70 km of the existing double-circuit 230 kV L24L and L26L transmission lines between Lambton TS and Macksville Junction with a new conductor that is capable of a higher thermal capacity; and

- Replace existing insulators and associated hardware on the L24L and L26L circuits.

2.0 DETAILS OF THE PROPOSED FACILITIES

The proposed transmission project will require the upgrade of the existing 230kV L24L and L26L circuits with a new, higher-capacity conductor. This project is one of five priority transmission projects included in Ontario's Long Term Energy Plan to maintain and improve system reliability, allow new load connections and incorporate new renewable generation up to 2018. This project will enable approximately 500 MW of new renewable generation in the west of London area. The exact amount of capacity made available will depend on the type of generation connected and the location chosen. This may include enabling capacity for gas and other resources (e.g. imports, demand response and customer generation) as well as reduce congestion and improve system reliability to Ontario's grid.

2.1. Overhead Transmission Line

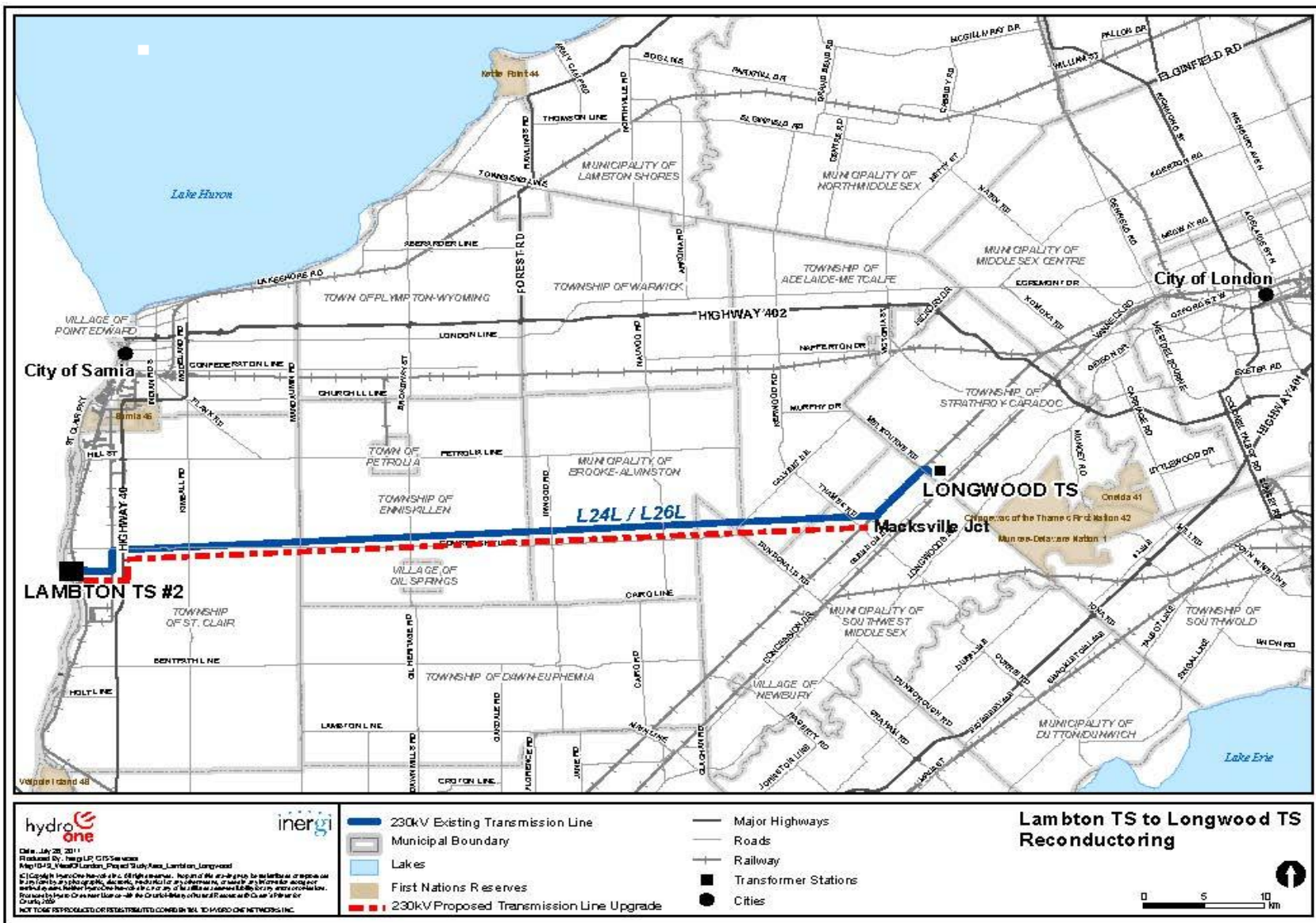
The total route length of the proposed upgrade to the double circuit 230 kV transmission line from Lambton TS to Macksville Junction is approximately 70 km. The existing route passes through two counties (Lambton and Middlesex) and six municipalities (St. Clair, Enniskillen, Brooke-Alvinston, Southwest Middlesex, Adelaide-Metcalf and Strathroy-Caradoc). A map of the proposed transmission line facilities is provided in **Exhibit B, Tab 2, Schedule 2.**

The proposed upgrade will not require modifying the existing transmission towers along the corridor with the exception of towers 78, 79 and 80. For these three towers, there are minor modifications to the mid-arms to accommodate the insulator assembly changes from I-string to V-string as shown in **Exhibit B, Tab 2, Schedule 4.** The selected

- 1 modifications and tower foundation repairs will not alter the appearance of the
- 2 transmission line.

1
2
3

Map of Proposed Facilities

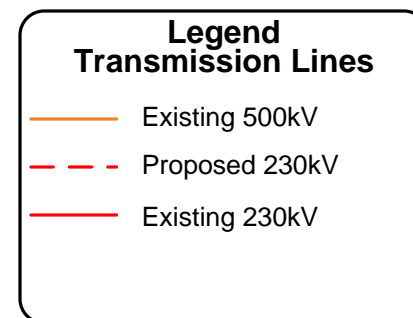
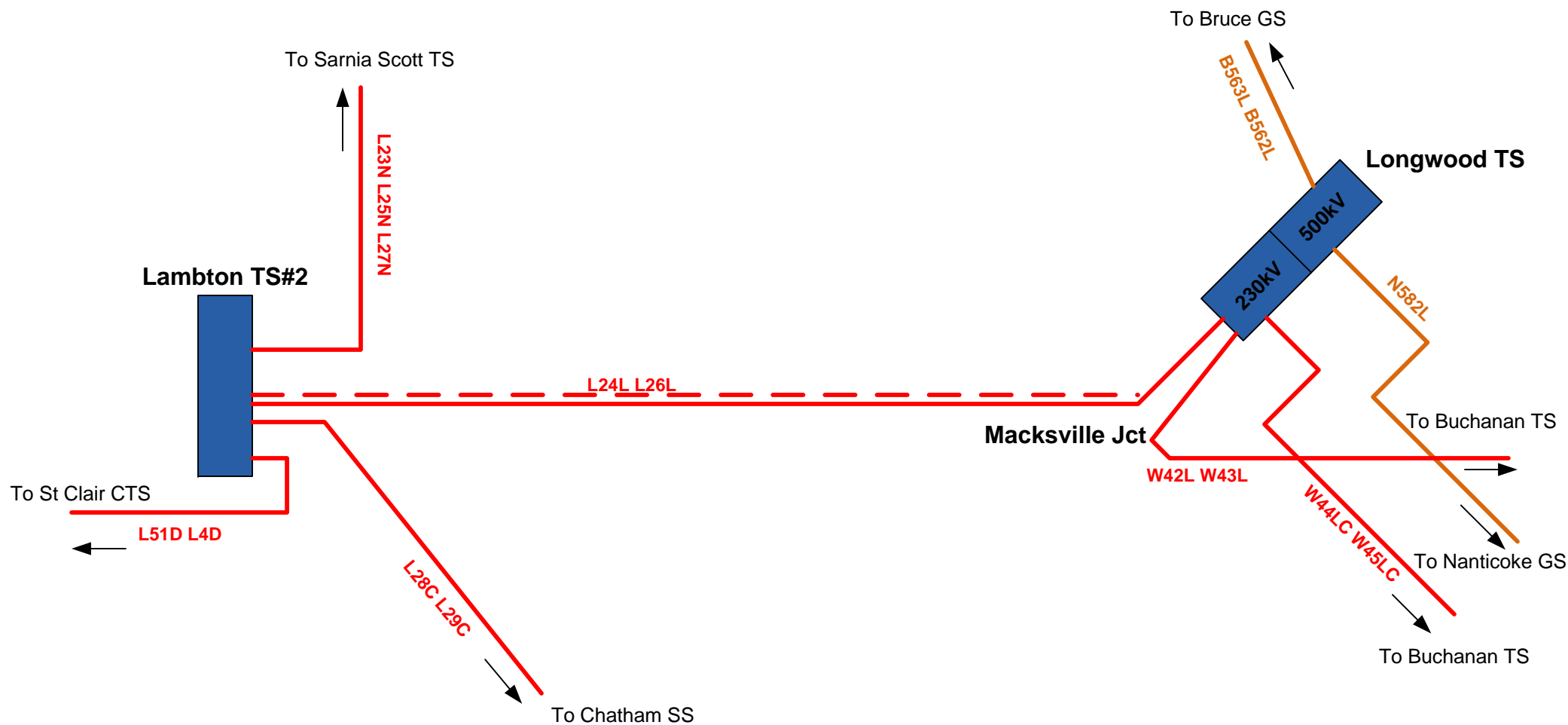


MAP OF PROPOSED FACILITIES

1

2

Schematic Diagram of Proposed Facilities

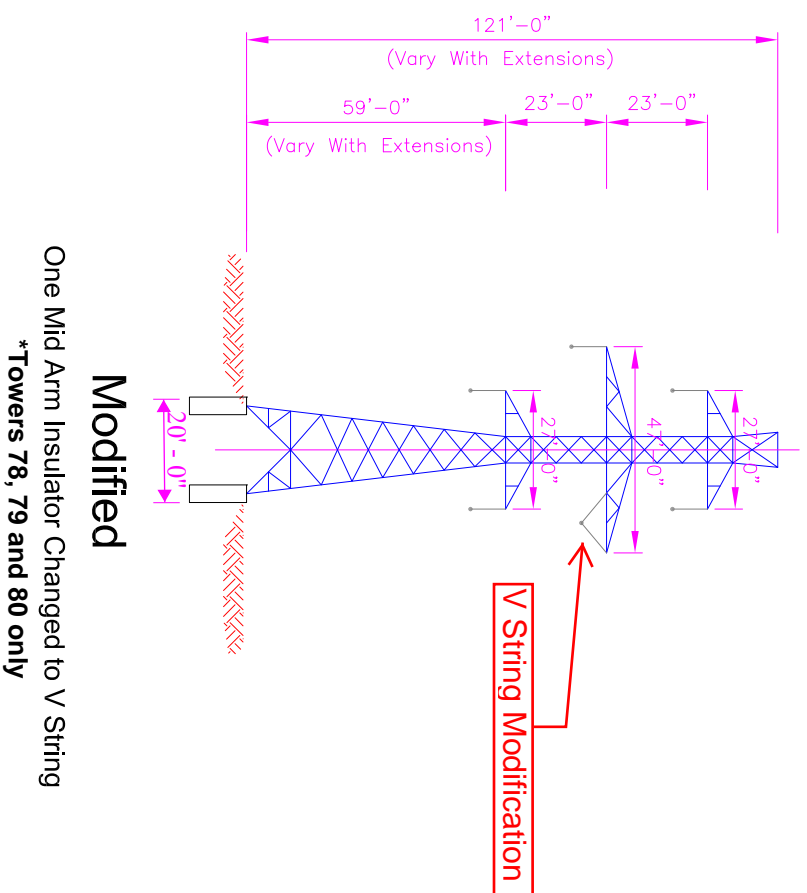
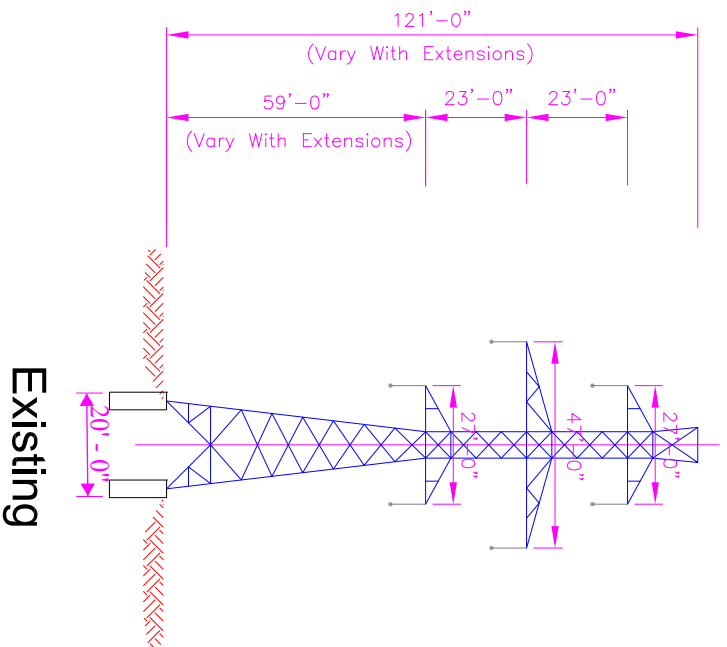


SCHEMATIC DIAGRAM OF PROPOSED FACILITIES

1
2
3

Cross Section of the Tower Types
Existing and Proposed

CROSS SECTION OF TOWER TYPES



ALTERNATIVES CONSIDERED

1
2
3
4
5
6

For information on Alternatives Considered, please see OPA's evidence filed as **Exhibit B, Tab 1, Schedule 5.**

**PROJECT COSTS, ECONOMICS, AND OTHER
PUBLIC INTEREST CONSIDERATIONS**

This set of exhibits describes the costs of the proposed facilities and the economics of the project, including the economic feasibility, rate impacts, and benefits to Ontario electricity consumers. Other public interest considerations are also discussed.

Under the Act “public interest” is defined to mean the interest of consumers with respect to price and the adequacy, reliability and quality of electricity service and where applicable and in a manner consistent with the policies of the Government of Ontario, the promotion of the use of renewable energy sources. Consumers are defined as those who use electricity that was not self-generated for their own consumption.

PROJECT COSTS

The estimated capital cost to upgrade the 230 kV circuits, L24L and L26L, between Lambton TS and Macksville Junction, including overheads and Allowance for Funds Used During Construction ("AFUDC") is as follows:

Table 1
Cost of Upgrade Line Work

	<i>Estimated Cost</i>
	<i>(\$000's)</i>
Planning & Estimating	296
Project Management ¹	1,139
Engineering	1,350
Procurement	15,595
Construction	10,660
Commissioning	14
Contingencies	4,081
Costs before Overhead and AFUDC	33,135
Overhead ²	4,139
AFUDC ³	2,724
Total Line Work	\$ 39,998

¹ Project Management includes costs for temporary rights along the ROW.

² All overhead costs allocated to the project are for asset management and corporate services costs. These costs are charged to capital projects through a standard overhead capitalization rate. As such they are considered "Indirect Overheads". Hydro One does not allocate any project activity to "Direct Overheads" but rather charges all other costs directly to the project.

³ AFUDC is calculated using the Board's approved interest rate methodology (EB-2006-0117) to the projects' forecast monthly cash flow and the carry-forward closing balance from the preceding month.

The cost of the upgrade line work provided above allows for the schedule of approval, design and construction activities provided in **Exhibit B, Tab 5, Schedule 2**.

1.0 RISKS AND CONTINGENCIES

As with most projects, there is some risk associated with estimating costs. Hydro One's cost estimate includes an allowance for contingencies in recognition of these risks.

Based on past experience, the estimates for this project work include allowances in the contingencies to cover the following potential risks:

- Cancellation or delays in attaining required power and telecommunications system outages (needed for upgrading the lines work and commissioning activities);
- Construction equipment failures;
- Delay relating to receipt of material at site on time;
- Use of High Temperature Low Sag Conductor, which is a new type of conductor for Hydro One;
- Damage to the possible tile bed under ROW ; and
- Crop damage compensation along the access road and ROW.

Cost contingencies that have not been included, due to their uncertainty of occurrence, include:

- Delay resulting from delivery of long lead materials; and
- Requirement of a betterment permit for species at risk found in the work area or additional species at risk studies that take more than one season, thereby adding time and cost to the project.
- Need for a temporary bypass would trigger an environmental assessment

1 **2.0 COSTS OF COMPARABLE PROJECTS**

2
3 Per the OEB EB-2006-0170 Filing Requirements, Table 2 below shows the cost for a
4 comparable project.

5
6 The Lambton to Longwood Transmission Upgrade Project is composed of overhead line
7 sections in the London area and to the west. The existing overhead line section between
8 Lambton TS and Longwood TS is a 70 km 230 kV transmission line that was first energized
9 in 1970 and runs from Sarnia to London through mainly agricultural lands must now be
10 upgraded. The project's corridor is a 90 ft. ROW (Michigan Central Railway) that was
11 purchased by Ontario Hydro in the 1960s. The corridor traverses the communities of
12 Brigden, Oil City, Inwood and Alviston and secondary land uses include agricultural
13 licences, unlicensed agricultural users, gas/pipeline companies and water lines. Construction
14 complexity is a challenge unique to this project.

15
16 The reconductoring of the proposed line from Lambton TS to Longwood TS is not a typical
17 Hydro One's 230kV reconductoring projects because of the use of a high-temperature low-
18 sag conductor to achieve a summer long-term emergency rating between 1700-1900A per
19 circuit. For this reason, a comparison of costs may not be directly applicable.

20
21 For the purpose of context, Hydro One recently placed in-service a 230 kV reconductoring
22 project on Burlington TS to Beach TS B10/B20H circuit. The costs and distances are
23 referenced below. The project differs from Lambton to Longwood project in volume of
24 technical work (70 km vs. 5.8 km), materials to be used (newer technology) and location of
25 work (rural agricultural vs. urban) making direct comparables difficult.

Table 2
Costs of Comparable Projects

Project	Lambton TS to Longwood TS (estimate)	Burlington TS to Beach TS (Actual)
Type*	Double circuits on single structures	Double circuits on single structures
Length (km)	70 km	5.8 km
In-Service Date	2014-12-31	2012-02-17
Total Cost	\$571K / km	\$914K / km

PROJECT ECONOMICS

1.0 ECONOMIC FEASIBILITY

The proposed transmission upgrade work for the Lambton to Longwood Transmission Upgrade Project comprises line assets which will be included in the network pool for cost classification purposes. See **Exhibit B, Tab 2, Schedule 1**, for information on proposed line work.

The proposed line facilities will be included in the network pool for rate-making purposes with no customer capital contribution required, consistent with the provisions of Section 6.3.5 of the *Transmission System Code*. A 25-year illustrative discounted cash flow analysis is provided in Table 1 below. The results show that based on the estimated initial project cost of \$40.0 million plus assumed ongoing operating and maintenance costs, the transmission upgrade project will have a negative net present value of \$41.9 million with a profitability index (“**PI**”) of nil. The analysis assumes zero incremental load and network revenues attributable to the project for purposes of the assessment. This approach reflects the fact that provincial network pool peak load is forecast to remain essentially flat or decline over the 25-year evaluation period, after mandated provincial CDM reductions.

2.0 RATE IMPACT ASSESSMENT

The analysis of the network pool rate impacts has been carried out on the basis of Hydro One’s transmission revenue requirement for the year 2012, and the most recently approved Ontario Transmission Rate Schedules. The line connection pool and transformation connection pool revenue requirements would be unaffected by the new

reinforcement facilities, based on the criteria used to allocate transmission costs to the three pools as approved by the Board in its RP-1999-0044 decision.

Network Pool

Based on the network pool incremental cash flows associated with the full cost of the project, \$40.0 million, 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 in December of 2014. The maximum revenue shortfall related to the proposed network facilities will be \$4.0 million in the year 2018, which will result in a rate impact of 0.28% or 1 cent on the provincial network pool rates after rounding. The network pool rate will rise from the current rate of \$3.57/kW/month to \$3.58/kW/month in 2015 and then remain stable. The detailed analysis illustrating the calculation of the incremental network revenue shortfall and rate impact is provided in Table 2 below.

Impact on Typical Residential Customer

Adding the costs of the new facilities to the network pool will cause a slight increase in a typical residential customer's rates. The table below shows this result for a typical residential customer who is under the Regulated Price Plan (RPP).

A. Typical monthly bill (Residential R1 in a high density zone at 1,000 kWh per month with winter commodity prices.)	\$160.55 per month
B. Transmission component of monthly bill	\$11.38 per month
C. Network Pool share of Transmission component	\$6.35 per month
D. Impact on Network Pool Provincial Uniform Rates (Table 2)	0.28%
E. Increase in Transmission costs for typical monthly bill (C x D)	\$0.02 per month or \$0.21 per year
F. Net increase on typical residential customer bill (E / A)	0.01%

Note: Values rounded to two significant digits.

Table 1 – DCF Analysis, Network Pool, page 1

Date: 27-Feb-12		SUMMARY OF CONTRIBUTION CALCULATIONS														hydro one	
Project #		Planner's estimate															
Facility Name:		Lambton to Longwood Transmission Upgrade															
Scope:		Network Pool															
		In-Service Date	Project year ended - annualized from In-Service Date														
		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-31	Dec-31	Dec-31	
		2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026			
		1	2	3	4	5	6	7	8	9	10	11	12				
Revenue & Expense Forecast																	
Load Forecast (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	0.0	0.0
Tariff Applied (\$/kW/Month)			3.57	3.57	3.57	3.57	3.57	3.57	3.57	3.57	3.57	3.57	3.57	3.57	3.57	3.57	3.57
Gross Revenue - \$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	0.0	0.0
OM&A Costs (Removals & On-going Incremental) - \$M			(1.1)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)
Net Revenue/(Costs) before taxes - \$M			(1.1)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)
Income Taxes			0.3	0.6	1.0	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6
Operating Cash Flow (after taxes) - \$M			(0.8)	(0.2)	0.2	0.1	0.1	(0.0)	(0.1)	(0.1)	(0.1)	(0.2)	(0.2)	(0.2)	(0.2)	(0.3)	(0.3)
Cumulative PV @ 6.05%																	
PV Operating Cash Flow (after taxes) - \$M (A)			(3.2)	(0.8)	(0.2)	0.2	0.1	0.0	(0.0)	(0.0)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Capital Expenditures - \$M																	
Upfront - capital cost before overheads & AFUDC			(32.1)														
- Overheads			(4.1)														
- AFUDC			(2.7)														
Total upfront capital expenditures			(38.9)														
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	0.0
PV 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	0.0
Total capital expenditures - \$M			(38.9)														
PV Proceeds on disposal of assets - \$M			0.0														
PV CCA Residual Tax Shield - \$M			0.2														
PV Working Capital - \$M			(0.0)														
PV Capital (after taxes) - \$M (B)			(38.8)														
Cumulative PV Cash Flow (after taxes) - \$M (A) + (B)			(41.9)	(39.6)	(39.8)	(39.6)	(39.5)	(39.5)	(39.5)	(39.5)	(39.6)	(39.7)	(39.8)	(39.9)	(40.0)	(40.1)	(40.1)
Discounted Cash Flow Summary																	
(Based on Economic Study Horizon - Years):							25										
Discount Tariff - %							6.05%										
Before Contribution																	
\$M																	
PV Incremental Revenue			0.0														
PV Incremental OM&A Costs			(12.0)														
PV Income Taxes			3.1														
PV CCA Tax Shield			5.8														
PV Capital - Upfront			(38.9)														
Add: PV Capital Contribution			0.0	(38.9)													
PV Capital - On-going				0.0													
PV Proceeds on disposal of assets				0.0													
PV Working Capital				(0.0)													
PV Surplus / (Shortfall)				(41.9)													
Profitability Index*				(0.1)													
*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																	
Start Date:															1-Jan-11		
In-Service Date:															31-Dec-14		


Table 1 – DCF Analysis, Network Pool, page 2

Date:27-Feb-12

Project #

SUMMARY OF CONTRIBUTION CALCULATIONS

Planner's estimate



Facility Name:

Lambton to Longwood Transmission Upgrade

Scope:

Network Pool

	Month Year	Dec-31 2027 13	Dec-31 2028 14	Dec-31 2029 15	Dec-31 2030 16	Dec-31 2031 17	Dec-31 2032 18	Dec-31 2033 19	Dec-31 2034 20	Dec-31 2035 21	Dec-31 2036 22	Dec-31 2037 23	Dec-31 2038 24	Dec-31 2039 25
Revenue & Expense Forecast														
Load Forecast (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)		3.57	3.57	3.57	3.57	3.57	3.57	3.57	3.57	3.57	3.57	3.57	3.57	3.57
Gross Revenue - \$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
OM&A Costs (Removals & On-going Incremental) - \$M		(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)
Net Revenue/(Costs) before taxes - \$M		(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)	(0.8)
Income Taxes		0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3
Operating Cash Flow (after taxes) - \$M		(0.3)	(0.3)	(0.3)	(0.4)	(0.4)	(0.4)	(0.4)	(0.4)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)
PV Operating Cash Flow (after taxes) - \$M	(A)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
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														
PV Proceeds on disposal of assets - \$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)	(40.3)	(40.4)	(40.6)	(40.7)	(40.9)	(41.0)	(41.2)	(41.3)	(41.4)	(41.6)	(41.7)	(41.8)	(41.9)

Table 2 – Revenue Requirement and Network Pool Rate Impact, page 1

Lambton to Longwood Transmission Upgrade

Calculation of Incremental Revenue Requirement (\$ millions)

		Project YE 31-Dec 2015	Project YE 31-Dec 2016	Project YE 31-Dec 2017	Project YE 31-Dec 2018	Project YE 31-Dec 2019	Project YE 31-Dec 2020	Project YE 31-Dec 2021	Project YE 31-Dec 2022	Project YE 31-Dec 2023	Project YE 31-Dec 2024	Project YE 31-Dec 2025	Project YE 31-Dec 2026
		1	2	3	4	5	6	7	8	9	10	11	12
In-service date	31-Dec-14												
Capital Cost	38.9												
Removal Cost	1.1												
Less: Capital Contribution Required	-												
Net Project Cost	40.0												
Average Rate Base		19.1	37.7	37.0	36.2	35.4	34.6	33.9	33.1	32.3	31.5	30.7	30.0
Incremental OM&A Costs		0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Depreciation	2.00%	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Interest and Return on Rate Base	6.86%	1.3	2.6	2.5	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.1
Income Tax Provision	26.25%	0.0	-0.3	-0.2	-0.1	-0.1	0.0	0.0	0.1	0.1	0.2	0.2	0.2
REVENUE REQUIREMENT PRE-TAX		2.9	3.9	3.9	4.0	4.0	4.0	4.0	4.0	3.9	3.9	3.9	3.9
Incremental Revenue		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUFFICIENCY/(DEFICIENCY)		-2.9	-3.9	-3.9	-4.0	-4.0	-4.0	-4.0	-4.0	-3.9	-3.9	-3.9	-3.9
Network Pool Revenue Requirement including sufficiency/(deficiency)	Base Year 866	869	870	870	870	870	870	870	870	870	870	870	870
Network GW	243	243	243	243	243	243	243	243	243	243	243	243	243
Network Pool Rate (\$/kw/month)	3.57	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
Increase/(Decrease) in Network Pool Rate (\$/kw/month), relative to base year		0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
RATE IMPACT relative to base year		0.28%	0.28%	0.28%	0.28%	0.28%	0.28%	0.28%	0.28%	0.28%	0.28%	0.28%	0.28%

Assumptions

Incremental OM&A		
Ontario Capital Tax	0.00%	2012 Ontario capital tax rate
Grants in Lieu of Municipal tax	0.53%	Transmission system average
OM&A	1.60%	1.6% of Initial Capital per year.
Depreciation	2.00%	Reflects 50 year average service life for towers, conductors and station equipment, excluding land
Interest and Return on Rate Base	6.86%	Includes OEB-approved ROE of 9.42%, 2.08% on ST debt, and 5.37% on LT debt. 40/4/56 equity/ST debt/LT debt split
Income Tax Provision	26.25%	2012 federal and provincial corporate income tax rate including surtax
Capital Cost Allowance	8.00%	100% Class 47 assets

1

Lambton to Longwood Transmission Upgrade

2

Table 3 – DCF Assumptions

**Hydro One Networks – Transmission Connection Economic Evaluation Model
2012 Parameters and Assumptions**

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

Monthly Rate (\$ per kW)	
Network	3.57
Transformation	1.86
Line	0.80

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

0.53%

Based on Transmission system

Ontario Capital tax (% of UCC, a proxy for taxable capital):

0.000%

2012 provincial rate

Income taxes:

Basic Federal Tax Rate (before surtax) -
% of taxable income:

2012

15.00%

Current rate

Federal Surtax - % of taxable income:

2012

0.00%

Current rate

Ontario corporation income tax -
% of taxable income:

2012

11.25%

Current rate

Capital Cost Allowance Rate, Class 47:

"Rate change retroactively enacted in 2006 to 8% for assets added after Feb. 22/05; formerly Class 1"

2012

8.0%

Current rate *

After-tax Discount rate:

6.05%

Based on OEB-approved ROE of 9.42% on common equity and 2.08% on short-term debt, 5.37% forecast cost of long-term debt and 40/60 equity/debt split, and current enacted income tax rate of 26.25%

Other Assumptions:

Estimated Incremental OM&A:

1.60%

of up-front capital expenditure each year

OTHER PUBLIC INTEREST CONSIDERATIONS

1.0 AVAILABILITY, RELIABILITY, AND QUALITY IMPACTS

The existing bulk transmission system west of London comprises double-circuit 230 kV lines N21W/N22W between London and the Sarnia area; W44LC/W45LS between London and Chatham; W42L/W43L between London and Longwood; L24L/L26L between Longwood and the Sarnia area; double circuit 500 kV line B562L/B563L between Longwood and the Bruce area; and other circuits connecting Chatham to the Sarnia and to the Windsor areas. Without upgrading, the incorporation of renewable energy resources in Essex, Kent, Elgin, Lambton and Middlesex counties would be constrained due to thermal overload of regional circuits in the area following the incorporation of the Bruce to Milton 500 kV circuits in 2012. The Lambton to Longwood Transmission Upgrade Project will enable additional renewable generation to help contribute to meet the government's long-term energy plan targets. While not needed for local system reliability, the upgrade will improve congestion on the transmission system in the area west of London as well as improve the ability to deliver firm quality resources to Ontario's grid. This area has a significant amount of gas-fired generation and is the interconnection point between Ontario and Michigan.

The Lambton to Longwood Transmission Upgrade Project will enable approximately 500 MW of renewable generation in the west of London area. The exact amount of capacity enabled will depend on the resource type and location.

This project involves replacing the conductor (wire) on the existing Lambton to Longwood L24L/L26L circuits with high-temperature low-sag ("HTLS") conductor, and replacing associated insulators and hardware. There will be no change in the appearance of the transmission line after the project has been completed.

Filed: March 28, 2012

EB-2012-0082

Exhibit B

Tab 4

Schedule 4

Page 2 of 2

1 Hydro One intends to undertake the work with in-house construction resources,
2 augmented by outsourcing as required. Request for proposals for any required
3 equipment, materials and services will be tendered for public bids and posted on Hydro
4 One's website.

5

6 Based on all of the above, Hydro One submits that availability, reliability and quality of
7 electricity service will be maintained or improved.

CONSTRUCTION AND PROJECT ADMINISTRATION

Hydro One can achieve a December 2014 in-service date for the proposed upgrade work assuming that the Board grants leave to construct approval for the proposed facilities by August 2012.

To complete the project, Hydro One will:

- Upgrade approximately 70 kilometres of existing 230 kV double-circuit transmission line between Lambton TS and Macksville Junction to achieve a summer long-term emergency rating of at least 1700A and less than 1900A per circuit by replacing existing conductor 1192.5 kcmil Aluminum Conductor Steel Reinforced (“**ACSR**”) with high-temperature low-sag conductor. All existing insulators and associated conductor hardware will be replaced;
- Ensure prudent measures are taken in the course of reconductoring work to reduce EMF at ground levels, which is achieved via circuit phasing optimization;
- Review and update easement documents and road authority occupation agreements to meet current and future requirements;
- Determine the environmental approvals and/or permits required for the proposed undertaking;
- Carry out line construction activities that include setting up construction yards, construction crew mobilization at sites, building access roads and stringing pads on the existing right-of-way (“**ROW**”), installing gates and fences, clearing trees and brush from the ROW (if required), stringing new and removing old conductors, replacing all insulators and hardware associated with the new conductor, removal of access road and stringing pads, restoration of the lands, and demobilization of construction crews;

- 1 • Carry out protection works at Lambton TS and Longwood TS by modifying line
2 protection settings due to line impedance changes; and
3

4 A project schedule showing the tasks leading up to the in-service date is provided in
5 **Exhibit B, Tab 5, Schedule 2.**
6

7 The proposed work requires certain components of the power system to be removed from
8 service during portions of the construction period. Only single circuit outage will be
9 available for construction to carry out the reconductoring work. It is assumed that a
10 temporary bypass will not be required. These outage constraints have been considered in
11 developing the schedule and cost estimate.
12

13 The existing transmission ROW between Longwood TS and Lambton TS will remain the
14 same for this project. Additional temporary land rights for temporary access to the site
15 may be required. The exact location and extent of the additional required temporary
16 rights will be determined after the completion of the legal and engineering survey and the
17 layout plan.

1

CONSTRUCTION AND IN-SERVICE SCHEDULE

TASK	START	FINISH
Submit Section 92		March 28, 2012
Projected Section 92 Approval		August 2012
Land Acquisition		N/A
LINES		
Detailed Engineering	Feb 2012	May 2013
Tender & Award Insulators	Nov 2011	Dec 2011
Tender & Award other Major Long Lead Materials	June 2012	Oct 2012
Receive Major Long Lead Materials	Nov 2012	May 2013
Construction	Jun 2013	Dec 2014
Commissioning	Oct 2014	Dec 2014
In Service		Dec 2014

2

OTHER MATTERS / AGREEMENTS / APPROVALS

1.0 SYSTEM IMPACT ASSESSMENT (“SIA”)

Under the Market Rules, any party planning to construct a new or modified connection to the IESO-controlled grid must request an IESO SIA of these facilities. The IESO has completed an expedited SIA of the proposed facilities under the IESO Connections Assessment and Approval process and it is filed as **Exhibit B, Tab 6, Schedule 2**.

The IESO assessment addresses the impact of the proposed facilities on system operating voltage, system operating flexibility, and on the ability of other connections to deliver or withdraw power supply from the IESO-controlled grid. The IESO’s SIA confirms that Hydro One’s proposed transmission facility changes will not result in a material adverse impact on the reliability of the integrated power system.

2.0 CUSTOMER IMPACT ASSESSMENT (“CIA”)

Hydro One has completed a CIA in accordance with its customer connection procedures. The results confirm there are no adverse impacts on transmission customers as a result of this project. The CIA document is filed as **Exhibit B, Tab 6, Schedule 3**.

3.0 STAKEHOLDER AND COMMUNITY CONSULTATION

Hydro One conducted stakeholder and community consultation to provide information about the project and give people opportunities to ask questions and provide feedback. The government ministries, agencies, municipal staff and elected officials, and residents in a defined study area were consulted through personal contact, e-mail or direct mailing, newspaper notices, the establishment of a project website (www.HydroOne.com/projects)

1 and Public Information Centres. The feedback received through the consultation process
2 regarding potential construction effects on the natural environment, agriculture, and the
3 neighbouring property owners was considered and incorporated as appropriate. The
4 details of Hydro One's stakeholder consultation process are described in **Exhibit B, Tab**
5 **6, Schedule 4.**

6 7 **4.0 ENVIRONMENTAL ASSESSMENT** 8

9 The proposed Lambton to Longwood Transmission Upgrade Project has been screened-
10 out under the *Class Environmental Assessment for Minor Transmission Facilities* ("**Class**
11 **EA**"), which is approved by the Ontario Ministry of the Environment ("**MOE**") under the
12 Ontario Environmental Assessment ("**EA**") Act. The screening process was developed to
13 screen out proposed projects which would cause environmental impacts so slight as to be
14 of no concern. The Class EA screening was done in accordance with the process
15 described in Hydro One's "Class Environmental Assessment for Minor Transmission
16 Facilities" and the screen out letter was filed with the MOE on March 9, 2012.

17
18 As part of the screening process, information on the environment and potential effects of
19 construction were collected through the consultation process and site visits. Government
20 agencies and stakeholders were sent letters describing the project and given information
21 about the Public Information Centres. They were asked if they would like to meet to
22 discuss the project or provide input as part of the EA process as described Hydro One's
23 consultation process filed as **Exhibit B, Tab 6, Schedule 4.**

24
25 The Ministry of Natural Resources was the only agency/stakeholder that asked to meet
26 with Hydro One. The topic they wanted to discuss was Species at Risk in the area of the
27 transmission line. A meeting was held in January 2012, where Hydro One described the
28 project and the Ministry staff pointed out the locations of the Species at Risk and

1 discussed possible effects of construction activities. The Ministry sent a follow-up e-mail
2 which described the species further and recommended methods of preventing effects on
3 these species. Hydro One will follow the Ministry's recommendations.

4
5 A Stage 1 Archaeological Assessment has been completed for the entire transmission
6 right-of-way between Lambton and Longwood. In areas where temporary access roads
7 will be developed Hydro One will proceed with a Stage 2 Assessment. Hydro One will
8 obtain Clearance Letters as required from the Ministry of Culture.

9
10 Local concerns were heard and information was collected as described in **Exhibit B, Tab**
11 **6, Schedule 4**. This information along with the recommendations from the Ministry of
12 Natural Resources, the results of the archaeological studies and further input from
13 neighbours will be used in the development of Environmental Specifications. The
14 Specifications describes project specific commitments and mitigation measures.

15 16 **5.0 COMPLIANCE WITH INDUSTRY STANDARDS AND CODES**

17
18 The proposed facilities will be constructed, owned and operated by Hydro One. The
19 design and maintenance of these facilities will be in accordance with good utility
20 practice, as established in the *Transmission System Code*.

21 22 **6.0 LAND MATTERS**

23
24 The proposed facilities upgrades will be located on the existing towers at the 230 kV
25 overhead transmission corridor between the Lambton Transformer Stations and
26 Macksville Junction. Details on land requirements, existing and required land rights, and
27 the process for acquiring the required land rights is provided in **Exhibit B, Tab 6,**
28 **Schedule 6.**

7.0 OTHER APPROVAL REQUIREMENTS

As required, Hydro One will also address the Provincial and Federal regulatory requirements shown below:

Provincial	Federal
<ul style="list-style-type: none">• Ontario Heritage Act	<ul style="list-style-type: none">• Fisheries Act

There are also other approvals and permits that may be required as part of the construction process, including the following:

- Agreements from rail and pipeline companies for crossings
- Highway encroachment permits
- Approval and permits for road crossings, vehicle restrictions, etc.

Hydro One also voluntarily complies with municipal noise bylaws.

1
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IESO's System Impact Assessment

September 29, 2011

Mr. John Sabiston
Manager, Transmission Plans - West
Hydro One Networks Inc.
483 Bay Street
Toronto, Ontario
M5G 2P5



ieso

Power to Ontario.
On Demand.
Station A, Box 4474
Toronto, ON
M5W 4E5

Dear Mr. Sabiston:

***Upgrade of L24L/L26L between Lambton TS and Macksville Jct
Notification of Conditional Approval of Connection Proposal
CAA ID Number: 2011-EX566***

Thank you for the information regarding the proposed upgrade of L24L/L26L between Lambton TS and Macksville Jct. The IESO has concluded that the proposed changes will not result in a material adverse impact on the reliability of the integrated power system. The IESO is therefore pleased to grant "conditional" approval as detailed in the attached expedited System Impact Assessment report. Please note that any material changes to your proposal may require a re-assessment by the IESO and may nullify your conditional approval.

You may now initiate the IESO's "Market Entry" process. To do so, please contact Market Entry at market.entry@ieso.ca at least eight months prior to your expected energization date. The SIA report, attached hereto, details the requirements that your company must fulfill during this process, including demonstrating that the facility *as installed* will not be materially different from the facility *as approved* by the IESO. The document entitled "**Market Entry: A Step-by-Step Guide**" provided in the approval email describes the key steps in the Market Entry process.

When your company has successfully completed the IESO's "Facility Registration/Market Entry" process, the IESO will provide you with a **final approval**, thereby confirming that the facility is fully authorized to connect to the IESO-controlled grid.

For further information, please contact me via connection.assessments@ieso.ca.

Yours truly,

Michael Falvo
Manager – Market Facilitation
Telephone: (905) 855-6209
Fax: (905) 855-6319
E-mail: mike.falvo@ieso.ca
cc: IESO Records

All information submitted in this process will be used by the IESO solely in support of its obligations under the *Electricity Act, 1998*, the *Ontario Energy Board Act, 1998*, the *Market Rules* and associated policies, standards and procedures and in accordance with its licence. All information submitted will be assigned the appropriate confidentiality level upon receipt.

Final Report - Expedited System Impact Assessment
Hydro One Networks Inc.

1.0 GENERAL DESCRIPTION & PROPOSED MODIFICATIONS

Hydro One is proposing to upgrade the 230 kV double circuit L24L/L26L from Lambton TS to Macksville Jct to enable the incorporation of at least 300 MW of additional renewable generation in the area.

The in-service-date for this project is December 2014.

2.0 TECHNICAL SPECIFICATIONS

The ratings for the existing conductors are shown in the table below and are based on the following assumptions:

- Conductor bundling: 1
- Phase conductor type: ACSS (proposed)
- Phase conductor size: To be determined (TBD)
- Sheltered: Yes
- Operating voltage: 230 kV

The summer continuous rating will be increased to a minimum of 1700 A as shown in the table below.

Note – winter continuous and short and long term emergency ratings are not available at this time but will be updated via this report when available.

L24L/L26L Double Circuit Upgrade (from Lambton TS to Macksville Jct)		
Ratings	Existing Conductor 1192.5 ACSR 54/19	Proposed Conductor TBD
Summer Continuous Rating 35 °C, wind speed 0-4 km/h, 230 kV Conductor temperature = 93 °C	1060 A (L24L) 1060 A (L26L)	1700 A min
Summer Emergency Rating (LTE) 35 °C, wind speed 0-4 km/h, 230 kV Conductor temperature = 127 °C (or sag temperature if lower)	1400 A (L24L) 1330 A (L26L)	TBD TBD
Summer Emergency Rating (15-MIN STE) 35 °C, wind speed 0-4 km/h, 230 kV Conductor temperature = 150 °C (or sag temperature if lower)	1900 A (L24L) 1510 A (L26L) (based on a pre-load of 1060 A)	TBD TBD
Winter Continuous Rating 10 °C, wind speed 0-4 km/h, 230 kV Conductor temperature = 93 °C	1300 A (L24L) 1300 A (L26L)	TBD TBD
Winter Emergency Rating (LTE) 10 °C, wind speed 0-4 km/h, 230 kV Conductor temperature = 127 °C (or sag temperature if lower)	1580 A (L24L) 1520 A (L26L)	TBD TBD
Winter Emergency Rating (15-MIN STE) 10 °C, wind speed 0-4 km/h, 230 kV Conductor temperature = 150 °C (or sag temperature if lower)	2030 A (L24L) 1680 A (L26L) (based on a pre-load of 1300 A)	TBD TBD

3.0 REQUIREMENTS

Hydro One is required to provide the entire set of parameters for the L24L and L26L circuits with the upgraded conductors including impedance, admittance and thermal ratings during the Market Entry process. New line parameters must not result in a negative impact to the reliability of the IESO controlled grid.

ASSESSMENT & CONCLUSIONS

The information provided by Hydro One shows that the summer continuous rating of this double circuit L24L/L26L has been improved. The continuous, long time emergency and short time emergency ratings for both summer and winter will also be substantially improved.

This expedited System Impact Assessment concludes that the installation of the new conductors is not expected to have a material adverse impact on the IESO-controlled grid, provided that the requirements specified in this report are satisfied.

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Customer Impact Assessment



Hydro One Networks Inc.
483 Bay Street
Toronto, Ontario
M5G 2P5

CUSTOMER IMPACT ASSESSMENT

LAMBTON X LONGWOOD TRANSMISSION UPGRADE

230kV L24L/L26L 70KM CONDUCTOR UPGRADE

FINAL

Revision: Final

Date: December 14, 2011

Issued by: **Transmission Planning Department
System Development Division
Hydro One Networks Inc.**

Prepared by:

Reviewed by:

A handwritten signature in black ink, appearing to read "Konrad Witkowski", written over a horizontal line.

Konrad Witkowski
Assistant Network Management Officer
Transmission Planning
Hydro One Networks Inc.

A handwritten signature in black ink, appearing to read "John Sabiston", written over a horizontal line.

John Sabiston, P.Eng
Manager
Transmission Planning
Hydro One Networks Inc.

Disclaimer

This Customer Impact Assessment was prepared based on information available about the Lambton x Longwood Transmission Upgrade. 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. 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 shall not be liable to any third party which uses the results of the Customer Impact Assessment 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.

CUSTOMER IMPACT ASSESSMENT LAMBTON TO LONGWOOD TRANSMISSION UPGRADE

1.0 INTRODUCTION

1.1 Scope of the Study

This Customer Impact Assessment (CIA) study assesses the potential impacts of the proposed Lambton to Longwood Transmission Line Upgrade Project on the load customers and generators in the local vicinity. This study is intended to supplement the expedited System Impact Assessment “CAA ID 2011-EX566” issued by the IESO.

This study covers the impact of the conductor upgrade on the L24L/L26L 230kV circuits on the Hydro One Networks Inc. (Hydro One) system in the Lambton to Longwood corridor. The primary focus of this study is to identify the fault levels and capacity changes on the transmission customer connected facilities.

This study does not evaluate the overall impact of the 230kV L24L/L26L conductor upgrade on the bulk system. The impact of the new conductor on the bulk system is the subject of the expedited System Impact Assessment (SIA) which is issued by the Independent Electricity System Operator (IESO).

Transmission connected customers potentially impacted by the upgrade of the Lambton to Longwood 230kV L24L/L26L circuits were requested to provide comments to a draft report of this study. The 30-day review period started on November 4, 2011. All comments received on the draft report were incorporated in this revision.

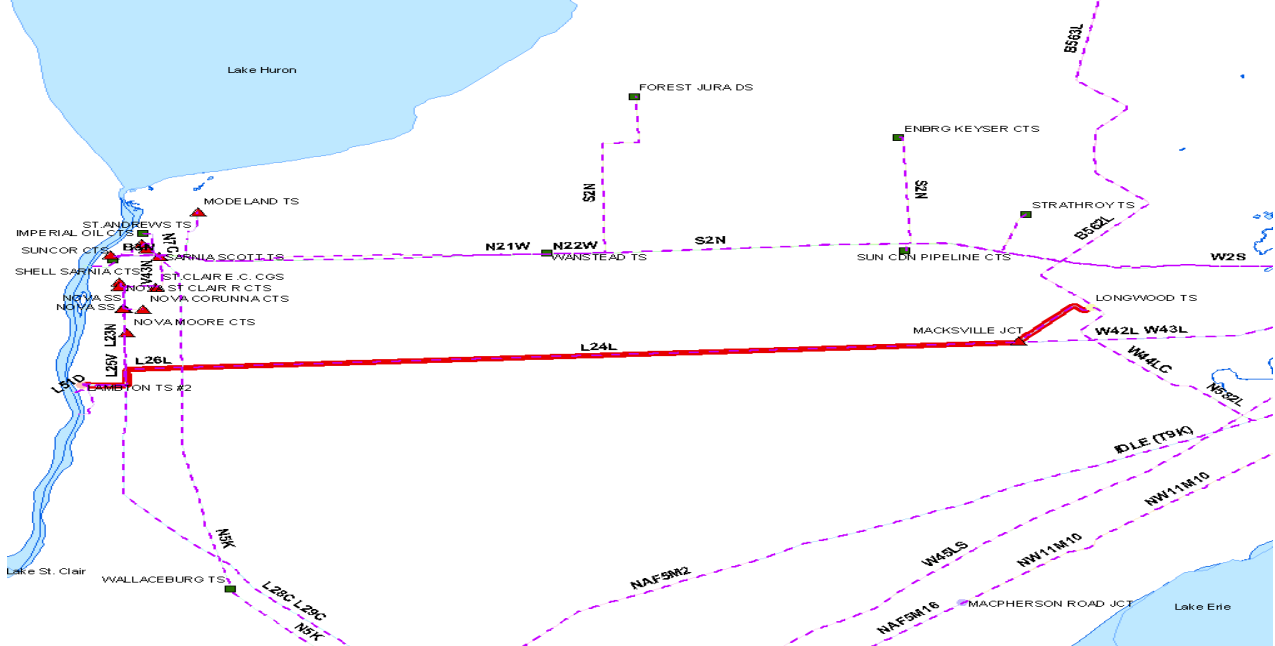
1.2 Background

The existing bulk transmission system west of London (Figure 1) comprises of 2-circuit 230 kV lines N21W/N22W between London and the Sarnia area, W44LC/W45LC between London and Chatham, W42L/W43L between London and Longwood, L24L/L26L between Longwood and the Sarnia area; 2-circuit 500 kV line B562L/B563L between Longwood and the Bruce area; and other circuits connecting Chatham to the Sarnia and to the Windsor areas. The incorporation of renewable energy resources in Essex, Kent, Elgin, Lambton and Middlesex counties would be constrained due to thermal overload of regional circuits in the area following the incorporation of the Bruce x Milton 500 kV circuits in 2012.

Hydro One is proposing to upgrade the existing Lambton TS x Macksville Jct. sections of the L24L and L26L 230kV circuits to achieve a LTE rating of at least 1700A, per circuit. This will enable the incorporation of at least 300MW of additional renewable generation in the area.

The required in-service date for the upgrade is December 2014.

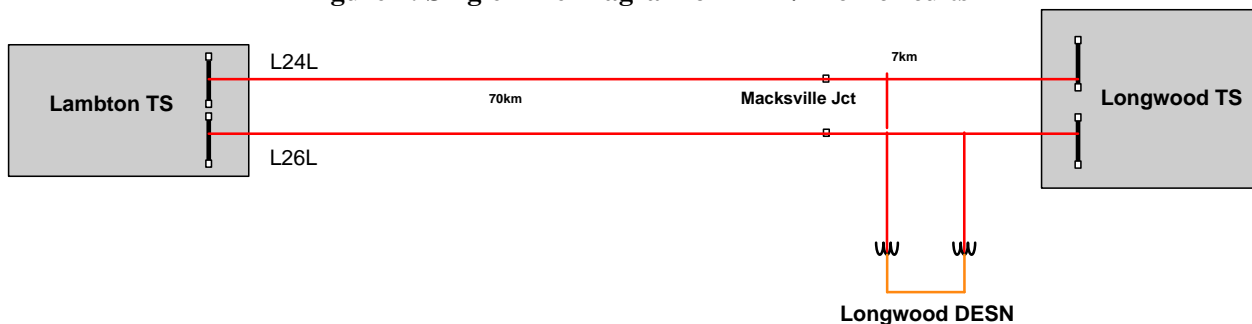
Figure 1: L24L/L26L Lambton x Longwood corridor and surrounding circuits



1.3 Single Line Diagram

The Lambton TS x Longwood TS L24L/L26L section is approximately 77km (Figure 2). At Longwood Jct the L24L and L26L continue on separate towers and eventually terminate in the Lambton TS yard. There are two different conductor sizes used, 1192.5 kcmil and 1843.2 kcmil. The section between Lambton TS x Macksville Jct is approximately 70 km of 1192.5 kcmil (54/19) ACSR conductor that has a rating of 1060 A (continuous) and 1400 A (long-term emergency) at 35°C ambient temperature, and 4 km/hr windspeed. The section between Macksville Jct x Longwood TS is 7 km of 1843.2 (72/7) section ACSR conductor that has a rating of 1350 A (continuous) and 1800 A (long-term emergency) at 35°C ambient temperature, and 4 km/hr windspeed.

The line work involves reconductoring of the Lambton TS x Macksville Jct section of circuits L24L/L26L (about 70 km) to provide a rating of at least 1700 A (long-term emergency), at 35°C ambient temperature and 4 km/hr windspeed. The reconductoring work is to be carried out in a way to achieve the required ampacity levels while limiting the scope of structure work to the Class EA screen out (new and rebuilt towers less than 25). To minimize conductor weight and tower work, the use of high-temperature low-sag conductors, such as ACSS, are under consideration..

Figure 2: Single Line Diagram of L24L/L26L circuits

2.0 CUSTOMER IMPACT ASSESSMENT

This Customer Impact Assessment (CIA) is a requirement of the Transmission System Code (TSC) to assess the potential impacts on the existing transmission connected customer(s). The primary focus of this study is to communicate the L24L/L26L upgrade to customers supplied directly by Lambton TS or Longwood TS in the vicinity of the mentioned geographical area (Figure 3). Table 1 summarizes the customers connected at each station:

Figure 3: L24L/L26L Lambton x Longwood Geographical Area

2.1 Study Assumptions

The following assumptions are modeled in the latest base case used for power system analysis. The major assumptions listed pertain to the Southwestern region:

- All hydraulic generation
- 6 Nanticoke

- 2 Lambton
- Brighton Beach (J20B/J1B)
- Greenfield Energy Centre (Lambton SS)
- St. Clair Energy Centre (L25N & L27N)
- East Windsor Cogen (E8F & E9F) + existing Ford generation
- TransAlta Sarnia (N6S/N7S)
- Imperial Oil (N6S/N7S)
- Thorold GS (Q10P)
- FIT Phase I, II, and III projects
- All 5 Phases of Samsung
- Second 500kV Bruce-Milton double circuit line
- 8 Bruce Units

Table 1: Customers Connected

Station	Customer
Lambton TGS	Ontario Power Generation Inc
Lambton TS	Hydro One Networks Inc. Greenfield Energy Centre CGS NOVA Moore CTS NOVA Corunna CTS NOVA St. Clair Shell Sarnia CTS St. Clair CGS
Longwood TS	Hydro One Networks Inc.

3.0 RESULTS OF ASSESSMENT

The incorporation of the new conductor will have no adverse material affect on any of the following factors:

- Supply Capacity
- Supply Reliability
- Voltage Performance
- Short Circuit Levels

The purpose of this project is to increase the thermal rating of the L24L/L26L circuits with the incorporation of a new conductor to 1700-1900A (LTE capability at 35°C, 4km/h wind speed). This will increase the transfer capability and enable the connection of an additional 300-500MW renewable generation in the west of London area depending on such factors as generators' locations and system conditions.

3.1 Short-Circuit Analysis

The L24L/L26L conductor upgrade will have no material impact on fault levels after completion of the project therefore existing levels at each bus are shown in Table 1 and 2. Two cases were included to

simulate scenarios whether the Lambton TS 230kV bus is closed or split. Current system conditions have the Lambton 230kV bus split.

Table 2: Present Fault Levels – Lambton TS 230kV Bus Split

Area Customers	Fault Levels (kA)			
	Symmetrical		Asymmetrical	
	3-Phase	L-G	3-Phase	L-G
Lambton TS PK1 230kV	40.830	38.795	54.481	49.192
Lambton TS PK2 230kV	43.529	48.710	61.100	70.667
Longwood TS 230kV	39.151	46.974	48.217	61.116
Longwood TS L24L 230kV	39.151	46.974	48.217	61.116
Longwood TS L26L 230kV	39.151	46.974	48.217	61.116
Longwood DESN L24L 230kV	39.151	46.974	48.217	61.116
Longwood DESN L26L 230kV	39.151	46.974	48.217	61.116
NOVA Moore CTS L25V 230kV	28.355	24.653	35.711	28.563
NOVA Moore CTS L27V 230kV	30.630	26.598	38.644	30.931
NOVA Corunna CTS V41N 230kV	26.070	22.408	32.041	25.673
NOVA Corunna CTS L27V 230kV	27.995	23.851	34.397	27.310
Greenfield Energy Centre CGS L38G 230kV	32.400	32.651	44.261	43.789
Greenfield Energy Centre CGS L37G 230kV	31.785	31.935	43.863	44.238
St Clair CGS V43N 230kV	36.490	35.019	47.875	47.414
St Clair CGS V41N 230kV	34.933	33.848	45.904	45.934
Shell Sarnia CTS L23N 230kV	28.360	24.733	35.174	28.156
Shell Sarnia CTS V43N 230kV	30.710	26.962	38.377	31.883
NOVA St Clair CTS V43N 230kV	32.314	28.733	40.890	24.500
NOVA St Clair CTS L23N 230kV	29.718	26.213	37.228	30.059
Longwood JQ 27.6kV	15.457	10.803	21.634	15.704
Lambton DESN D 27.6kV	8.107	5.722	11.037	7.846
Lambton DESN Y 27.6kV	7.631	5.583	10.421	7.678

Table 3: Present Fault Levels – Lambton TS 230kV Bus Closed

Area Customers	Fault Levels (kA)			
	Symmetrical		Asymmetrical	
	3-Phase	L-G	3-Phase	L-G
Lambton TS PK1 230kV	66.704	71.564	92.912	102.581
Lambton TS PK2 230kV	66.704	71.564	92.912	102.581
Longwood TS 230kV	39.161	46.983	48.230	61.130
Longwood TS L24L 230kV	39.161	46.983	48.230	61.130
Longwood TS L26L 230kV	39.161	46.983	48.230	61.130
Longwood DESN L24L 230kV	39.161	46.983	48.230	61.130
Longwood DESN L26L 230kV	39.161	46.983	48.230	61.130
NOVA Moore CTS L25V 230kV	31.911	27.533	40.052	31.829
NOVA Moore CTS L27V 230kV	31.965	27.379	40.128	31.702
NOVA Corunna CTS V41N 230kV	28.156	23.963	34.438	27.358
NOVA Corunna CTS L27V 230kV	28.413	24.084	34.839	27.537
Greenfield Energy Centre CGS L38G 230kV	42.587	41.562	56.849	54.130
Greenfield Energy Centre CGS L37G 230kV	43.550	43.590	59.943	59.477
St Clair CGS V43N 230kV	36.526	35.048	47.931	47.457
St Clair CGS V41N 230kV	36.417	35.011	47.792	47.446
Shell Sarnia CTS L23N 230kV	30.008	25.933	37.131	29.481
Shell Sarnia CTS V43N 230kV	30.769	26.994	38.439	31.913
NOVA St Clair CTS V43N 230kV	32.380	28.770	40.959	34.536
NOVA St Clair CTS L23N 230kV	31.536	27.567	39.424	31.572
Longwood JQ 27.6kV	15.457	10.803	21.635	15.705
Lambton DESN D 27.6kV	8.181	5.746	11.159	7.886
Lambton DESN Y 27.6kV	7.705	5.609	10.543	7.721

Notes:

1. Pre-fault voltages of 250 kV at 230 kV stations and 29 kV at 27.6 kV stations are assumed.
2. A breaker contact parting time of 25ms was assumed for asymmetrical current calculation for 230kV breakers and a contact parting time of 30ms was assumed for asymmetrical current calculation for 27.6kV breakers.
3. 2 units at Lambton GS, 6 units at Nanticoke, latest FIT project additions and all 5 phases of Samsung projects were considered.

Results for show that fault levels are within maximum symmetrical three-phase and single line-to-ground faults (kA) of 230 kV and 27.6 kV systems for all equipment connected to Hydro One transmission system as set out in Appendix 2 of the TSC when the Lambton TS 230kV bus is split. Therefore, if the generation that was assumed to be in-service (Note 3) was ON then the Lambton 230kV bus cannot be CLOSED.

- The maximum symmetrical three-phase and single line-to-ground faults given for those voltages in the TSC may be summarized as follows:

<i>Nominal Voltage (kV)</i>	<i>Max. 3-Phase Fault (kA)</i>	<i>Max. SLG Fault (kA)</i>
230	63	80 (usually limited to 63kA)
27.6	17	12 (4 wire)/ 0.45 (3 wire)

3.2 Preliminary Outage Impact Assessment

With appropriate construction and outage planning, it is expected that the conductor upgrade on the 230kV L24L/L26L circuits can be performed with minimal supply impact to the existing transmission customers.

4.0 Conclusion

This CIA study has confirmed that the Lambton x Longwood 230kV L24L/L26L conductor upgrade will be incorporated without adverse impact on the affected transmission customers. The plan increases the transfer capability and enables the connection of an additional 300-500MW renewable generation in the west of London area depending on such factors as generators' locations and system conditions. Customers should confirm that their equipment is able to withstand the impact of the fault levels contained in this report.

STAKEHOLDER AND COMMUNITY CONSULTATION

1.0 INTRODUCTION

Hydro One identified and consulted with affected property owners and stakeholders who may have an interest in the proposed transmission upgrade project. This schedule describes Hydro One's consultation process, input received and the results to date. Hydro One intends to continue communication and consultation with property owners along the transmission corridor throughout project implementation to ensure any concerns they may have about construction activities are promptly and adequately addressed. Hydro One has also committed to keeping municipal and county officials informed of the project's status, as well as staff of relevant provincial government ministries and agencies and interested parties on the project contact list.

2.0 CONSULTATION OBJECTIVES AND APPROACH

The intent of the consultation process is to inform affected property owners, stakeholders, government agencies and ministries, and members of the general public about the project and to provide them with opportunities to ask questions and provide feedback. Hydro One carried out a parallel First Nations & Métis consultation process for this project, as described in **Exhibit B, Tab 6, Schedule 5**.

Hydro One uses a variety of methods to communicate with identified stakeholders about a proposed undertaking and to establish the opportunity for two-way communication. For this project, communications vehicles included: newspaper advertisements; letters and phone calls to key stakeholders; post card invitations to directly-affected and adjacent property owners; the establishment of a project website (www.HydroOne.com/projects) and a designated contact person for on-going communication; a round of public

1 information centres (“**PICs**”) to speak directly with interested and/or affected parties; and
2 one individual face-to-face meeting with the principal of an elementary school adjacent to
3 the corridor. The activities and outcomes of the consultation process are documented in
4 the following sections.

5
6 The Ontario Power Authority (“**OPA**”) actively supported Hydro One in communicating
7 information relative to the need for the project and OPA staff also attended the PICs.

8
9 All issues identified during the consultation process are given full and fair consideration,
10 and Hydro One will develop project plans that address those issues, where appropriate. A
11 summary of the issues raised and how Hydro One intends to address them is provided in
12 Section 5 of this exhibit.

13 14 **3.0 CONTACT WITH STAKEHOLDERS AND THE PUBLIC**

15 16 **3.1 Municipal and County Officials**

17
18 Prior to notifying property owners, stakeholders and the public and before advertising for
19 the Public Information Centres, Hydro One contacted the Clerk or Chief Administrative
20 Officer of each county and lower-tier municipality in the study area by telephone to
21 arrange for project information to be placed on the agendas of the first council meetings
22 of 2012. Hydro One, in its communication, invited members of council and staff to the
23 planned PICs and also offered to have members of the project team attend a subsequent
24 meeting of Council. The municipalities within the study area include: the Counties of
25 Lambton and Middlesex; the Townships of St. Clair, Enniskillen, Brooke-Alvinston, and
26 Adelaide Metcalfe; and the Municipalities of Southwest Middlesex and Strathroy-
27 Caradoc (see **Exhibit B, Tab 6, Schedule 4, Attachment 1** for communication letter sent
28 to municipal and county officials).

1 **3.2 Members of Provincial Parliament (“MPPs”)**

2
3 The project area falls within the provincial ridings of Lambton-Kent-Middlesex and
4 Sarnia-Lambton. The MPPs for these areas were notified in advance of public
5 communications about the project and the public information centres, and Hydro One
6 offered to brief the MPPs and their staff (see **Exhibit B, Tab 6, Schedule 4, Attachment**
7 **2** for communication letter sent to MPPs).

8
9 **3.3 Government Ministries and Agencies**

10
11 Prior to contacting local stakeholders and members of the public in September 2011,
12 Hydro One informed and sought input on the proposed undertaking from a broad range of
13 provincial government ministries and agencies, and federal departments, including:

14
15 St. Clair Region Conservation Authority
16 Ministry of Agriculture, Food and Rural Affairs
17 Ministry of the Environment
18 Ministry of Natural Resources
19 Ministry of Energy
20 Ministry of Transportation
21 Ministry of Aboriginal Affairs
22 Ministry of Infrastructure
23 Ministry of Tourism, Culture and Sport
24 Ontario Provincial Police
25 Department of Fisheries and Oceans
26 Canadian Environmental Assessment Agency
27

1 In January 2012, Hydro One sent a letter to the government agencies listed above
2 providing updated information on the project, giving them another opportunity to offer
3 input, and enclosing the newspaper ad relating to the PICs scheduled for January 18 and
4 19.

5
6 See **Exhibit B, Tab 6, Schedule 4, Attachments 3a and 3b** for communication letter
7 sent to government ministries and agencies.

8
9 **3.4 Community Stakeholders**

10
11 Hydro One identified and provided project information to several local interest groups
12 including Chambers of Commerce, County Federations of Agriculture, and
13 nature/naturalist groups.

14
15 On January 19, 2012, Hydro One met with the Principal of Brigden Public School which
16 is located adjacent to the right-of-way. Hydro One staff provided an overview of what the
17 proposed construction activities near the school would entail and stated the company's
18 commitment to working with the school and its parents' council to minimize disruption
19 and to ensure the safety of students and the broader community who use school property
20 for recreational activities. Hydro One noted that electric and magnetic fields ("EMFs")
21 are often raised as a concern whenever transmission facilities near a school are being
22 constructed or upgraded. The principal was provided with information on EMFs
23 including Health Canada's fact sheet *Electric and Magnetic Fields at Extremely Low*
24 *Frequencies* (see **Exhibit B, Tab 6, Schedule 4, Attachment 4**). Hydro One will keep
25 Brigden Public School and Lambton-Kent District School Board officials aware of
26 project status.

1 Hydro One also notified other companies that have infrastructure in the vicinity of the
2 transmission line to be upgraded, including Ontario Power Generation, Union Gas,
3 Enbridge Gas, CP and CN railways, and Bluewater Power, a local distribution company
4 in the Sarnia-Lambton area.

6 **4.0 PUBLIC INFORMATION CENTRES**

8 **4.1 Schedule and Notification**

10 Hydro One held two public information centres (“**PICs**”), one in Lambton County and
11 the other in Middlesex County, to introduce the project to members of the community and
12 to receive their input. The PICs were held on Wednesday, January 18 at the Southwest
13 Middlesex Arena in Glencoe and on Thursday, January 19, 2012 at the Brigden
14 Community Hall. Representatives from Hydro One and the Ontario Power Authority
15 attended the PICs to discuss the project with local residents.

17 Hydro One used various methods to notify the local community and stakeholders about
18 the project and the PICs. A newspaper advertisement introducing the study and
19 advertising the PICs was placed in the following local and regional newspapers on these
20 dates: *Sarnia Observer* (January 12, 2012); *Sarnia / Lambton This Week* (January 11,
21 2012); *London Free Press* (January 11, 2012); and *Strathroy Age Dispatch* (January 12,
22 2012). The newspaper ad provided details about the proposed undertaking and included
23 a map of the transmission line to be upgraded. It also provided a Hydro One contact name
24 and contact information and a link to the Hydro One Networks website where more
25 information about the project could be obtained. A copy of the newspaper ad was
26 provided in advance to municipal officials and MPPs so they would be prepared to handle
27 any questions they might receive from their constituents. A copy of the newspaper ad is
28 filed in **Exhibit B, Tab 6, Schedule 4, Attachment 5**.

1
2 In addition, a post card invitation was mailed to about 250 property owners who would be
3 directly affected by the project or who live adjacent to the transmission corridor. A copy
4 of the post card is filed in **Exhibit B, Tab 6, Schedule 4, Attachment 6.**

5
6 **4.2 Public Information Centre Format**

7
8 The PICs were held in an Open House format where visitors could drop in anytime
9 between 5 p.m. and 8 p.m. After signing in at the registration desk, visitors were
10 provided with handouts of the display panels and a comment form on which they could
11 record their feedback both on the project in general and on the PIC. Handouts on EMFs
12 and energy conservation were also available. Hydro One and OPA employees
13 representing various disciplines were on hand to speak one-on-one with visitors about the
14 proposed project and to answer their questions.

15
16 Hydro One's experience with this open house format over the years is that it has proven
17 to be an effective way for visitors to gain a better understanding of the project being
18 proposed, while having the opportunity to freely express their views and to direct any
19 questions to the appropriate technical or subject-matter expert.

20
21 Hydro One had table-sized aerial photographs of the transmission corridor which allowed
22 property owners to see their properties in relation to the existing transmission line and
23 structures. Information panels were also displayed around the room explaining the need
24 for the project, what it would entail, the regulatory approvals process, the project
25 schedule, and information about electric and magnetic fields. A copy of the display
26 panels and the comment forms is filed as **Exhibit B, Tab 6, Schedule 4, Attachments 7**
27 **and 8.**

1 Hydro One also had a table-sized diagram showing typical construction activities for a re-
2 conducting project of this type. It explained the preparatory activities that take place on
3 the right-of-way, such as the clearing of vegetation and the installation of temporary
4 access roads, how conductor (wire) is removed and replaced, and what Hydro One does
5 to restore the right-of-way to its pre-construction condition. In addition, both the display
6 panels and the diagram of typical construction activities (in animated version) were
7 shown electronically on monitors at three computer stations.

8 9 **4.3 Summary of Feedback**

10
11 Twenty-two individuals attended the PIC in Glencoe on January 18, 2012, including an
12 elected official from the Oneida Nation of the Thames, an elected official from the
13 Township of Southwest Middlesex, and a representative of a wind developer.

14
15 The majority of attendees were local property owners who live along or in the vicinity of
16 the transmission line Hydro One is proposing to upgrade. In general, the area residents
17 who attended the PIC said they did not have any issues with the proposed re-
18 conducting of the transmission line. Some of the visitors were asking if this project
19 would help them connect microFIT installations which are constrained due to lack of
20 capacity on the distribution system. Representatives from Hydro One and the OPA
21 explained that while this project will provide additional capacity on the transmission
22 system, it will not help with constrained microFIT projects. Hydro One staff did speak
23 about some upgrades currently underway at Longwood Transformer Station (unrelated to
24 this project) which, once completed, will facilitate the connection of some additional
25 microFIT installations in the area. None of the visitors expressed any opposition to the
26 project.

1 Three individuals filled out comment forms, one anonymous stating that Hydro One
2 should feel free to do whatever it wants. Comments on the other two forms stated that
3 the visitors found the information, displays and maps helpful in explaining the project
4 and that Hydro One and OPA staff at the PIC adequately answered their questions.

5
6 Forty individuals attended the PIC in Brigden on January 19, 2012 including three elected
7 officials from the Township of St. Clair and one from the Township of Brooke-Alvinston,
8 a representative from the Sarnia Lambton Chamber of Commerce, and the Corporate
9 Relations Officer from OPG's Lambton Generating Station. The Principal of Brigden
10 Public School whom staff had met earlier that afternoon also dropped by. A few
11 representatives from wind developers also attended this PIC. The majority of visitors
12 were area landowners and farmers who were interested to learn more about the project
13 and how it might affect them. Many of the questions were related to the location of the
14 towers where the foundations might need to be repaired. This maintenance work
15 (separate from the reconductoring project) would be performed prior to the start of
16 construction for the reconductoring of the transmission line. There were also concerns
17 expressed by a few farmers, who cultivate or have livestock on both sides of the corridor,
18 that access across the right-of-way be maintained during construction. Several questions
19 were posed relating to compensation for crop damage/loss, damage to tile drains,
20 responsibility for replacing any fencing that would need to be removed during
21 construction. There were a few questions about the control of weeds during the
22 construction period and general maintenance along the right-of-way. More than one
23 individual pointed out the existence of the brine line.

24
25 One individual indicated there were old foundations with rebar sticking out of the ground
26 on one part of the right-of-way which he felt posed a safety hazard. Hydro One staff
27 marked the location of these on the map and will investigate the situation. A few
28 individuals also noted they were not pleased that private citizens ride ATVs along the

1 right-of-way and often trespass across private property which causes property damage
2 and disruption. One individual indicated his crops sustained damage when Hydro One
3 foresters were recently doing some work on the right-of-way, and his information was
4 noted for follow-up.

5
6 One couple questioned the need to increase the capacity of this transmission line when
7 coal-fired generation at OPG's Lambton Generating Station is being shut-down, and they
8 commented that they did not feel that wind and solar power is consistent enough to
9 warrant the cost of this re-conductoring project. However, no visitors expressed any
10 opposition to the project.

11
12 A few individuals asked what will happen to EMF levels once higher-capacity conductor
13 is installed. Hydro One explained that EMF levels will decrease from current levels due
14 to planned optimal phasing of the new circuits.

15
16 Representatives from the Alvinston Community Group also came to the PIC to let Hydro
17 One know about some of their community improvement projects, including a plan to
18 beautify the "Mill Pond" area along the transmission corridor. Hydro One's
19 Environmental Coordinator has committed to follow up with the community group when
20 next in the area for project work.

21
22 Six comment forms were filled out at the Brigden PIC. Four of them expressed the
23 visitor's satisfaction with the PIC information, displays and maps, and also with how
24 Hydro One staff responded to their questions. One respondent did not feel Hydro One's
25 information contained the technical detail he was seeking, nor did he feel that staff he
26 spoke with at the PIC adequately answered his questions.

5.0 SUMMARY OF KEY ISSUES AND HYDRO ONE RESPONSES

Following is a list of the main issues expressed during Hydro One's consultations to-date and the company's response or proposed method to address or mitigate the issue.

Subject	Description of Issue	Hydro One response
Status of agricultural licenses during construction	What will happen to those who farm (Bill 58) corridor lands under agricultural license?	Hydro One will notify these licensees that their license will be terminated for the duration of the construction.
Access across corridor during construction	Those with farms or livestock operations bisected by the corridor wish to maintain access across the right-of-way during construction	Hydro One will make every effort to enable farmers to maintain access across the corridor during construction and will discuss construction details to directly-affected property owners prior to beginning the project.
Loss of farm income / crop damage	Whether farmers will be compensated for loss of income during the construction phase	<p>Hydro One will attempt to minimize disruption to farm operations caused by construction activities. Where Hydro One holds an easement on private property, Hydro One will compensate for loss of crop income and will restore/repair any damage to the property subject to the terms of the easement agreement.</p> <p>For provincially-owned lands which are covered under an active or inactive agricultural license, notices to terminate will be issued in 2012 and Hydro One will compensate for loss of crop income and will restore/repair any damage to the property subject to the terms of the license agreement during the 2012 growing season. The license agreements will be re-established once construction work is completed.</p> <p>Hydro One will notify property owners with unauthorized farm operations on both</p>

Subject	Description of Issue	Hydro One response
		Hydro One and provincially owned lands prior to the start of construction, and advice them to refrain from planting. Hydro One will assess whether compensation for any damages shall be applied in these situations. Once construction is completed, Hydro One will enter into license agreements with these property owners.
Weeds and maintenance of the right-of-way	Weeds and general maintenance along the right-of-way are a concern to some property owners	Private property owners are responsible for determining if and how they wish to control weeds or maintain their property. On provincially-owned parts of the corridor, Hydro One controls vegetation to ensure the safety and the reliability of the transmission circuits; however it does not control weeds or cut grass on rural transmission corridors.
Potential Damage to fences and tile drains	Whether farmers will be compensated for any damage to fences and tile drains resulting from construction activities	Although it is not anticipated that the construction activities will damage any fences or tiles, Hydro One will investigate any claims for damage.
EMF	Concern about EMF levels increasing	<p>Although Hydro One is installing a high-capacity conductor, the EMF levels will decrease from current levels because the new conductor will be optimally phased (i.e. arranged for maximum cancellation of magnetic fields)</p> <p>Hydro One recognizes that some people are concerned about the perceived health effects of EMFs. Information about EMFs is always provided at PICs, and concerned individuals are encouraged to review the independent information posted on the EMF page of Hydro One's website at www.HydroOne.com or to call Hydro One's toll-free EMF information line: 1-800-728-9533.</p>
Species at Risk	The Ministry of Natural Resources ("MNR")	Hydro One met with the MNR in January 2012 to provide an overview of the project.

Subject	Description of Issue	Hydro One response
	identified Species at Risk in the area of the transmission corridor	Ministry staff pointed out the locations of the Species at Risk and discussed possible effects of construction activities. The Ministry subsequently provided information to further describe the Species at Risk and recommended methods of preventing effects on these species. Hydro One will follow the Ministry's recommendations.
Connecting microFIT projects	A few individuals with microFIT installations have been unable to connect them due to capacity constraints and were hoping the Lambton x Longwood project would facilitate their ability to connect.	This project will not facilitate the connection of currently constrained microFIT projects to the distribution system. However, some upgrades being undertaken at Longwood Transformer Station (independent of the Lambton to Longwood project) may give some microFit projects the ability to connect.

Hydro One Networks Inc.
Community Relations
483 Bay St., 8th Fl. South Tower
Toronto, ON M5G 2P5

Tel: 1-877-345-6799
Fax: 416-345-6984
Community.Relations@HydroOne.com



www.HydroOne.com/projects

January 3, 2012

Letter of Municipality

VIA EMAIL

Dear Warden and Members of Council:

Lambton to Longwood transmission line upgrade

Hydro One Networks Inc. (Hydro One) has initiated planning to upgrade the existing 230 kilovolt transmission line between Lambton Transformer Station (TS) in the Township of St. Clair and Longwood TS in the Municipality of Strathroy-Caradoc. The project, identified in Ontario's Long-Term Energy Plan for completion by 2014, is required to increase the capacity of the transmission system west of London to carry additional power from renewable, gas and other sources.

This project involves replacing the conductor (wire) and insulators on the existing towers and repairing selected tower foundations. There will be no change in the appearance of the transmission line, and it is expected that all work can be carried out within the existing right-of-way. Hydro One will maintain on-going communication with property owners and communities along the transmission line to minimize disruption during construction.

Consultation with local officials, First Nations, government agencies, property owners and communities along the transmission line is an important part of the planning and approvals process for this project. To this end, Hydro One will be hosting two Public Information Centres (PICs) on January 18 in Glencoe and January 19 in Brigden. Representatives from Hydro One and the Ontario Power Authority will be on hand to discuss the project with area residents and to answer any questions they may have. I've attached the newspaper advertisement that will appear in the *Sarnia Observer* and *Sarnia This Week* during the week of January 9. Hydro One is also notifying property owners along this transmission right-of-way by direct mail.

If you have any questions, or would like Hydro One to make a deputation to Council, please do not hesitate to contact me at 416-345-5130.

Best Regards,

A handwritten signature in blue ink that reads "C. Ognibene".

Carrie-Lynn Ognibene
Senior Advisor, Corporate Relations

Encl.

cc XXX, Chief Administrative Officer
XXX, General Manager, Corporate Services/Clerk
XXX, Manager, Planning & Development Services

January 4, 2012

Letter to local MPPs

VIA EMAIL

Dear XXXX:

Lambton to Longwood transmission line upgrade

Hydro One Networks Inc. (Hydro One) has initiated planning to upgrade the existing 230 kilovolt transmission line between Lambton Transformer Station (TS) in the Township of St. Clair and Longwood TS in the Municipality of Strathroy-Caradoc. The project, identified in Ontario's Long-Term Energy Plan for completion by 2014, is required to increase the capacity of the transmission system west of London to carry additional power from renewable, gas and other sources.

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If you have any questions, please do not hesitate to contact me at 416-345-5130. If you are unable to attend one of our PICs, members of our project team would be available to brief you and your staff at your constituency office.

Best Regards,



Carrie-Lynn Ognibene
Senior Advisor, Corporate Relations

Encl.

Hydro One Networks Inc.
483 Bay Street
TCT4, South Tower
Toronto, Ontario, M5G 2P5
www.HydroOneNetworks.com

Tel: (416)-345-6597
Fax: (416)-345-6919



Brian McCormick
Manager, Environmental Services and Approvals

September 19, 2011

Mr. /Ms. First Name Last Name, Title
Department
Agency
Address
City, Province, Postal Code

Re: Lambton to Longwood Transmission Upgrade Class Environmental Assessment

Dear Mr./Ms. First Name Last Name:

This letter is to inform you that Hydro One Networks Inc. (Hydro One) is planning to upgrade approximately 70 kilometres of an existing two-circuit 230 kilovolt (kV) transmission line in southwestern Ontario. The line extends from Lambton Transformer Station (TS) in the Township of St. Clair to Longwood TS in the Township of Strathroy-Caradoc, as shown on the attached map. This project was identified as a priority in Ontario's Long Term Energy Plan, and is required to increase capacity of the transmission system in the area west of London.

This project will involve replacing the conductor (wire) on the existing Lambton TS to Longwood TS L24L/L26L circuits with higher capacity conductor, and replacing associated insulators and hardware. Hydro One may also take the opportunity to replace a number of aging transmission towers to ensure the long-term integrity of this important transmission facility. All work will be conducted on the existing right-of-way and there will be no noticeable difference in the appearance of the transmission line after the project has been completed. Construction is scheduled to begin during the spring of 2013 and be completed by the beginning of 2014.

Projects of this nature are carried out under the *Class Environmental Assessment (EA) for Minor Transmission Facilities* approved under the provincial *Environmental Assessment Act*, and this project is also subject to approval in accordance with Section 92 (Leave to Construct) of the *Ontario Energy Board Act*. This project will undergo an initial Environmental Screening as the anticipated environmental effects of this undertaking are minor. If the potential for significant effects is identified through the screening process, Hydro One will evaluate the need for undertaking a full Class Environmental Assessment. We look carefully at potential effects and determine measures to eliminate or reduce them. All mitigation and restoration activities will follow Hydro One's Environmental Guidelines for Construction and Maintenance of Transmission Facilities.

A Public Information Centre (PIC) is planned for November 2011, to provide interested parties the opportunity to learn more about the project, provide their input, and discuss any issues or concerns with our Project Team.

Public consultation is an important part of the Class EA process, and we welcome input from First Nations and Métis communities, government agencies and the public. If you would like to learn more about this project and provide input as part of the Environmental Assessment process, we would be pleased to meet with you to discuss your interests.

For our records, please complete and return the attached Project Participation Form indicating whether or not you want to provide input to the project and the appropriate contact person. In the interim, if you have any questions please feel free to contact me at 416-345-6597, or Patty Staite, Environmental Planner at 416-345-6686.

Sincerely,

Brian J. McCormick, Manager
Environmental Services & Approvals

cc:

Attachments (2)

Hydro One Networks Inc.
483 Bay Street
TCT4, South Tower
Toronto, Ontario, M5G 2P5
www.HydroOneNetworks.com

Tel: (416)-345-6597
Fax: (416)-345-6919



Brian McCormick
Manager, Environmental Services and Approvals

January 9, 2012

Mr./Ms. First Name Last Name
Organization
Address
City, Province, Postal Code

VIA EMAIL

Re: Lambton to Longwood Transmission Upgrade Class Environmental Assessment

Dear Mr./Ms. Last Name:

This letter is to inform you about Hydro One Networks Inc. (Hydro One) plan to upgrade approximately 70 kilometres of an existing two-circuit 230 kilovolt (kV) transmission line in southwestern Ontario. The line extends from Lambton Transformer Station (TS) in the Township of St. Clair to Longwood TS in the Township of Strathroy-Caradoc, as shown on the attached newspaper Ad. This project is required to increase capacity on the transmission system for additional power from renewable sources, consistent with the Province of Ontario's Long Term Energy Plan.

Hydro One's work will involve replacing the conductor (wire) and associated hardware, such as insulators, on the existing transmission line. Hydro One will also undertake, as required, maintenance and/or replacement of selected tower foundations and components to ensure the long term integrity and reliability of this transmission line. All work will be conducted on the existing right-of-way and there will be no noticeable difference in the appearance of the transmission line after the project has been completed. Construction is scheduled to begin during the spring of 2013 and be completed by the end of 2014.

Projects of this nature are carried out under the *Class Environmental Assessment (EA) for Minor Transmission Facilities* approved under the provincial *Environmental Assessment Act*, and this project is also subject to approval in accordance with Section 92 (Leave to Construct) of the *Ontario Energy Board Act*. This project will undergo an Environmental Screening. Screening criteria will be used to assess the potential significance of effects. If significant effects cannot be avoided, Hydro One will carry out a full Class Environmental Assessment process. All mitigation and restoration activities will follow Hydro One's Environmental Guidelines for Construction and Maintenance of Transmission Facilities.

Public consultation is an important part of the Class EA process, and we welcome input from First Nations and Métis communities, government agencies and the public. If you would like to learn more about this project and provide input as part of the Environmental Assessment process, we would be pleased to meet with you to discuss your interests.

A Public Information Centre (PIC) is scheduled for January 18, 2012 at the Southwest Middlesex Arena in Glencoe and on January 19, 2012 at the Brigden Community Hall in Brigden, to provide interested parties the opportunity to learn more about the project and discuss any issues or concerns with our Project Team. Please see the enclosed newspaper ad for details.

If you have any questions please feel free to contact me at 416-345-6597, or Patty Staite, Environmental Planner at 416-345-6686.

Sincerely,

Brian J. McCormick, Manager
Environmental Services & Approvals

Attachments (1)



IT'S YOUR HEALTH



Electric and Magnetic Fields At Extremely Low Frequencies

The Issue

There are concerns that daily exposure to electric and magnetic fields (EMFs) may cause health problems. These concerns are reflected in a number of reports that have attempted to link EMF exposure to a variety of health issues, including childhood cancer.

Background

Electricity delivered through power lines plays a central role in modern society. It is used to light homes, prepare food, run computers and operate other household appliances, such as TVs and radios. In Canada, appliances that plug into a wall socket use electric power that flows back and forth at a power frequency of 60 cycles per second (60 hertz).

Every time you use electricity and electrical appliances, you are exposed to electric and magnetic fields (EMFs) at extremely low frequencies (ELF). The term “extremely low” is used to describe any frequency below 300 hertz. EMFs produced by the transmission and use of electricity belong to this category.

Electric and Magnetic Fields (EMFs)

Electric and magnetic fields are invisible forces that surround electrical equipment, power cords and wires that carry electricity, including outdoor power lines. You cannot see or feel EMFs.

Electric Fields: These are formed whenever a wire is plugged into an outlet, even when the appliance is not turned on. The higher the voltage, the stronger the electric field.

Magnetic Fields: These are formed when electric current is flowing within a device or wire. The greater the current, the stronger the magnetic field.

Electric and magnetic fields can occur separately or together. For example, when you plug the power cord for a lamp into a wall socket, it creates an electric field along the cord. When you turn the lamp on, the flow of current through the cord creates a magnetic field. Meanwhile, the electric field is still present.

The Strength of EMFs

Electric and magnetic fields are strongest when close to their source. As you move away from the source, the strength of the fields fades rapidly. This means you are

exposed to stronger electric and magnetic fields when standing close to a source (e.g., right beside a transformer box or under a high voltage power line), and you are exposed to weaker fields as you move away. When you are indoors at home, the magnetic fields from high voltage power lines and transformer boxes are weaker than those from household electrical appliances.

Canadian Exposures to EMFs at ELF

On a daily basis, most Canadians are exposed to EMFs generated by household wiring, fluorescent lighting, and any electrical appliance that plugs into the wall, including hair dryers, vacuum cleaners and toasters. In the workplace, common sources include video display terminals (computer monitors), air purifiers, photocopiers, fax machines, fluorescent lights, electric heaters and electric tools in machine shops, such as drills, power saws, lathes and welding machines.

Exposures in Canadian Homes, Schools and Offices Present No Known Health Risks

Research has shown that EMFs from electrical devices and power lines can cause weak electric currents to flow through the human body. However, these currents are much smaller than those produced naturally by your brain, nerves and heart, and are not associated with any known health risks.

There have been many studies about the effects of exposure to electric and magnetic fields at extremely low frequencies. Scientists at Health Canada are aware that some of these studies have suggested a possible link between exposure to ELF fields and

certain types of childhood cancer. The International Agency for Research on Cancer (IARC) has evaluated the scientific data and has classified ELF magnetic fields as being “possibly carcinogenic” to humans. IARC based this classification on the following:

- human health population studies showing weak evidence of an association with childhood leukemia; and
- a large database of laboratory study results showing inadequate evidence of an association with cancer in animals.

To put this into context, it is important to understand that the “possibly carcinogenic” classification is also applied to coffee, gasoline engine exhaust and pickled vegetables, and is often used for agents that require further study. In summary, when all of the studies are evaluated together, the evidence suggesting that EMFs may contribute to an increased risk of cancer is very weak.

Concerns about Electromagnetic Interference

In certain circumstances, EMFs can cause interference with electronic devices. For example, office workers may notice image movement (jitter) on their computer screens if the computer is in an area where magnetic fields are slightly elevated above background levels. Some sources that generate these slightly elevated levels are the cables that bring electrical power into an office area, and common electrical equipment, such as power transformers.

Magnetic fields that are capable of causing jitter on computer screens do not present any known risks to human health. To solve the jitter problem,

simply move the computer to another part of the room where the magnetic fields are weaker.

Minimizing Your Risk

You do not need to take action regarding daily exposures to electric and magnetic fields at extremely low frequencies. There is no conclusive evidence of any harm caused by exposures at levels found in Canadian homes and schools, including those located just outside the boundaries of power line corridors.

Health Canada's Role

Health Canada, along with the World Health Organization, monitors scientific research on EMFs and human health as part of its mission to help Canadians maintain and improve their health. At present, there are no Canadian government guidelines for exposure to EMFs at ELF. Health Canada does not consider guidelines for the Canadian public necessary because the scientific evidence is not strong enough to conclude that exposures cause health problems for the public.

Some national and international organizations have published health-based exposure guidelines for EMFs at ELF. However, these guidelines are not based on a consideration of risks related to cancer. Rather, the point of the guidelines is to make sure that exposures to EMFs do not cause electric currents or fields in the body that are stronger than the ones produced naturally by the brain, nerves and heart. EMF exposures in Canadian homes, schools and offices are far below these guidelines.



Health
Canada

Santé
Canada

Your health and
safety... our priority.

Votre santé et votre
sécurité... notre priorité.

Electric and Magnetic Fields At Extremely

Low Frequencies

Updated January 2010

IT'S YOUR HEALTH

Need More Info?

For further information contact:

The Consumer and Clinical Radiation
Protection Bureau
Health Canada
775 Brookfield Road
Ottawa, ON K1A 1C1
Telephone: (613) 954-6699
Fax: (613) 952-7584
E-mail: CCRPB-PCRPPC@hc-sc.gc.ca
[www.hc-sc.gc.ca/ahc-asc/branch-dirgen/
hecs-dgsesc/psp-psp/
ccrpb-bpcrpcc-eng.php](http://www.hc-sc.gc.ca/ahc-asc/branch-dirgen/hecs-dgsesc/psp-psp/ccrpb-bpcrpcc-eng.php)

Also, see the following Fact Sheets on the
World Health Organization (WHO) Web
sections:

Electromagnetic Fields and Public Health:
Exposure to Extremely Low Frequency
Fields, at:
[www.who.int/mediacentre/factsheets/
fs322/en/index.html](http://www.who.int/mediacentre/factsheets/fs322/en/index.html)

Electromagnetic Fields and Public Health:
Extremely Low Frequency(ELF), at:
[www.who.int/docstore/peh-emf/
publications/facts_press/efact/
efs205.html](http://www.who.int/docstore/peh-emf/publications/facts_press/efact/efs205.html)

Electromagnetic Fields and Public Health:
Extremely Low Frequency Fields and
Cancer, at: [www.who.int/docstore/
peh-emf/publications/facts_press/efact/
efs263.html](http://www.who.int/docstore/peh-emf/publications/facts_press/efact/efs263.html)

For more information visit the following
Web sites:

The International Agency for Research on
Cancer (IARC), Static and extremely low
frequency (ELF) electric and magnetic
fields. Report No. 80, at:
[www.iop.org/EJ/abstract/0952-4746/
21/3/604](http://www.iop.org/EJ/abstract/0952-4746/21/3/604)

IARC Carcinogen Classifications, at:
[http://monographs.iarc.fr/ENG/
Classification/index.php](http://monographs.iarc.fr/ENG/Classification/index.php)

The U.S. National Institute of
Environmental Health Sciences (NIEHS),
Questions and Answers about EMF at :
[www.niehs.nih.gov/health/topics/agents/
emf/](http://www.niehs.nih.gov/health/topics/agents/emf/)

It's Your Health, Safety of Exposure to
Electric and Magnetic Fields from
Computer Monitors and Other Video
Display Terminals at :
[www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/
monit-eng.php](http://www.hc-sc.gc.ca/hl-vs/iyh-vsv/prod/monit-eng.php)

For additional articles on health and safety
issues go to the *It's Your Health* Web
section at:

www.healthcanada.gc.ca/iyh
You can also call toll free at
1-866-225-0709
or TTY at 1-800-267-1245*

Notice of Commencement and Invitation to Public Information Centre

Lambton to Longwood Transmission Upgrade Class Environmental Assessment

ATTACHMENT 5

Hydro One Networks Inc. ("Hydro One") invites you to a Public Information Centre to learn more about plans to upgrade an existing double-circuit 230 kilovolt transmission line. The transmission line, as shown on the map below, connects Lambton Transformer Station (TS) in the Township of St. Clair with Longwood TS in the Municipality of Strathroy-Caradoc.

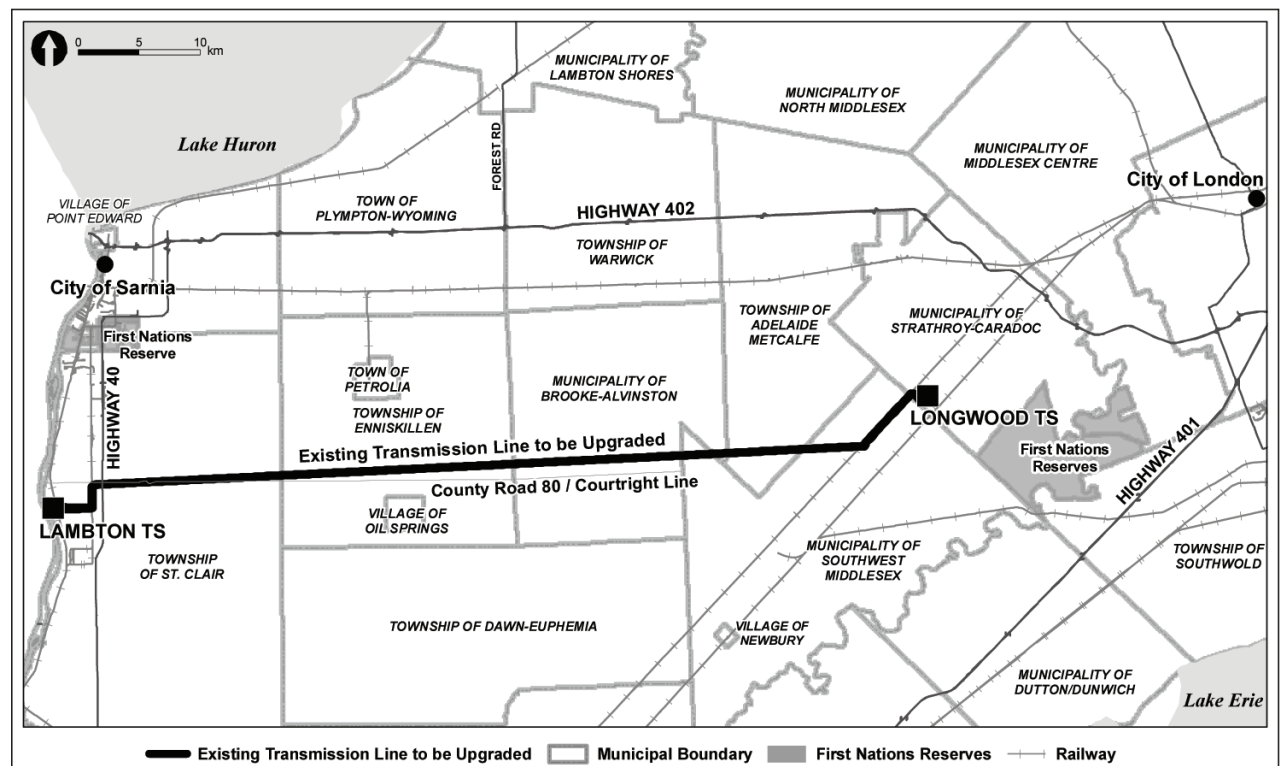
Consistent with the Province of Ontario's Long-Term Energy Plan, this project is required by the end of 2014 to increase capacity of the transmission system west of London to carry additional power from renewable, gas and other sources. The project involves replacing the conductor (wire) and insulators on the existing transmission towers. Hydro One will also repair selected tower foundations to ensure the long-term structural integrity of the transmission line.

Project Planning and Approvals

This project is being planned in accordance with the *Class Environmental Assessment for Minor Transmission Facilities*. The project will undergo an initial Environmental Screening. Screening criteria will be used to assess the potential significance of effects. If significant effects cannot be avoided, Hydro One will carry out a full Class Environmental Assessment.

The project will also require approval under Section 92 of the *Ontario Energy Board Act, 1998*. The Ontario Energy Board regulates the electricity sector in Ontario and will review Hydro One's "Leave to Construct" application to determine if the construction and operation of the proposed project is in the public interest.

Opportunities for public input exist throughout both the environmental planning and Ontario Energy Board review processes.



Public Information Centres

Interested parties are invited to attend one of our public information centres to learn more about the project and to provide comments to our project team. Please join us on:

Wednesday, January 18, 2012

5:00 p.m. – 8:00 p.m.
Southwest Middlesex Arena, Auditorium
138 Mill Street, Glencoe

Thursday, January 19, 2012

5:00 p.m. – 8:00 p.m.
Brigden Community Hall
3016 Brigden Road, Brigden

For More Information

If you have any questions or want to be added to the project mailing list, please contact:

Carrie-Lynn Ognibene, Community Relations
Hydro One Networks Inc.
Tel: 1-877-345-6799
E-mail: Community.Relations@HydroOne.com
www.HydroOne.com/projects



Partners in Powerful Communities



COMMUNITY NOTICE

Hydro One invites you to a Public Information Centre Lambton to Longwood Transmission Upgrade

ATTACHMENT 6



Partners in Powerful Communities

Dear Residents,

Hydro One is planning to upgrade the existing transmission line between Lambton Transformer Station (TS) and Longwood TS (see map on reverse). The project is required to increase capacity on the transmission system west of London to carry additional power from renewable, gas and other sources.

What's being proposed?

Hydro One would replace the conductor (wire) and insulators on the existing transmission towers and repair selected tower foundations. The appearance of the transmission line would not change. It is expected that all construction activities can be carried out within the existing transmission right-of-way.

Hydro One is committed to working with landowners and communities to minimize construction nuisances and disruption.

When would the work take place?

Tower foundation repairs could begin in 2012. Conductor and insulator replacement is scheduled to begin in Spring 2013. Construction activities at work areas along the right-of-way would be intermittent. All work is expected to be done by the end of 2014.

Join us at one of our Public Information Centres:

January 18, 2012

5:00 p.m. – 8:00 p.m.
Southwest Middlesex Arena
138 Mill Street, Glencoe

January 19, 2012

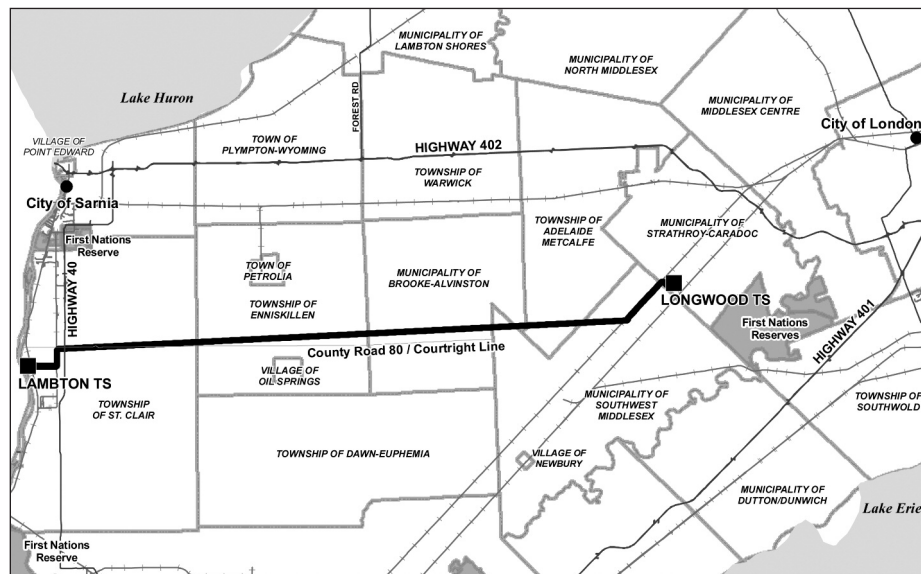
5:00 p.m. – 8:00 p.m.
Brigden Community Hall
3016 Brigden Rd, Brigden

Contact:

Carrie-Lynn Ognibene, Hydro One Community Relations
Tel: 1-877-345-6799
Email: Community.Relations@HydroOne.com
www.HydroOne.com/projects



Proposed Lambton to Longwood Transmission Upgrade Project



Place
Stamp
Here

Welcome to our Public Information Centre

Partners in Powerful Communities



Purpose of the Public Information Centre

- Provide you with information about Hydro One's proposed project.
- Present the study area for the project.
- Provide an opportunity for you to review display panels and speak directly with project team members.
- Outline the next steps in project planning, approvals and implementation.

The Ontario Power Authority

Established in 2004, the Ontario Power Authority (OPA) is responsible for ensuring a long-term supply of electricity for the province of Ontario. The OPA's mandate includes:

- leading and coordinating electricity conservation initiatives
- ensuring required investments are made in new electricity supply resources
- preparing a comprehensive and integrated long-term power system plan.



Partners in Powerful Communities



Hydro One

Hydro One Networks Inc. (Hydro One), a successor company to the former Ontario Hydro, is an electricity transmission and distribution company. It owns, operates and maintains Ontario's high-voltage transmission system and is responsible for:

- implementing transmission solutions identified by the OPA
- conducting public consultation and seeking environmental and regulatory approvals for specific projects
- co-ordinating the engineering, design and construction of new or upgraded transmission facilities.



Partners in Powerful Communities



Why this Project is needed

Part of Ontario's Long-Term Energy Plan

This project is one of five priority transmission projects included in Ontario's Long-Term Energy Plan for system reliability, to serve new load and to incorporate renewable energy to 2018.

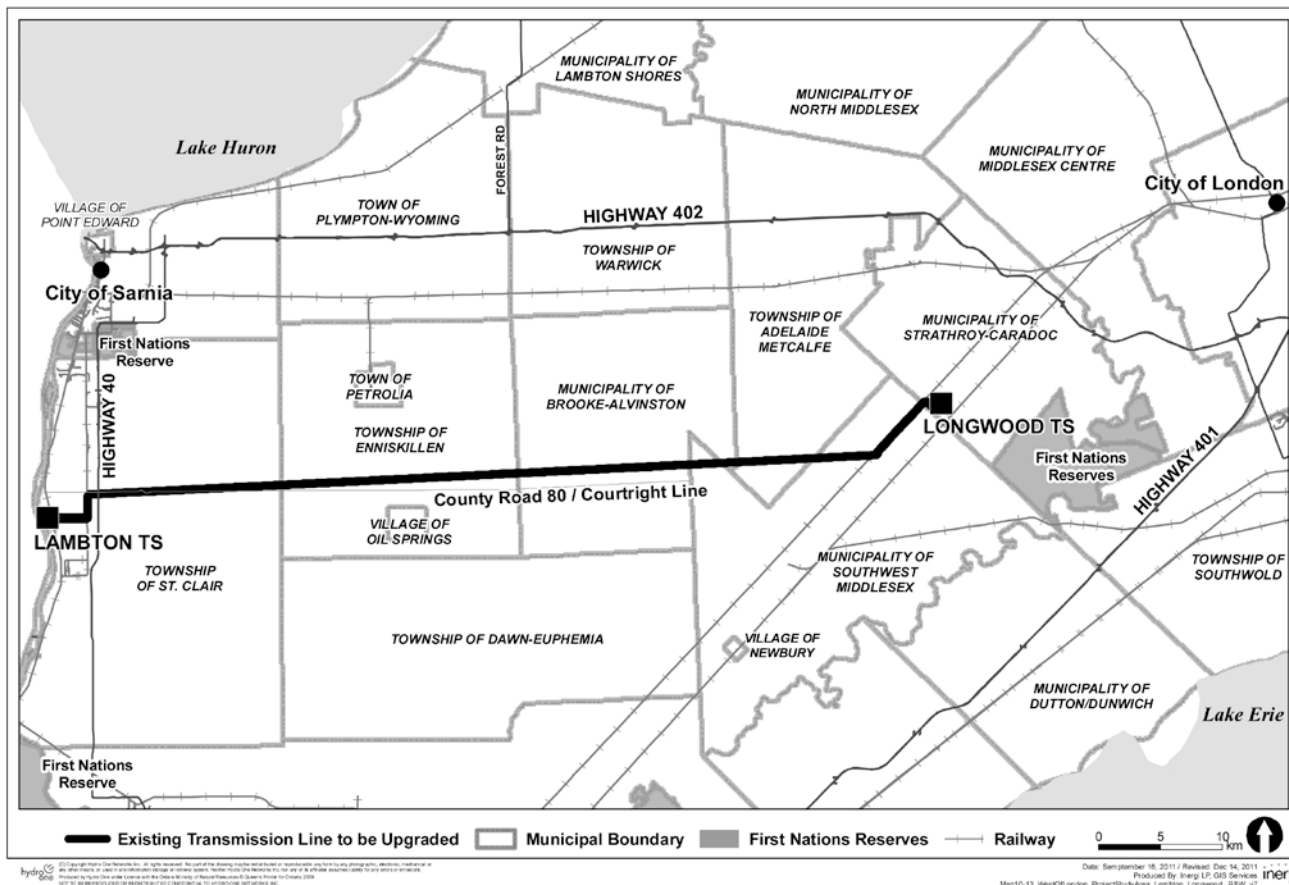
Meeting Ontario's Renewable Energy Targets

This project is needed to enable renewable generation in the area west of London to meet the government's targets for renewable energy.

Benefiting Other Generation Resources in the Area

This project will also enable capacity for gas or other resources (such as energy imports, demand response or customers with on-site generation), by reducing congestion and improving the ability to deliver firm resources to Ontario's grid.

Map of the Project Area



Partners in Powerful Communities

What does this Project involve?

- The conductor (wire) and insulators on the existing transmission towers would be replaced.
- Minor modifications may be made to certain tower components; however the appearance of the transmission line would not change.
- Selected tower foundations will be repaired.
- Hydro One is considering replacing the existing shield wire that protects the transmission circuits from lightning strikes with optical fibre ground wire.

Approval Requirements

Ontario Environmental Assessment Act

The facilities are subject to provincial *Environmental Assessment Act* approval in accordance with the *Class Environmental Assessment for Minor Transmission Facilities*, as a precursor to any other separate approvals.

Ontario Energy Board Act

“Leave to Construct” approval is required under Section 92 of the *Ontario Energy Board Act, 1998*.

Other

Hydro One will meet all other legislative and permitting requirements for individual projects.

Environmental Planning Process

During project planning and design, Hydro One will identify potential project effects related to:

- Properties along the corridor (residential, commercial, institutional)
- Agricultural operations
- Existing land uses and infrastructure
- Biodiversity and habitat (terrestrial and aquatic)
- Environmentally significant areas
- Archaeological (heritage) resources
- Community recreational resources.

Typical Construction Activities

- Temporary access roads are installed at various locations to permit heavy vehicle access.
- Vegetation may need to be cleared for access roads and work areas around towers.
- Agricultural leases along the right-of-way will be terminated during construction.
- Construction staging areas are set up along the right-of-way.
- Wood pole structures are installed at road, railway and distribution line crossings to prevent disruption to these facilities when the new conductor (wire) is pulled onto the towers.

Minimizing Construction and Project Effects

- Hydro One will work with landowners and communities along the transmission right-of-way to minimize disruption due to construction activities (noise, dust, soil compaction, traffic restrictions, etc.)
- Construction will be intermittent and it is expected that all work can be carried out within the existing right-of-way.
- Appropriate signage and flagging will alert the public to our work and ensure safety.
- Hydro One will develop environmental specifications for construction based on information collected during the project planning process.
- Optimal phasing of the new conductor will reduce electric and magnetic fields from current levels.
- Upon completion of the project, the right-of-way will be restored to its pre-construction condition.
- Any claim for crop losses during construction will be investigated.

Electric and Magnetic Fields (EMFs)

- EMFs are invisible forces that surround electrical equipment, power cords, and power lines. You cannot see or feel EMFs.
- Every time you use electricity and electrical appliances, you are exposed to EMFs at extremely low frequencies. EMFs produced by both power lines and use of electrical appliances, belong to this category.
- EMFs are strongest when close to the source. As you move away from the source, the strength of the fields fades rapidly.

Health Canada's Position on EMFs

- There is no compelling scientific evidence that EMF in living and school environments, regardless of locations from power transmission lines, cause ill health such as cancer. This position is consistent with the overall opinions from most national and international scientific bodies.
- Health Canada does not consider guidelines for EMF exposure necessary because scientific evidence is not strong enough to conclude that exposures cause problems.

Source: Health Canada submission to the British Columbia Environmental Assessment Office on the Vancouver Island Transmission Reinforcement Project; 2006.

Next Steps

Public Information Centres	January 2012
Submit Ontario Energy Board "Leave to Construct" Application	Spring 2012
Submit Environmental Screening Report to Ministry of the Environment	Spring 2012
Begin Tower Foundation Repairs *	2012
Begin Conductor and Insulator Replacements	2013
Project Completion	End of 2014

* Repairs to tower foundations will be undertaken as routine maintenance work. They are not included in the scope of the Transmission Upgrade Project and are not subject to OEB approval.

Your Input is Important to Us

Thank you for attending our Public Information Centre.

Please fill out a comment form before you leave, or
send us your comments afterward.

For project information, please contact us at:

Website: www.HydroOne.com/projects

Email: Community.Relations@HydroOne.com

Information Line: 1-877-345-6799

Fax: 416-345-6984

Partners in Powerful Communities





COMMENT FORM
Lambton x Longwood Transmission Upgrade Project
Public Information Centre

Southwest Middlesex Arena, Glencoe

January 18, 2012

THANK YOU for attending Hydro One's Public Information Centre. Please take a moment to answer a few questions and note your comments or questions about the information presented today.

1. Please tell us how you learned about the Public Information Centre:

- | | |
|--|--|
| <input type="checkbox"/> Newspaper ad | <input type="checkbox"/> Mail delivered to your home |
| <input type="checkbox"/> Hydro One website | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Newspaper article | |

2. Did you find the information, displays and maps helpful in explaining the project? Yes / No

3. Did Hydro One & Ontario Power Authority employees adequately answer your questions? Yes / No

4. How could the Public Information Centre have been improved?

5. Do you have any particular comments, questions, or concerns regarding this project or the proposed construction activities along the right-of-way? (Additional space on reverse)

Please provide your contact information below if we need to follow up with you, or if you would like to be on the mailing list for this project.

Name: _____

Mailing Address & Postal Code: _____

Tel: _____ Email: _____

Please give your comment form to one of Hydro One's representatives at the Public Information Centre, or send your comments to:

Carrie Lynn Ognibene, Hydro One Networks Inc.

483 Bay Street, 8th Floor, South Tower, Toronto, ON M5G 2P5

Tel. 1-877-345-6799; Fax: 416-345-6984; Email: Community.Relations@HydroOne.com

Please be advised that any of your personal information contained on this comment form will become part of the public record files for this project, and may be released, if requested, to any person, unless you state on this form that you do not consent to your personal information becoming part of the public record files and disclosed to any person upon request.

(additional comment space on reverse)

January 18, 2012

[illegible]

FIRST NATIONS & MÉTIS CONSULTATION PROCESS

1.0 INTRODUCTION

Hydro One recognizes the importance of early engagement with respect to consultation with First Nations communities regarding the Lambton to Longwood Transmission Upgrade Project (“**the Project**”). Hydro One is undertaking the procedural aspects of Consultation with potentially affected First Nations communities on behalf of the Crown throughout the completion of the Project. The following sets out Hydro One’s process for engaging with First Nations communities who may have an interest in, or may be potentially affected by, the Project.

2.0 IDENTIFICATION OF FIRST NATIONS & MÉTIS COMMUNITIES

On July 27, 2011 Hydro One sent a letter including a Project Study Area Map to the Ontario Ministry of Energy requesting input on First Nations and/or Métis communities with potential interests in or who may be potentially affected by the Project. In a letter to Hydro One dated August 12, 2011, the Ontario Ministry of Energy identified the following First Nations as having known or asserted Aboriginal or Treaty rights in the proposed project area:

- Chippewas of Kettle and Stony Point
- Aamjiwnaang First Nation (Chippewas of Sarnia)
- Oneida Nation of the Thames
- Chippewas of the Thames
- Moravian of the Thames
- Munsee-Delaware First Nation
- Bkejwanong (Walpole Island First Nations)
- Caldwell First Nations

1 The Ontario Ministry of Energy indicated in the same August 12, 2011 letter to Hydro One that it
2 was not aware of any Métis communities with established or credibly asserted Aboriginal or
3 Treaty rights in the areas relevant to the proposed Project.

4 5 **3.0 CONSULTATION PROCESS FOR FIRST NATIONS & MÉTIS COMMUNITIES**

6
7 Hydro One's First Nations & Métis consultation process is designed to provide relevant Project
8 information to potentially impacted First Nations and Métis communities in a timely manner and
9 for Hydro One to respond to and consider issues, concerns or questions raised by First Nations
10 and Métis communities in a clear and transparent manner throughout the regulatory review
11 processes (e.g., the Environmental Assessment ("EA") and OEB processes). Engagement
12 activities with potentially impacted First Nations communities include:

- 13
14 • Providing Project-related information to potentially impacted First Nations communities
15 including, project notification letters which describe the need and nature of the project,
16 and ensuring that all publicly available information is also made available to First
17 Nations & Métis communities;
- 18
19 • Offering meetings with the First Nations & Métis communities to provide Project-related
20 information and to address any concerns, issues or questions about the Project;
- 21
22 • Providing information, when requested, on the OEB's regulatory process, the EA process
23 or any other decision-making processes applicable to the Project;
- 24
25 • Giving consideration to all issues and concerns raised by the First Nations and Métis
26 communities as to how the Project may affect their interests, addressing any potentially
27 affected First Nations & Métis interests, and communicating the results of such
28 consideration clearly to the First Nations & Métis Communities;
- 29

- Recording all forms of engagement with the First Nations & Métis communities, including creating a list of concerns and issues raised by the First Nations & Métis communities regarding the Project and Hydro One's responses thereto.

4.0 ENGAGEMENT TO DATE WITH FIRST NATIONS COMMUNITIES

On September 1, 2011, Hydro One contacted the First Nations communities identified by the Crown through letters and email to provide notification of the Project and to extend an offer to meet and discuss the Project with Hydro One staff (see **Exhibit B, Tab 6, Schedule-5, Attachment 1**).

- Hydro One received a reply from the *Chippewas of Kettle and Stony Point* via fax requesting an opportunity to provide input on the Project. On September 14, 2011, Hydro One responded identifying potential meeting dates and times. On October 19, 2011, Hydro One followed up again via email to request potential meeting dates. Hydro One has not received a response to these follow-up efforts.
- On September 2, 2011, Hydro One received a response from the *Munsee-Delaware First Nation* seeking information about the project in relation to a potential mixed-waste generation project. On September 6 and 8, Hydro One offered to meet with the community to provide information on the project. Hydro One has not received a response to these follow-up efforts.
- On September 2, 2011 Hydro One received a response from *Caldwell First Nation* requesting that Hydro One meet with the Chief and Council. On September 6, and again on December 1, 2011, Hydro One requested potential meeting dates. On September 8, Hydro One also sent Chief Hillier from the Caldwell First Nation a copy of Section 92 of

1 *Ontario Energy Board Act* including an explanation of the OEB's Leave to Construct
2 process. Hydro One has not received a response to its follow-up efforts.

3
4 On January 4, 2012, via letter and email, Hydro One sent each First Nation community an
5 invitation to two Public Information Centres ("PICs") regarding the proposed Project which
6 were held in Glencoe, Ontario on January 18 and in Brigden, Ontario on January 19 (see **Exhibit**
7 **B, Tab 6, Schedule 5, Attachment 2**). A Band Councilor from the *Oneida Nation of the Thames*
8 attended the January 18 PIC in Glencoe, Ontario and spoke with Hydro One staff about the First
9 Nation's interest in receiving information on any archeology study findings associated with the
10 Project. Hydro One will share this information with the Oneida Nation of the Thames First
11 Nation upon availability.

12
13 On January 20, 2012, Hydro One received a letter from the *Chippewas of the Thames First*
14 *Nation* which requested a meeting with Hydro One to discuss the Project. On January 31,
15 February 2, 6, 7, 9 and via letter on February 13, Hydro One tried unsuccessfully to contact the
16 First Nation via the telephone number provided in the January 20 letter to arrange a meeting
17 date. Hydro One has received no response to these follow-up efforts.

18 19 **5.0 SUMMARY**

20
21 Hydro One will continue consultation efforts with these First Nations relating to the Lambton to
22 Longwood Transmission Upgrade Project. To date, no major issues or concerns have been raised
23 by the above mentioned First Nations communities. Hydro One will work to resolve any issues
24 or concerns in the event that anything should arise.

Hydro One Networks Inc.
483 Bay Street
TCT4, South Tower
Toronto, Ontario, M5G 2P5
www.HydroOneNetworks.com

Tel: (416)-345-6597
Fax: (416)-345-6919
Cell: (416)-525-1051



Brian McCormick
Manager, Environmental Services and Approvals

September 1, 2011

Chief First Name Last Name
First Nation
Address
City, Province, Postal Code

Re: Lambton to Longwood Transmission Upgrade Class Environmental Assessment

Dear Chief Last Name:

This letter is to inform you that Hydro One Networks Inc. (Hydro One) is planning to upgrade approximately 70 kilometres of an existing two-circuit 230 kilovolt (kV) transmission line in southwestern Ontario. The line extends from Lambton Transformer Station (TS) in the Township of St. Clair to Longwood TS in the Township of Strathroy-Caradoc, as shown on the attached map. This project was identified as a priority in Ontario's Long Term Energy Plan, and is required to increase capacity of the transmission system in the area west of London.

This project will involve replacing the conductor (wire) on the existing Lambton TS to Longwood TS L24L/L26L circuits with a higher capacity conductor, and replacing associated insulators and hardware. Hydro One may also take the opportunity to replace a number of aging transmission towers to ensure the long-term integrity of this important transmission facility. All work will be conducted on the existing right-of-way and there will be no noticeable difference in the appearance of the transmission line after the project has been completed. Construction is scheduled to begin during the spring of 2013 and be completed by the beginning of 2014.

Projects of this nature are carried out under the *Class Environmental Assessment (EA) for Minor Transmission Facilities* approved under the provincial *Environmental Assessment Act*, and this project is also subject to approval in accordance with Section 92 (Leave to Construct) of the *Ontario Energy Board Act*. This project will undergo an initial Environmental Screening process as the anticipated environmental effects of this undertaking are minor. If the potential for significant effects is identified through the screening process, Hydro One will evaluate the need for undertaking a full Class Environmental Assessment. We look carefully at potential effects and determine measures to eliminate or reduce them. All mitigation and restoration activities will follow Hydro One's Environmental Guidelines for Construction and Maintenance of Transmission Facilities.

Public consultation is an important part of the Class EA process, and we welcome input from First Nations and Métis communities, government agencies and the public. If you would like to

learn more about this project and provide input as part of the Environmental Assessment process, we would be pleased to meet with you to discuss your interests.

For our records, please complete and return the attached Project Participation Form indicating whether or not you want to provide input to the project and the appropriate contact person. In the interim, if you have any questions please feel free to contact me at 416-345-6597, or Patty Staite, Environmental Planner at 416-345-6686.

Sincerely,

Brian J. McCormick, Manager
Environmental Services & Approvals

cc: Ian Jacobsen, Sr. Manager, First Nations & Métis Relations, Hydro One

Attachments (2)

Hydro One Networks Inc.
483 Bay Street
TCT4, South Tower
Toronto, Ontario, M5G 2P5
www.HydroOneNetworks.com

Tel: (416)-345-6597
Fax: (416)-345-6919
Cell: (416)-525-1051



Brian McCormick
Manager, Environmental Services and Approvals

January 4, 2012

Chief First Name Last Name
First Nation
Address
City, Province, Postal Code

**Re: Lambton to Longwood Transmission Upgrade Class Environmental Assessment
Invitation to Public Information Centre**

Dear Chief Last Name:

This letter is to update you regarding Hydro One Networks Inc. (Hydro One) plan to upgrade approximately 70 kilometres of an existing two-circuit 230 kilovolt (kV) transmission line in southwestern Ontario. The line extends from Lambton Transformer Station (TS) in the Township of St. Clair to Longwood TS in the Township of Strathroy-Caradoc, as shown on the attached newspaper Ad. This project is required to increase capacity on the transmission system for additional power from renewable sources, consistent with the Province of Ontario's Long Term Energy Plan.

Hydro One's work will involve replacing the conductor (wire) and associated hardware, such as insulators, on the existing transmission line. Hydro One will also undertake, as required, maintenance and/or replacement of selected tower foundations and components to ensure the long term integrity and reliability of this transmission line. All work will be conducted on the existing right-of-way and there will be no noticeable difference in the appearance of the transmission line after the project has been completed. Construction is scheduled to begin during the spring of 2013 and be completed by the end of 2014.

Projects of this nature are carried out under the *Class Environmental Assessment (EA) for Minor Transmission Facilities* approved under the provincial *Environmental Assessment Act*, and this project is also subject to approval in accordance with Section 92 (Leave to Construct) of the *Ontario Energy Board Act*. This project will undergo an Environmental Screening. Screening criteria will be used to assess the potential significance of effects. If significant effects cannot be avoided, Hydro One will carry out a full Class Environmental Assessment process. All mitigation and restoration activities will follow Hydro One's Environmental Guidelines for Construction and Maintenance of Transmission Facilities.

Public consultation is an important part of the Class EA process, and we welcome input from First Nations and Métis communities, government agencies and the public. If you would like to learn more about this project and provide input as part of the Environmental Assessment process, we would be pleased to meet with you to discuss your interests.

A Public Information Centre (PIC) is scheduled for January 18, 2012 at the Southwest Middlesex Arena in Glencoe and on January 19, 2012 at the Brigden Community Hall in Brigden, to provide interested parties the opportunity to learn more about the project and discuss any issues or concerns with our Project Team. Please see the enclosed newspaper ad for details.

If you have any questions please feel free to contact me at 416-345-6597, or Patty Staite, Environmental Planner at 416-345-6686.

Sincerely,

Brian J. McCormick, Manager
Environmental Services & Approvals

cc: Ian Jacobsen, Sr. Manager, First Nations & Métis Relations, Hydro One

Attachments (1)

LAND MATTERS

1.0 DESCRIPTION OF LAND REQUIRED

The proposed transmission facility upgrade will involve replacing the conductor (wire) on the existing 230 kV overhead transmission corridor between the Lambton Transformer Station (“TS”) and Macksville Junction (“Jct.”) a distance of approximately 70 kilometres. In addition, Hydro One is proposing to replace the existing shield wire that protects the transmission circuits from lightning strikes with optical fibre ground wire. This work will extend beyond Macksville Jct. to Longwood TS, an additional distance of 7.5 kilometres.

The existing corridor from Lambton TS to Longwood TS is a combination of:

- provincially owned property segments held under title to the Ministry of Infrastructure, and managed by Infrastructure Ontario;
- easement rights on private properties; and
- municipal road corridors.

These rights consist of the existing statutory easement rights Hydro One enjoys on all of the provincially-owned corridor lands, as well as its existing permanent easements rights on private property lands.

No new permanent rights will be required to accommodate these proposed transmission facilities; however, temporary rights for construction purposes will be required at specific locations along the corridor.

1 **2.0 DESCRIPTION OF LAND RIGHTS**

2
3 The location of the existing easement rights on properties along the Lambton TS to
4 Macksville Jct. corridor are shown on the maps at **Exhibit B, Tab 6, Schedule 6,**
5 **Attachment 1.** The existing corridor crosses approximately 200 privately-owned
6 properties from Lambton TS to Macksville Jct. The properties traversed by the corridor
7 are mainly agricultural operations; however there are also residential, commercial, and
8 institutional lands uses and open space. The transmission line also crosses one rail spur at
9 the Lambton Generating Station, and Canadian Pacific, Canadian National Railway and
10 CSX Corporation rights-of-way, and 47 road allowances.

11
12 **3.0 LAND ACQUISITION PROCESS**

13
14 Hydro One will be using its existing land rights along the corridor from Lambton TS to
15 Macksville Jct. Additional temporary working rights will be required, but these are not
16 expected to be significant. Temporary property rights may be required when crossing or
17 paralleling existing or planned utilities (e.g., pipelines, power lines) or other planned
18 infrastructure (e.g., highways), and building a construction access roads and working
19 pads. These requirements will be determined and confirmed at the engineering design
20 stage. Access agreements with landowners will be required.

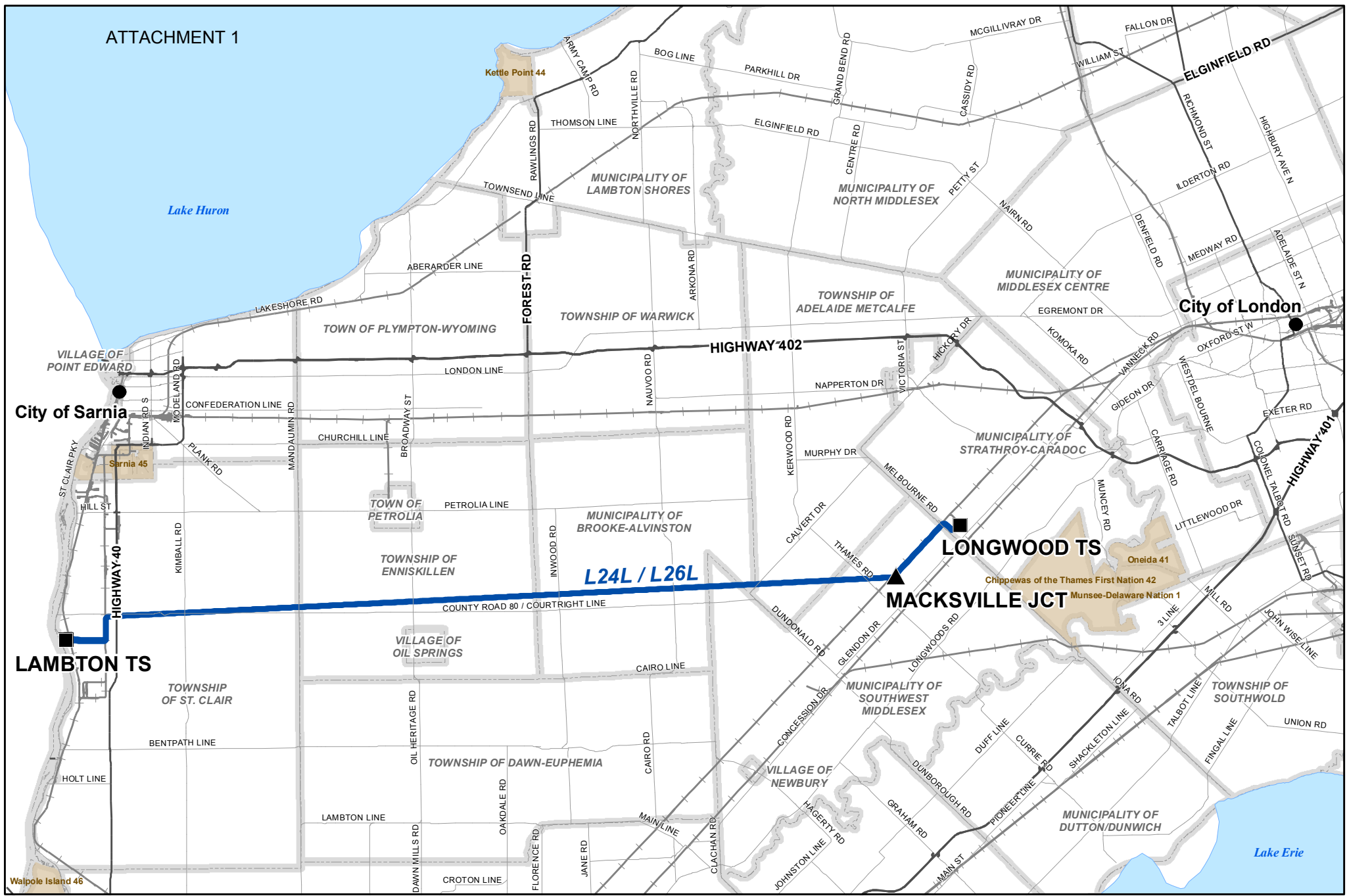
21
22 Copies of the Off-Corridor Temporary Access and Access Road, Temporary
23 Construction License Agreement for construction staging, and a Damage Claim
24 Agreement and Release form which will be used as the basis for compensation related to
25 construction impacts such as crop damage, are included at the end of this schedule (see
26 **Exhibit B, Tab 6, Schedule 6, Attachments 2, 3 and 4 respectively**).

1 Landowners have been informed of this project as part of the stakeholder and community
2 consultation process described in **Exhibit B, Tab 6, Schedule 4**. Landowners will also
3 be notified of the proposed transmission upgrade as part of the Board's Section 92 Notice
4 of Application requirements and as part of the EA approval process.

1

2

Map Showing Location of Existing Easement Rights



Date: September 19, 2011, Revised: March 15, 2011
 Produced By: Inergi LP, GIS Services
 Map10-13_WestOfLondon_ProjectStudyArea_Lambton_Longwood

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 NOT TO BE REPRODUCED OR REDISTRIBUTED CONFIDENTIAL TO HYDRO ONE NETWORKS INC.



- Existing Transmission Line to be Reconductored
- Municipal Boundary
- Lakes
- First Nations Reserves

- Major Highways
- Roads
- Railway
- Transformer Stations
- Cities
- Junctions

Lambton TS to Longwood TS Transmission Upgrade



1:400,000 0 5 10 km

1
2
3
4
5
6
7
8
9

Real Estate Agreements

Attachment 2	Temporary Access and Temporary Access Road
Attachment 3	Temporary Construction Licence
Attachment 4	Damage Claim

Temporary Access and Temporary Access Road

THIS AGREEMENT made in duplicate the _____ day of _____ 20XX

Between:

INSERT NAME OF 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 LEGAL DESCRIPTION*** (the “Lands”).

WHEREAS HONI in connection with its [Insert Project Name] Project (the “Project”) desires the right to enter onto the Lands in order to construct temporary access roads on, over and upon the Lands in order to access the construction site associated with the “Project.”

WHEREAS the Grantor is agreeable in allowing HONI to enter onto the Lands for the purpose of constructing temporary access roads 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 ***INSERT CONSIDERATION*** 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 yellow as shown in Schedule “A” attached hereto (the “Access Lands”), the rights privileges, and easements 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 Access Lands for the purpose of access to the construction site associated with the Project, subject to payment of compensation for damages to any crops caused thereby;
 - (b) to construct, use and maintain upon the Access Lands, a temporary road to the construction site associated with the Project, together with such gates, bridges and drainage works as may be necessary for HONI’s purposes (collectively, the “Works”), all of which Works shall be removed by HONI upon completion of the construction associated with the Project.; and
 - (c) 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 XXXX from the date written above (the “Term”). HONI may, in its sole discretion, and upon 60 days notice to the Grantor, extend the Term for an additional length of time, which shall be negotiated between the parties.

3. Upon the expiry of the Term or any extension thereof, HONI shall repair any physical damage to the 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.
4. All agents, representatives, officers, directors, employees and contractors and property of HONI located at any time on the 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.
5. 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 Access Lands or of its activities on or in connection with the 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.
6. 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
5th Floor
483 Bay Street South Tower
Toronto, Ontario M5G 2P5

Attention:

Fax:

TO GRANTOR:

7. 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.
8. 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.
9. 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 & DELIVERED
In the presence of:

OWNER:

Witness

Witness

HYDRO ONE
HST #

HYDRO ONE NETWORKS INC.

By: _____

Name:

Title:

I have authority to bind the Corporation

SCHEDULE "A"

PROPERTY SKETCH

TEMPORARY CONSTRUCTION LICENCE

THIS AGREEMENT made in duplicate X day of X 20XX
the

BETWEEN:

HYDRO ONE NETWORKS (hereinafter called the
INC. “HONI”) OF THE FIRST
PART

and

XXXXX (hereinafter called the
“Owner”) OF THE SECOND
PART

WHEREAS:

- (a) The Owner is the registered owner of lands legally described as ***INSERT LEGAL DESCRIPTION*** (the “Lands”).
- (b) HONI will be constructing new electrical transmission facilities in the area highlighted in yellow on a portion of the Lands more particularly shown on Schedule “A” attached hereto (the “Project”) and requires a portion of the Lands as a temporary construction area.
- (c) The Owner is agreeable in allowing HONI to enter onto the Lands and using a portion of the Lands for the purposes of a temporary construction area, which area is more particularly shown in red on Schedule “A” attached hereto in order to facilitate construction work on HONI’s adjacent transmission corridor.

NOW THEREFORE THIS AGREEMENT WITNESSES THAT IN CONSIDERATION of the sum of Five Dollars (\$5.00) now paid by each party to the other and the respective covenants and agreements of the parties hereinafter contained (the receipt and sufficiency of which are hereby acknowledged by the parties hereto), the parties hereto agree as follows:

1. The Owner hereby grants to HONI the right to enter upon a portion of the Lands highlighted in red, being XX acres, for the purpose of a temporary construction area (the “Licenced Area”).
2. HONI will pay the Owner the amount of ***INSERT CONSIDERATION*** for the rights granted herein (the “Licence Fee”).
3. HONI agrees that it shall take all reasonable care in its construction practices. HONI agrees that it shall erect such barriers and take such other appropriate safety precautions (i.e. gating system), as may be reasonably required to effectively prevent death or injuries to persons or the Owner’s property during the Term of this Agreement.

4. All agents, representatives, officers, directors, employees and contractors and property of HONI located at any time on the Licenced Area shall be at the sole risk of HONI and the Owner 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 Owner.
5. HONI agrees that it shall indemnify and save harmless the Owner from and against all claims, demands, costs, damages, expenses and liabilities (collectively the "Costs") whatsoever arising out of HONI's presence on the Lands or of its activities on or in connection with the Licenced Area arising out of the permission granted herein except to the extent any of such Costs arise out of the negligence or willful misconduct of the Owner.
6. This Agreement and the permission granted herein shall be for a XXXXX term commencing from XXXXX until XXXXX (the "Term").
7. This Agreement and the permission granted herein may be renewed by HONI on a month to month basis up to an additional one year term, upon the same terms and conditions contained herein, including the Licence Fee, which amount shall be pro-rated to a monthly amount if applicable, save and except any further right to renewal. In the event HONI desires to renew this Licence, it shall provide notice in writing to the Owner of its desire to renew the Licence, at least thirty (30) days prior to the end of the Term, or any renewal thereof.
8. Upon the expiry of this Licence, HONI shall remove all equipment and debris from the Licenced Area and shall restore the Licenced Areas to as close as is practicable to its original condition immediately prior to HONI's occupancy at HONI's sole cost and expense.
9. Any notice to be given to the Owner shall be in writing and shall be delivered by pre-paid registered post or by facsimile, at the address noted below:

in the case of the Owner, to:

Attention:
Fax No.:

in the case of the HONI, to:

Attention:
Fax No.:

Such notice shall be deemed to have been given, in, writing or delivered, on the date of delivery, and, where given by registered post, on the third business day following the posting thereof, and if sent by facsimile, the date of delivery shall be deemed to be the date of transmission if transmission occurs prior to 4:00 p.m. (Toronto time) on a business day and on the business day next following the date of transmission in any other case. It is understood that in the event of a threatened or actual postal disruption in the postal service in the postal area through which such notice must be sent, notice must be given in writing by

delivery or by facsimile, in which case notice shall be deemed to have been given as set out above. "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. 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.
12. Any amendments, modification or supplement to this Agreement or any part thereof shall not be valid or binding unless set out in writing and executed by the parties with same degree of formality as the execution of this Agreement.

IN WITNESS WHEREOF the parties hereto have executed this Agreement by the hands of their duly authorized signing officers in that regard.

Per: _____
Name:
Title:

I have authority to bind the Corporation

HYDRO ONE NETWORKS INC.

Per: _____
Name:
Title:

I have authority to bind the Corporation

SCHEDULE “A”



Schedule A.pdf

Damage Claim

THIS MEMORANDUM OF AGREEMENT dated the _____ day of _____ 20XX

Between:

_____ herein called the "Claimant"

-and-

Hydro One Networks Inc.

_____ herein called "HONI"

Witnesseth:

The Claimant agrees to accept(\$ _____) 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 HONI during the construction, completion, operation or maintenance of the works of HONI constructed on Lot(s) _____, Concession(s) _____ or according to Registered Plan No. _____ in the _____ of _____ of which property the Claimant is the _____ and which damages may be approximately summarized and itemized as:

WITNESS

CLAIMANT

Name:

Name:

Address:

Address:

HYDRO ONE NETWORKS INC.

HYDRO ONE
HST#

Per: _____
Name:
Title:

I have authority to bind the Corporation

RELEASE AND WAIVER
FULL AND FINAL RELEASE

IN CONSIDERATION of the payment or of the promise of payment to the undersigned of the aggregate sum of [INSERT SETTLEMENT AMOUNT] (\$), the receipt and sufficiency of which is hereby acknowledged, I/We, the undersigned, on behalf of myself/ourselves, my/our heirs, executors, administrators, successors and assigns (hereinafter the "Releasors"), hereby release and forever discharge HYDRO ONE NETWORKS INC., its officers, directors, employees, servants and agents and its parent, affiliates, subsidiaries, successors and assigns (hereinafter the "Releasees") from any and all actions, causes of action, claims and demands of every kind including damages, costs, interest and loss or injury of every nature and kind, howsoever arising, which the Releasors now have, may have had or may hereafter have arising from or in any way related to [INSERT DESCRIPTION OF THE DAMAGE CAUSED] on lands owned by [INSERT PROPERTY OWNER NAME] and specifically including all damages, loss and injury not now known or anticipated but which may arise or develop in the future, including all of the effects and consequences thereof.

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 this release.

AND FOR THE SAID CONSIDERATION, the Releasors further agree not to disclose, publish or communicate by any means, directly or indirectly, the terms, conditions and details of this settlement to or with any persons other than immediate family and legal counsel.

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 facsimile) 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.

IN WITNESS WHEREOF, the Releasors have hereunto set their respective hands this day of, 20XX.

SIGNED, SEALED & DELIVERED
In the presence of:

Witness

SIGNED, SEALED & DELIVERED
In the presence of:

Witness

Name

Name