Hydro One Networks Inc.
7th Floor, South Tower
483 Bay Street
Toronto, Ontario M5G 2P5
www.HydroOne.com

Tel: (416) 345-5393
Fax: (416) 345-6833
Joanne.Richardson@HydroOne.com

Joanne Richardson
Director – Major Projects and Partnerships
Regulatory Affairs

BY COURIER

March 16, 2015

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

Dear Ms. Walli:

EB-2013-0421 – Hydro One Networks' Section 92 – Supply to Essex County Transmission Reinforcement Project – Interrogatory Responses

Please find attached an electronic copy of responses provided by Hydro One Networks Inc. to Interrogatory questions. Two (2) hard copies will be sent to the Board shortly.

Below are the Tab numbers corresponding to each intervenor:

Tab	Intervenor
1	Ontario Energy Board (Board Staff)
2	Comber Wind LP (Comber)

An electronic copy of the Interrogatories, have been filed using the Board's Regulatory Electronic Submission System.

Sincerely,

ORIGINAL SIGNED BY JOANNE RICHARDSON

Joanne Richardson

cc. Intervenors for EB-2013-0421 (electronic only)

Attach.

Ontario Energy Board (Board Staff) **INTERROGATORY #1**

Interrogatory

Reference: Ex A/T1/S1

Preamble: The updated application is seeking an order of the Board for leave to construct "*transmission line facilities*" including: (a) Construction of approximately 13 km of new 230 kV double-circuit line; (b) installation of optic ground wire and (c) the proposed transmission station at Leamington ("Leamington TS"). For the construction of Leamington TS, please provide the information requested in the parts (i) to (v) below:

i. The evidence on Land Matters, at Ex B/T6/S7, provides a description of the lands required for the transmission line only. Please provide a description of the land required for the transformer station and the status of the land acquisition process with respect to these lands.
ii. The forms of agreement provided at Ex B/T6/S7 include agreements in relation to the construction of the transmission line only. If Leamington TS is to be located on private lands please provide the form of agreement if it is different than the one for the transmission line land. .
iii. At Ex B/T4/S2/p4/Table 2, Hydro One provides the Cost of Comparable Projects and compares the line work on the SECTR project with line work on the Hurontario Station and Transmission Line Reinforcement Project, on a $/km basis. However, no comparison has been provided in relation to the costs for the Leamington TS. Please provide a similar cost comparison for the station-related work.

Response

i. Hydro One purchased the land required for the transformer station in December 2009 and no additional land for the station will be required.. The land was purchased with a single dwelling and a barn and would be categorized as Agriculture.

ii. As stated in (i) above, Hydro One already owns the land and therefore forms of agreement will not be required.

iii. A similar-type cost comparison for station-related work is Duart TS, shown in the table below. Duart TS is a good comparison to Leamington TS because it is a DESN transformer station with the same voltage and capacity and has similar design requirements.

STATION-SPECIFIC COST OF COMPARABLE PROJECTS

Project	**Leamington TS (Estimate)**	**Duart TS (Actual)**
Technical	DESN with: • Two 125 MVA Dual Secondaries Transformers - 230/28-28 kV. • 4 Transformer Breakers • 1 Bus Tie Breaker • 6 Feeder Breakers • 1 Shunt Capacitor Bank • 1 Cap Bank Breaker	DESN with: • Two 125 MVA Dual Secondaries Transformers - 230/28-28 kV. • 4 Transformer Breakers • 1 Bus Tie Breaker • 2 Feeder Breakers • No Shunt Capacitor Bank • No Cap Bank Breaker
In-Service Date	2018-03-31	2011-12-12
Total Project Cost	**$32.1M**	**$25.8M**
Less: Non-Comparable Costs		
Cost associated with 4 additional feeders	0.7*4=$2.8M	$0M
Cost associated with 1 additional Cap Bank	1.7*1=$1.7M	$0M
Total Comparable Project Costs	**$27.6M**	**$25.8M**

- Associated Contingency, Overhead and capitalized interest are included for both projects.

Ontario Energy Board (Board Staff) **INTERROGATORY #2**

Interrogatory

Reference: Ex B/T1/S5/p.6 – OPA Evidence on Need

At page 6 of the above reference, it is stated that a regional plan that considered the needs to supply the Windsor-Essex Region was first developed as part of the 2007 IPSP. Please submit the relevant sections of the referenced plan.

Response

The evidence on the Windsor-Essex area which was developed as part of the 2007 IPSP is provided as Attachment A to this exhibit.

Attachment A

2007 IPSP (EB-2007-0707) Windsor – Essex area evidence

WINDSOR – ESSEX

1.0 EXECUTIVE SUMMARY

The OPA recommends transmission reinforcements in the Windsor-Essex area. The purpose of the recommended reinforcements is to address local area reliability needs. The reinforcements will also further the Directive's goal of promoting system efficiency and reducing congestion.

The Windsor-Essex area (W-E Area) is a major regional centre in Ontario. It has a peak electrical demand of over 1,000 MW. Steady growth in the communities on the outskirts of the City of Windsor and in East Essex, and the addition of major generation resources in the City of Windsor in recent years have stressed the electrical infrastructure serving this area. The OPA has identified three specific needs. They are:

1. inadequate supply capacity in East Essex;
2. lack of security of supply for the whole of the W-E Area; and
3. inadequate transmission capacity for delivering generation from the west part of Windsor to the bulk transmission grid.

After evaluating a range of options, the OPA has identified a preferred integrated plan for meeting these needs. This plan proposes the strengthening of the W-E 115 kV network by the addition of a 230/115 kV autotransformer station near South Woodslee in East Essex, in the vicinity of where the 230 kV and 115 kV transmission lines cross. This plan also includes uprating the existing 115 kV lines from this new station to the Kingsville station, uprating the 115 kV line between the Keith station and the Essex station in the City of Windsor, and pursuing Conservation, distributed generation and combined heat and power generation potential identified in the area. Of the alternatives studied, this alternative has the lowest cost and community impact.

At this time, the OPA and Hydro One have not sufficiently consulted on the plan with stakeholders, local officials and the affected communities in order to refine the siting of the proposed transmission facilities. Therefore, in this IPSP proceeding, the OPA is not seeking the OEB's approval of the need to construct the recommended facilities. It is the OPA's understanding that Hydro One will be proceeding with the EA process, including the necessary consultation with affected communities, in order to identify a station site for the new transformer station and following this process, will file a Section 92 leave-to-construct application to the OEB. The OPA supports Hydro One's intention to proceed with the EA process, community consultation and seeking Section 92 approval.

2.0 PROJECT LOCATION & OVERVIEW

The study area addressed by this project includes the County of Essex, Town of Amherstburg, Town of Essex, Town of Kingsville, Town of LaSalle, Town of Lakeshore, Town of Leamington, Township of Pelee, Town of Tecumseh, and City of Windsor, collectively referred to as the Windsor-Essex Area ("W-E Area").

A map of the area of focus for this study is provided in Figure 1.

Figure 1: Map of Focus Area

Source: County of Essex website

The W-E Area is one of the most agriculturally productive areas in Canada. It is also home to a very significant manufacturing base, particularly the automotive industry. The area has a population of approximately 410,000 people.

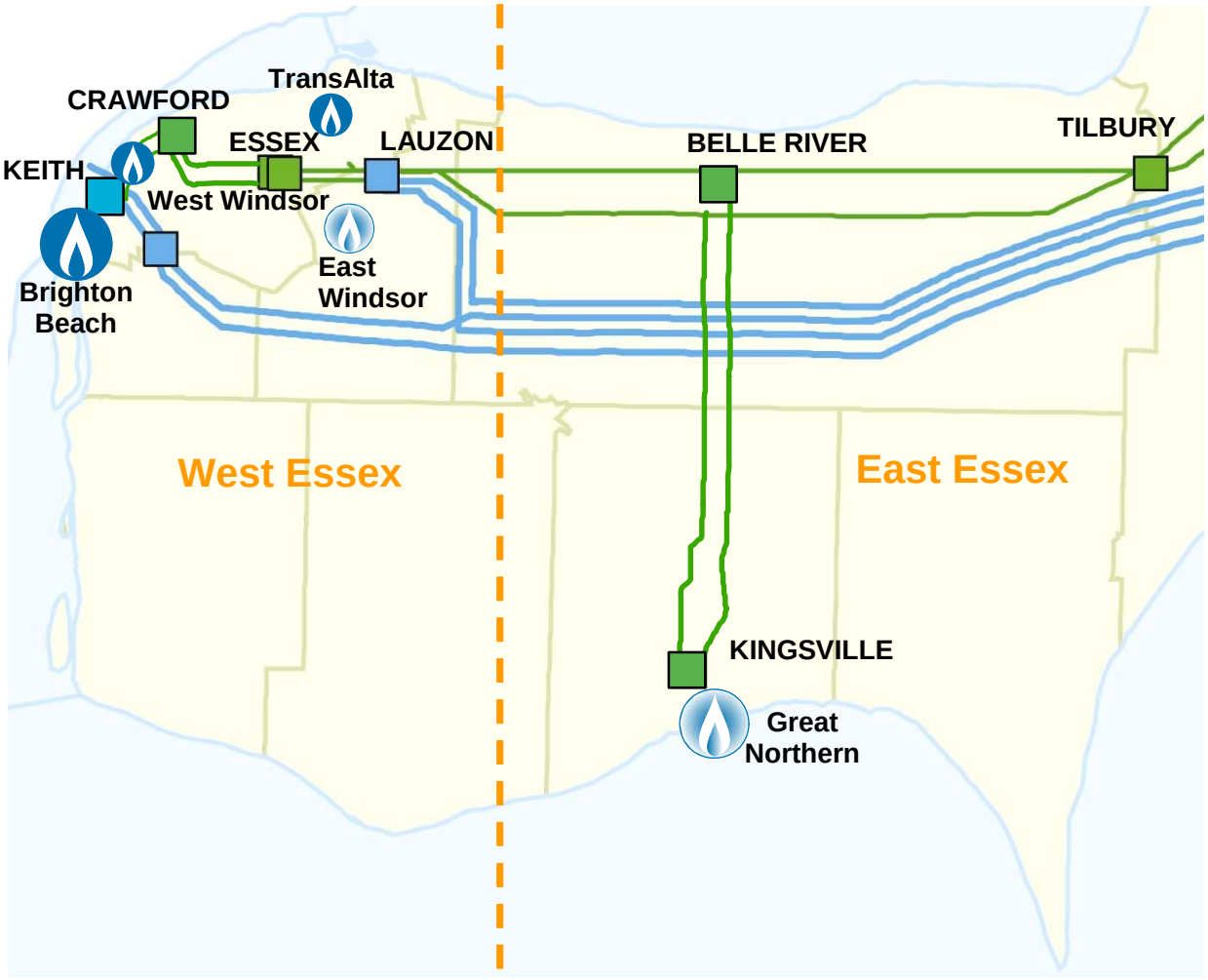
3.0 EXISTING FACILITIES

The W-E Area is a major load centre, with over 1,000 MW of load. It is one of the largest load centres in Ontario.

For study purposes, the W-E Area has been split into two sub-areas based on the electricity supply infrastructure: West Essex and East Essex. A simplified map of the

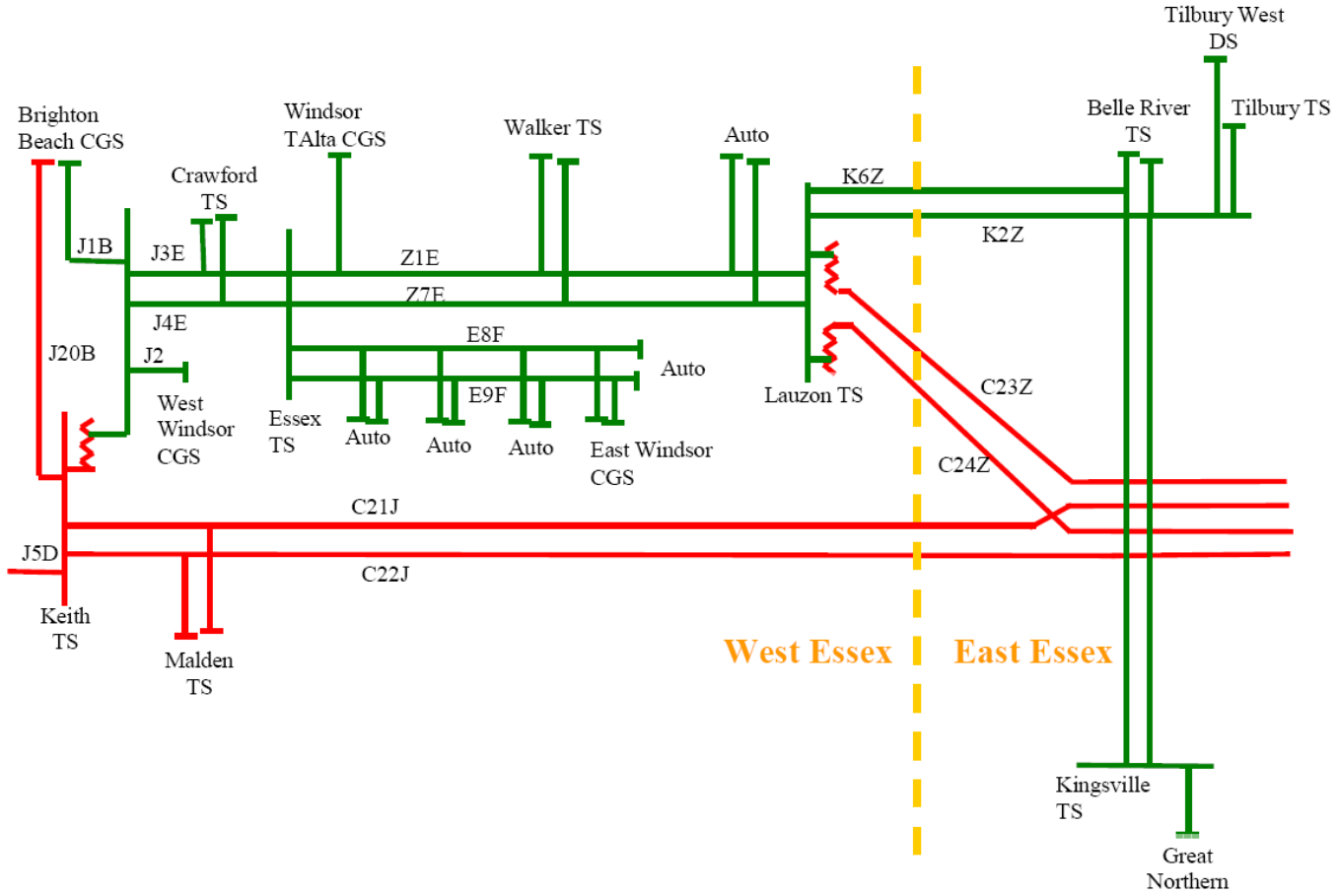
existing transmission facilities is provided in Figure 2. A schematic diagram of the existing facilities is provided at Figure 3.

Figure 2: Simplified Map of Existing Transmission Facilities



Source: OPA

Figure 3: Schematic Diagram of Existing Facilities



Source: OPA and Hydro One

EB-2007-0707
Exhibit E
Tab 5
Schedule 4
Page 5 of 28

3.1 West Essex

West Essex includes the City of Windsor, the Town of LaSalle, the Town of Tecumseh, the Town of Amherstburg, and the Town of Essex. West Essex has a load of roughly 850 MW, which is supplied by both the 115 kV and 230 kV networks.

The main supply in West Essex is from two double-circuit 230 kV lines, C21J/C23Z and C22J/C24Z, which run west from Chatham to Sandwich Junction. At Sandwich Junction, the configuration of the four circuits is changed and the right-of-way ("ROW") splits: one double-circuit 230 kV line with circuits C21J/C22J heads west to the Keith Transformer Station ("TS"). The second double-circuit 230 kV line, with circuits C23Z/C24Z, heads northwest to Lauzon TS. Both Keith TS and Lauzon TS have two autotransformers which supply the 115 kV network in West Essex and East Essex. In West Essex, the 115 kV network is composed of one double circuit line that runs from Keith TS to Essex TS (J3E/J4E) and then proceeds from Essex TS to Lauzon TS (Z1E/Z7E) through the city of Windsor.

There are six transformer stations in West Essex: Crawford TS, Essex TS and Walker TS which are 115 kV stations, and Keith TS, Lauzon TS and Malden TS which are connected to the 230 kV system. There are also several automotive loads fed directly by circuits E8F/E9F from Essex TS that total approximately 100 MW.

West Essex also has three existing generators, as well as a fourth with a planned in-service date of 2009:

- Brighton Beach – This generator is connected to the 115 kV and 230 kV buses at Keith TS and can supply approximately 580 MW.
- West Windsor Power – This generator is connected to the 115 kV bus at Keith TS and supplies 128 MW.
- Windsor TransAlta – This generator is connected to circuit Z1E and provides 78 MW of power.
- East Windsor Cogen Centre – This generator will be connected to E8F and E9F by 2009 and will provide 84 MW of supply.

This area also has an interconnection with Detroit, Michigan that has a capacity of approximately 400 MW.

3.2 East Essex

East Essex includes the Town of Lakeshore, the Town of Kingsville, the Town of Leamington and the Township of Pelee. It has approximately 200 MW of load. All of East Essex is supplied by the 115 kV network from Lauzon station.

Supply to East Essex is provided by one double-circuit line, K2Z/K6Z, which runs east from Lauzon TS to Belle River TS. Just east of Lauzon station, circuit K2Z is tapped, and a single-circuit line proceeds east to Tilbury and south to Kingsville TS. Circuit K6Z also proceeds south to Kingsville TS after supplying Belle River TS.

There are three transformer stations in East Essex: Belle River TS, Kingsville TS, Tilbury TS and Tilbury Distribution Station ("DS"). These stations are all connected to the 115 kV system.

There is also one new generator, Great Northern Tri-Gen Facility, expected to come online in 2008 in the Leamington area. It will be connected to Kingsville TS and will supply about 12 MW of power.

4.0 NEED

In order to assess supply adequacy and security in the W-E Area, the forecast demand at peak was examined. The amount of available local resources was then deducted, and the remaining load was compared to the supply capability of the area. For the purpose of assessing congestion, the amount of total generation in the area was also compared with the capability of the transmission system to deliver this generation to the main grid. The determination of need was consistent with the assumptions, considerations and criteria contained in the IESO Ontario Resource and Transmission Assessment Criteria (Exhibit E-7-1, Attachment 3).

4.1 Historical Growth & Load Forecast

Demand in the W-E Area peaks in the summer period. In 2006, the load in West Essex reached nearly 875 MW, while East Essex load peaked at around 200 MW.

Over the last five years, the total load in West Essex has declined slightly, mainly due to a loss of manufacturing loads associated with the automotive industry. Although it is difficult to forecast load growth for the City of Windsor due to the large industrial load component, electricity growth is forecast to decrease by approximately 0.1% for West Essex over the next 10 years.

Over the same period, East Essex has experienced much more robust growth. For the next 10 years, East Essex is forecast to grow at about 1.6%, close to the provincial average of 1%.

Historical station loading and growth rates for West Windsor, East Windsor and the W-E Area as a whole are shown in Table 1, Figure 4, Figure 5, and Figure 6. It should be noted that Lauzon TS was supplying a portion of East Essex's load, prior to 2006. When the new Belle River TS was brought in-service in 2006 (see Attachment 1 to this exhibit for the System Impact Assessment), roughly 27 MW of load was transferred off Lauzon to this new station. This load transfer has distorted the historical growth rates for both West Essex and East Essex. West Essex's load growth is thus low at -1.1%, rather than the 0.6% it would have been if the load had not been transferred. Conversely, East Essex's growth appears to be relatively high at 5.7%, in comparison to the actual growth of 1.9% when the transferred load is not included.

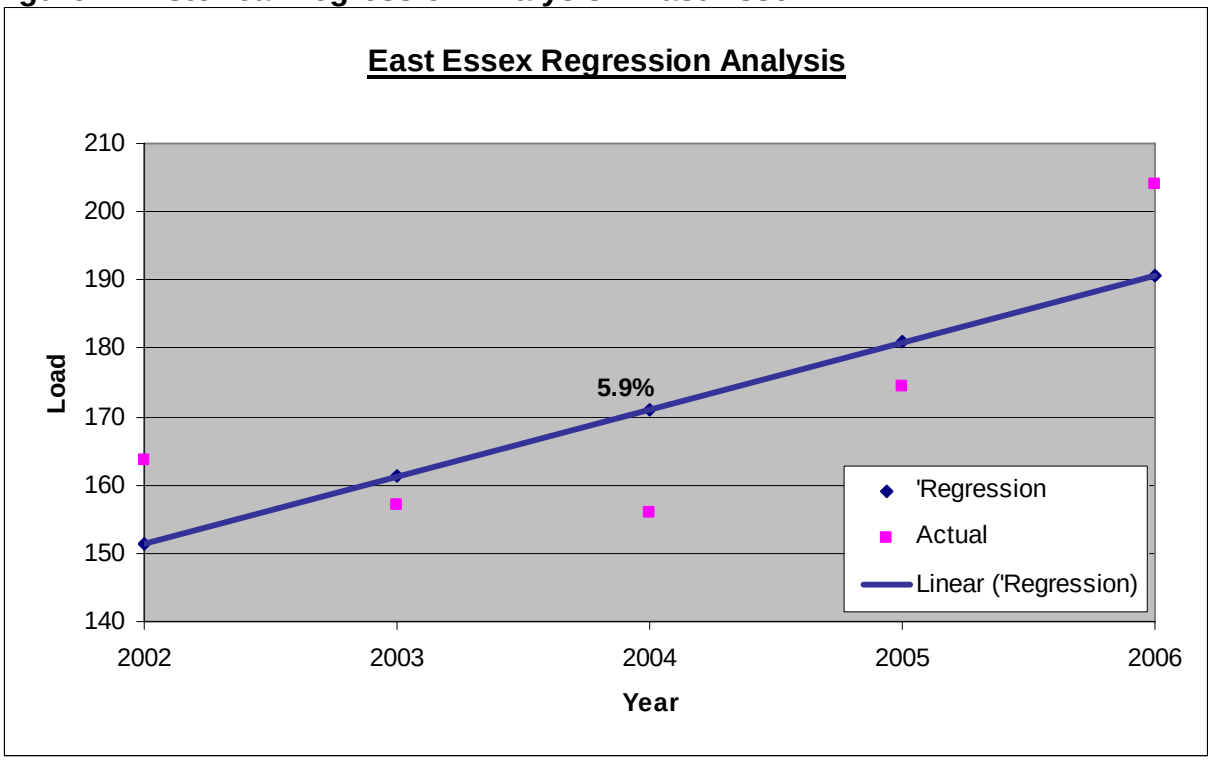
Forecast loads by stations are shown in Table 2. For area capacity planning purposes, summer peak loads under extreme weather conditions are used, consistent with the IESO Ontario Resource and Transmission Assessment Criteria (see Exhibit E-7-1, Attachment 3). Typically, summer peak loads under extreme weather conditions are about 6% higher than under normal weather conditions.

Table 1: W-E Historical Load

Historical Data						
	2002	**2003**	**2004**	**2005**	**2006**	**Growth Rate**
Belle River	-	-	-	-	27.3	-
Kingsville TS	133.8	129.2	127.8	144.4	146.6	2.3%
Tilbury TS	1.7	1.5	1.2	1.4	1.4	-4.7%
Tilbury West DS	28.2	26.5	27	28.7	28.7	0.4%
East Essex Load	**163.7**	**157.2**	**156.0**	**174.5**	**204.0**	**5.7%**
Automotive Load	137.0	136.1	136	131.6	131.2	-1.1%
Crawford TS	82.4	88.2	86.5	95.3	89.1	2.0%
Essex TS	64.2	46.7	46.8	46.9	49.5	-6.3%
Keith TS	79.9	78.6	91.1	66.8	63.0	-5.8%
Lauzon TS	225.5	196.8	202.6	225.6	203.1	-2.6%
Malden TS	149.4	148.3	145.1	161.4	165.1	2.5%
Walker TS	175.9	172.6	178.8	203.3	173.3	-0.4%
West Essex Load	**914.3**	**867.3**	**886.9**	**930.9**	**874.3**	**-1.1%**
Total Area Load	**1078.0**	**1024.5**	**1042.9**	**1105.4**	**1078.3**	**0.0%**

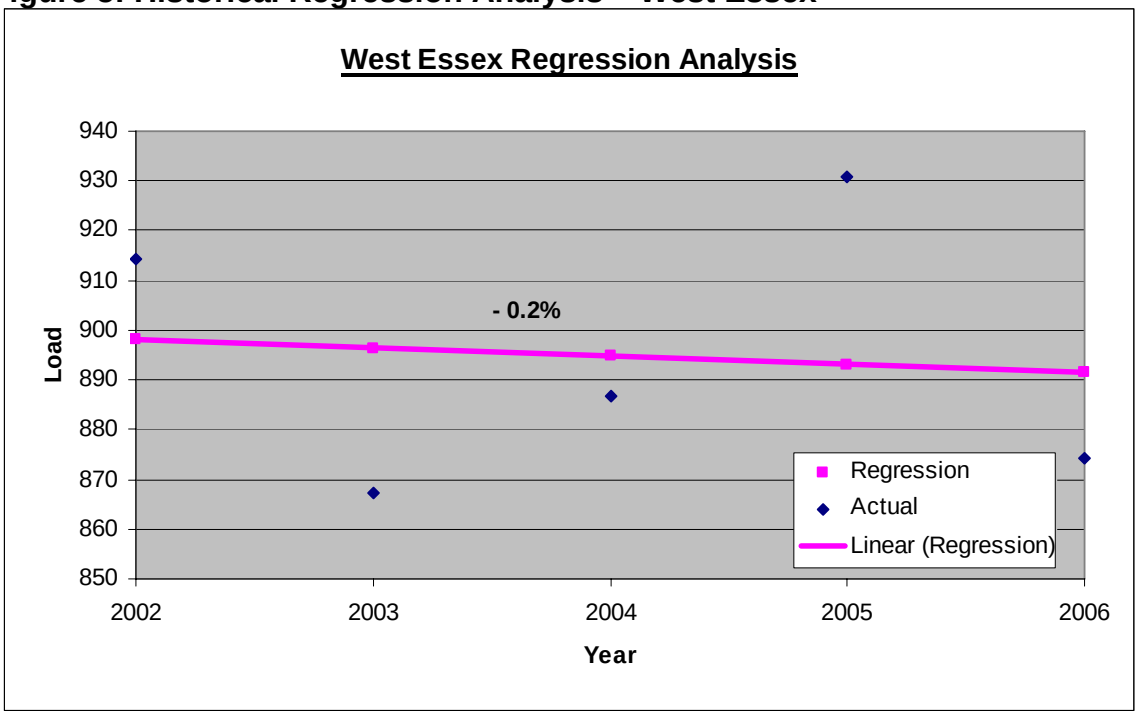
Source: OPA, IESO

Figure 4: Historical Regression Analysis – East Essex



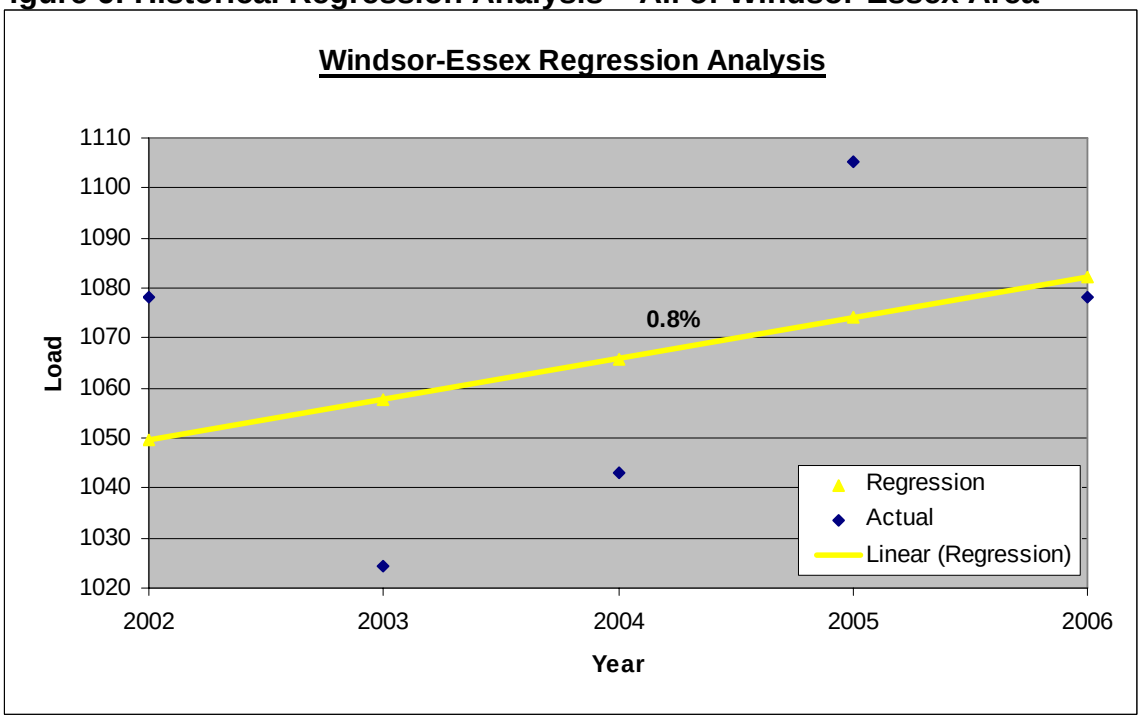
Source: OPA

Figure 5: Historical Regression Analysis – West Essex



Source: OPA

Figure 6: Historical Regression Analysis – All of Windsor-Essex Area



Source: OPA

Table 2: W-E Forecast Load

Forecast Data												
	2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**Growth Rate**
Belle River	27.9	33.3	33.6	34.6	36.3	38.0	39.7	41.3	42.9	44.5	46.1	5.2%
Kingsville TS	148.4	150.4	152.3	154.3	156.2	158.1	160.1	161.9	163.9	165.9	167.9	1.2%
Tilbury TS	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	0.8%
Tilbury West DS	29.1	24.5	24.8	25.2	25.5	25.8	26.2	26.5	26.8	27.1	27.5	-0.6%
East Essex Load	**206.9**	**209.6**	**212.2**	**215.6**	**219.5**	**223.3**	**227.4**	**231.3**	**235.2**	**239.1**	**243.0**	**1.6%**
Automotive Load	143.7	94.2	92.7	92.8	93.1	93.4	93.6	93.9	94.2	94.5	94.8	-4.1%
Crawford TS	95.1	94.6	94.3	95.0	95.6	96.3	97.0	97.7	98.3	99.0	99.7	0.5%
Essex TS	49.6	49.8	49.9	50.1	50.2	50.3	50.5	50.6	50.7	50.9	51.0	0.3%
Keith TS	74.1	74.0	74.1	74.8	75.5	76.2	76.9	77.6	78.3	79.0	79.7	0.7%
Lauzon TS	201.9	202.8	204.0	205.3	206.0	206.7	207.4	208.2	208.9	209.7	210.4	0.4%
Malden TS	156.0	156.4	157.1	158.6	160.1	161.7	163.1	164.7	166.2	167.7	169.2	0.8%
Walker TS	171.6	171.0	170.7	171.9	173.1	174.3	175.5	176.8	178.0	179.3	180.5	0.5%
West Essex Load	**892.2**	**842.8**	**842.9**	**848.4**	**853.6**	**858.9**	**864.1**	**869.5**	**874.7**	**880.0**	**885.2**	**-0.1%**
Total Area Load	**1099.1**	**1052.4**	**1055.1**	**1064.0**	**1073.1**	**1082.2**	**1091.5**	**1100.7**	**1109.9**	**1119.1**	**1128.2**	**0.3%**

* Transfer of 5 MW from Tilbury West 115kV DS to Belle River in 2008
* Transfer of 10-15 MW from Malden to Keith TS in 2007
* Hydro One's growth at Lauzon station capped around 100 MW - all additional growth to Belle River TS
Source: OPA, Hydro One, Enwin

4.2 Supply Capability & Needs

In assessing the adequacy and reliability of the W-E Area supply, the OPA relied upon the applicable reliability standards and criteria, as summarized at Exhibit E-2-7. To test the reliability of the system, the contingencies considered for the W-E Area are as follows:

- Loss of one of the two 230 kV supply circuits: C23Z, C24Z, C21J, or C22J [N-1]
- Loss of one of the two 115 kV supply circuits: J3E,J4E, K2Z, or K6Z [N-1]
- Loss of one of the autotransformers at Keith TS or Lauzon TS [N-1]
- Loss of one of the step-down transformers [N-1]
- Loss of one of the double-circuit 230 kV lines [N-2]

The first four sets of contingencies are referred to as single-element or [N-1] contingency events, which are more probable. The last contingency is less likely to occur, and is referred to as a double-element or [N-2] contingency event.

For the application of the reliability criteria in the planning of W-E Area service needs, load meeting capacity (LMC) is defined as the maximum load in the area that can be served so that following the critical single-element or [N-1] contingency, the system is stable, all equipment is within its rating, voltages are within the acceptable operating range, and no load is interrupted. Similarly, supply security is the ability of the delivery system to restore interrupted load in a reasonable time frame following the critical double-element or [N-2] contingency. The application of the security criterion indicates when an area would require an alternative source of supply or the need for greater diversity of supply.

4.2.1 Supply Capacity

In East Essex, the maximum demand that can be supplied at Kingsville TS, the major supply point in this area, following the critical [N-1] contingency is approximately 110 MW. This is also referred to as the load meeting capacity for the supply to Kingsville TS. The constraint is the post-contingency loading of circuit K6Z, from Lauzon TS to Kingsville TS, for the loss of circuit K2Z. The companion circuit, K2Z, has a slightly higher thermal rating, with a LMC of roughly 130 MW. Presently, the loss of either of these circuits would result in the remaining circuit exceeding its rating. In 2006, the load at Kingsville TS reached a peak of roughly 147 MW, well beyond the ratings of 110 MW and 130 MW respectively for circuits K6Z and K2Z.

Circuit K6Z also has a slightly less restrictive voltage limit of roughly 164 MW. The total East Essex load has also exceeded this voltage limit. In 2006, the East Essex load totaled roughly 200 MW, well beyond the voltage rating of 164 MW. Beyond this limit, the voltage in the area will collapse following a contingency.

Thus, there is a need to provide capacity relief to East Essex, which has been experiencing above average growth, in order to reliably supply current load levels and to provide for continued demand growth in the area. Circuits K2Z and K6Z supplying Kingsville TS have an LMC which is below the existing peak load in the area. Curtailment of load is required to alleviate these inadequacies today should the critical contingencies occur. Exposure to this risk continues to increase with load growth.

Loss of a transformer is also considered in East Essex. The most limiting equipment contingency is the loss of one of the transformers at Kingsville TS. This station has a supply capacity of roughly 153 MW for this [N-1] contingency, and load is still below this level.

In West Essex, the LMC is dictated by the loss of either circuit J3E or J4E, or the loss of an autotransformer at Keith TS. Presently, the latter is more restrictive. With the available generation in West Essex, there is adequate supply capacity to serve the load in West Essex in respect of single-element contingencies.

4.2.2 Supply Security

In accordance with the IESO's reliability standards and criteria, following a double-element or [N-2] contingency, load interrupted following this contingency must be restored in appropriate times – within 30 minutes for load level greater than 250 MW and between 4 to 8 hours for the balance.

Loss of supply to Keith TS or Lauzon TS can cause load curtailment, but the most impactive outage presently is the loss of the 230 kV double-circuit line C23/24Z supplying Lauzon TS. Following this [N-2] contingency, all of load supplied by Lauzon TS and all of the East Essex load, minus the local generation in these areas, must be supplied through the Windsor 115 kV system, which comprises the Keith 230/115 kV autotransformers and 115 kV circuits, J3E/J4E between Keith TS and Essex TS. A special protection scheme is currently in place to automatically disconnect East Essex load following this critical contingency in order to alleviate the resulting overloading of the Windsor 115 kV system and to prevent a voltage collapse in this area. Following the operation of this scheme, the load that was interrupted needs to be restored. Based on the 2007 forecast summer peak conditions, there is a deficit of about 370 MW between the load that needs to be restored following the contingency and the supply capacity available to restore it, assuming that the outaged line could not be repaired readily. The recently announced 84 MW of combined heat and power generation development at the East Windsor Co-Generation Centre, scheduled to come in service in 2009, helps to bridge this gap somewhat. This still leaves

about 285 MW of load unable to be restored by the existing supply. Thus, there is a need to improve the security of the existing supply to the Lauzon station.

4.2.3 Congestion

Congestion results in constraining economic generation, dispatching of higher priced generation, and paying congestion management settlement credits to constrained generators. Local generation is constrained to roughly 400 MW in the west part of the City of Windsor. This means that under certain conditions, generators in the W-E Area cannot be run at full capacity, even if the system needs the supply. When all of the generators in West Essex are dispatched, there is insufficient line capacity to handle the resulting flow, and so area generation must be constrained. This congestion reduces available generation for the Ontario grid.

Currently, the combined output of Brighton Beach Generating Station (GS) (580 MW) and inflow on the Michigan J5D Tie (400 MW) must be restricted to less than 400 MW to restrict the pre-contingency ratings of the 115 kV circuits, J3E/J4E, between Keith and Essex. From a system capacity perspective, about 180 MW of the capacity at Brighton Beach GS cannot be relied on for maintaining system adequacy. This is not a concern while the coal units on the Ontario grid are still available. But after 2014, the constrained capacity of the Windsor generators could advance the need for system capacity resources and thus result in capital costs for the system. Additionally, there will be costs associated with the restricted operation of the Michigan J5D Tie and the uneconomic operation of the Windsor gas-fired generators because of transmission congestion in the Windsor area. More costly units on the system would have to be dispatched to replace the energy that would have been produced by the Windsor generators if the transmission limitations did not exist in the Windsor area. The congestion in the west Windsor area will worsen with the addition of further generation in west Windsor.

In summary, there are three needs in the W-E Area: a) inadequate supply capacity in East Essex, b) lack of security of supply in the W-E Area, and c) inadequate transmission

capacity for delivering generation from the west part of Windsor to the bulk transmission grid.

5.0 OPTION ANALYSIS

5.1 Evaluation Consideration & Process

In order to meet each of the needs identified above, the OPA was guided by the Directive and the OPA's six planning criteria. In particular, the OPA was concerned with maintaining reliability of electricity services in this large and growing region of Ontario.

In considering the needs and potential solutions for the W-E Area, the OPA undertook extensive consultation with LDCs in the study area, as well as the IESO and Hydro One. The OPA consulted with these entities on needs, alternatives, costs, load forecast, and the merits and implications of different alternatives. Stakeholder consultation was taken into consideration in the OPA's planning. For example, the OPA heard feedback from the LDCs in the Kingsville-Leamington area that there were significant opportunities for distributed generation, specifically tri-generation at local greenhouses. The prospects for additional distributed generation, its effect on the area load, and the potential for deferment of capital expenditures was therefore a key consideration when examining each alternative.

Several options were examined for each of the needs identified in Section 4.0.

5.2 Need #1 – Inadequate Supply Capacity in East Essex

5.2.1 Conservation

The regional share of the 6,300 MW provincial Conservation target was disaggregated for the W-E Area based on the methodology described at Exhibits D-4-1 and E-2-3. As shown in Table 3, the estimated potential for the W-E Area increases from 27 MW in 2007 to 152 MW in 2017.

Table 3: W-E Area Conservation Estimate

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
W-E Area (MW)	27	36	50	77	89	101	113	124	137	144	152

Source: OPA

Table 4 summarizes the W-E Area load after deducting the supply that can be provided by Conservation.

Table 4: W-E Load After Conservation

	Forecast Data											
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Growth Rate
East Essex Load	206.9	209.6	212.2	215.6	219.5	223.3	227.4	231.3	235.2	239.1	243.0	1.6%
East Essex Conservation	5.2	6.9	9.4	14.6	16.8	19.1	21.3	23.5	25.8	27.2	28.8	18.8%
East Essex Load - Net of Conservation	**201.7**	**202.7**	**202.8**	**200.9**	**202.7**	**204.3**	**206.1**	**207.7**	**209.4**	**211.9**	**214.2**	**0.6%**
West Essex Load	892.2	842.8	842.9	848.4	853.6	858.9	864.1	869.5	874.7	880.0	885.2	-0.1%
West Essex Conservation	22.1	29.5	40.3	62.7	72.2	81.7	91.3	100.9	110.7	116.5	123.5	18.8%
West Essex Load - Net of Conservation	**870.1**	**813.2**	**802.5**	**785.7**	**781.4**	**777.2**	**772.9**	**768.6**	**764.0**	**763.4**	**761.8**	**-1.3%**
Total Area Load	1099.1	1052.4	1055.1	1064.0	1073.1	1082.2	1091.5	1100.7	1109.9	1119.1	1128.2	0.3%
Total Area Conservation	27.3	36.4	49.7	77.3	89.0	100.7	112.5	124.5	136.5	143.7	152.3	18.8%
Total Area Load - Net of Conservation	**1071.8**	**1016.0**	**1005.4**	**986.7**	**984.1**	**981.5**	**978.9**	**976.3**	**973.4**	**975.3**	**975.9**	**-0.9%**

Source: OPA

Conservation can contribute to meeting the need for additional supply in East Essex. Based on these estimated levels, and assuming this Conservation is allocated proportionally by station load, Conservation would be approximately 4 MW in 2007 for Kingsville TS, as shown in Table 5, or 5.2 MW for the whole East Essex area, as shown in Table 4. Although this level of Conservation can reduce the amount of load that needs to be supplied by circuits K2Z and K6Z, it is not sufficient to fully reduce the loading below the thermal limits or the voltage limit of 164 MW. Therefore, additional supply is still required in East Essex.

Table 5: Kingsville Proportion of W-E Area Conservation Estimate

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Kingsville	3.7	5.0	6.8	10.5	12.1	13.7	15.3	16.9	18.6	19.5	20.7

Source: OPA

5.2.2 Distributed Generation

East Essex has several existing distributed generators, including facilities at the Heinz factory and a new tri-generation facility at a greenhouse in the Leamington area. Especially in the Kingsville-Leamington area, there is significant potential for a variety of types of further distributed generation: bioenergy, tri-generation and wind. Current information from Hydro One's Customer Impact Assessment ("CIA") queue indicates that there are roughly 20 MW of proposed generation at Belle River TS and 212 MW at Kingsville TS.

However, not all of the identified potential can be connected to the system: there is a limited amount of connection capacity at these stations due to transformer limitations. The distribution system at Belle River is capable of accepting 30 MW of generation and Kingsville TS can accept 77 MW of generation. Therefore, not all of these resources will be able to connect to the existing distribution system. In addition, many of the identified resources are wind generators, and in this case it is not possible to depend on the total installed capacity for reliability purposes. Wind generation is intermittent, often swinging between very high and very low outputs in a single day, and it is not a "dispatchable" resource. The capacity credit for wind in this area was found to be just 15% at peak, at a confidence level of 90%, based on statistical analysis of historical data for an existing generator in the area. As well, wind generation is generally better suited to meeting winter peaking needs, rather than summer needs like in East Essex, because wind speeds tend to be higher and more consistent in the winter. That being said, these additional distributed generation resources will help alleviate the loading on the 115 kV circuits. At a 15% capacity factor, 77 MW of wind generation would yield roughly 12 MW of resources for reliability purposes. As illustrated in Table 6 though, even in combination with Conservation, the amount of DG that can be connected to the distribution system at Kingsville TS would not be sufficient to meet the gap between the 147 MW peak load in

2006 at Kingsville TS, and the supply capability of circuit K6Z (110 MW). Although beneficial for the area, it will not be able to fully meet this need. Roughly half of the available generation capacity, or approximately 37 MW, would need to be dependable to obviate the East Essex supply need.

Table 6: Kingsville Load net of Conservation and DG

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Growth Rate
Kingsville Load	148.4	150.4	152.3	154.3	156.2	158.1	160.1	161.9	163.9	165.9	167.9	1.2%
Kingsville Conservation	3.7	5.0	6.8	10.5	12.1	13.7	15.3	16.9	18.6	19.5	20.7	18.8%
Kingsville DG	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	0.0%
Kingsville Load - Net of DG & Conservation	**132.7**	**133.5**	**133.6**	**131.8**	**132.1**	**132.4**	**132.8**	**133.0**	**133.4**	**134.4**	**135.2**	**0.2%**

Source: OPA

5.2.3 Large Gas-Fired Generation

The East Essex area has significant potential for cogeneration and CHP. However, there is limited capacity west of London on the bulk system and exacerbating the existing area congestion is to be avoided. The bulk system presently does not have sufficient capacity to incorporate all existing generation. Although some generation east of Lauzon can be accommodated, a large gas-fired plant was not considered as a preferred means of addressing this need.

5.2.4 Transmission

Transmission reinforcement is a viable means of addressing this need. Essentially, the existing 115 kV system in East Essex can be strengthened and upgraded, or additional infrastructure can be added. This need can be met by upgrading the existing conductors on circuits K2Z and K6Z, or a new 115 kV or 230 kV line could be added to the area.

5.3 Need #2 – Lack of Security of Supply in the W-E Area

As described in section 5.2.1, the total amount of Conservation expected in the W-E Area, 27 MW in 2007, is not sufficient to address the security needs. Similarly, the amount of potential distributed generation in the W-E Area that can be accommodated on the distribution system, 133 MW – 10 MW at Keith TS, 19 MW at Belle River TS, 77 MW at

Kingsville TS, 18 MW at Lauzon TS and 9 MW at Malden TS - cannot fully meet this need if much of this generation is wind or another form of non-dispatchable generation. With the planned Conservation and all the distributed generation potential that can be accommodated on the system, the W-E Area is still short of addressing the security need by approximately 125 MW or more. Therefore, further supply reinforcement is required to improve the supply security of the W-E Area.

5.3.1 Large Gas-Fired Generation

Large gas-fired generation, appropriately sized and in the right location, is helpful in addressing the security need in the W-E Area. To be effective, this generation should be dependable and dispatchable, and be located in east Windsor near Lauzon TS on the 115 kV system.

5.3.2 Transmission

Transmission options can also address the supply security need in the W-E Area. This can be accomplished either through the construction of a new 230 kV line to provide redundancy of transmission supply to Lauzon TS or by providing another 115 kV source to supply the W-E Area when the 230 kV connection is interrupted.

5.4 Need #3 - Inadequate Transmission Capacity for Delivering Generation

5.4.1 Transmission

Transmission is the only option capable of relieving congestion in West Essex. Any options, such as Conservation and distributed generation, which essentially result in a reduction in load without a corresponding decrease in local generation, would further aggravate congestion. The addition of large gas generation in the area would do the same.

Congestion is an economic consideration, so it is possible to increase the transmission capability out of West Essex or accept uneconomic generation.

6.0 DEVELOPMENT OF ALTERNATIVES

The options identified in section 5.0 to meet each of the identified needs can be grouped into alternative plans that address the identified local area service needs.

Overall, Conservation and distributed generation options are common for all of the solution alternatives. Transmission options are required to address the East Essex capacity need. Both transmission options and large local generation options can help address the W-E Area security need. Only transmission options are viable for relieving the congestion need in west Windsor.

With the above considerations, the following two alternative plans have been developed to address the three needs identified for the W-E Area. In general, both plans depend on acquiring the Conservation and distributed generation forecast for the W-E Area and providing transmission reinforcements. The transmission reinforcements associated with Alternative # 1 strengthen the 115 kV network, whereas those with Alternative #2 provide additional 230 kV supply to the W-E Area.

In both cases, having generation sited in east Windsor near Lauzon TS on the 115 kV system is beneficial for increasing the security of supply to Lauzon. But having local generation there alone without some transmission reinforcements would not be sufficient to address the other needs. Furthermore, the bulk transmission system west of London is increasingly becoming congested. The addition of a large amount of generation in the W-E Area would aggravate this concern. Thus, this option should be utilized selectively for generation development opportunities that would provide maximum system and strategic value.

6.1 Alternative #1 – Strengthen the 115 kV Network

This alternative addresses all of the needs outlined in section 4.2 by: a) relying on acquiring the forecast Conservation and distributed generation potentials, and b) strengthening the East-Windsor 115 kV network. Alternative #1 increases reliability by providing an additional 115 kV source to diversify the area's supply to the W-E Area and meet future growth in

East Essex. It reduces reliance on the existing autotransformers supplying the W-E 115 kV system.

The cost of the transmission component of this alternative is approximately $48 million. The transmission work would comprise the following:

Line Work:

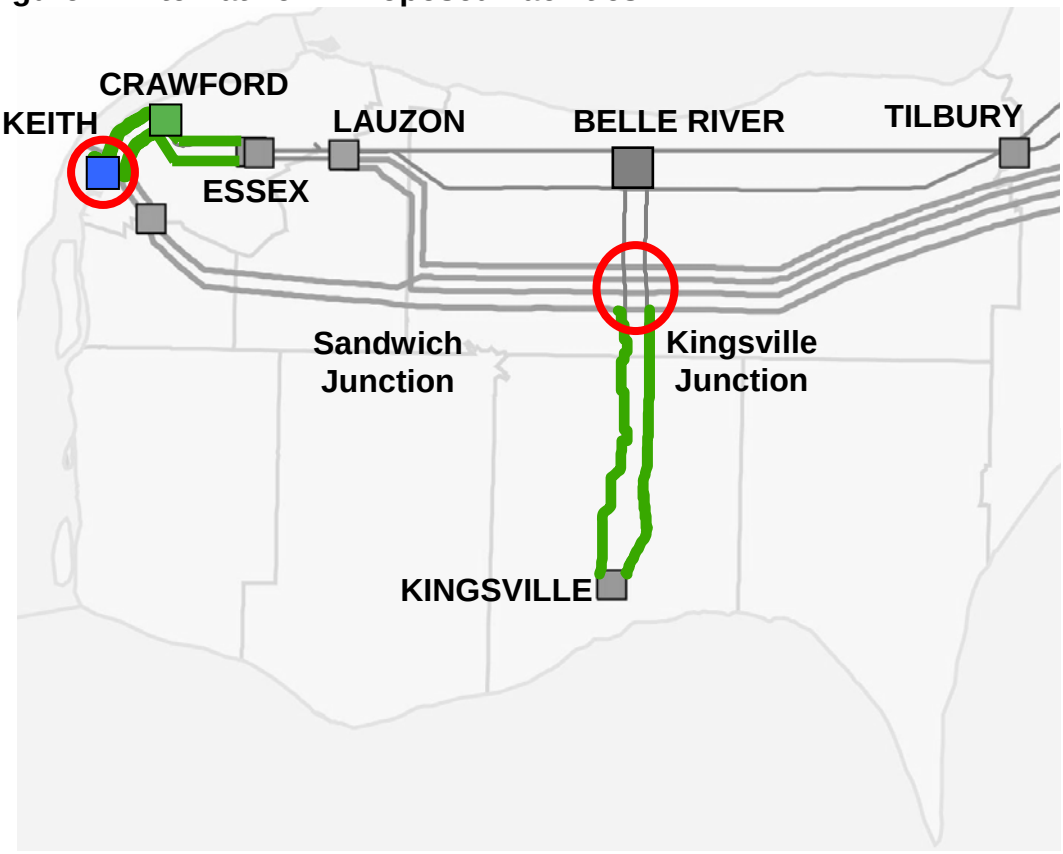
- Upgrading circuits K6Z / K2Z between "Kingsville Junction" near South Woodslee and Kingsville TS in 2010 to increase the capacity of their conductors. This upgrade would increase the amount of load that these lines can supply to the Kingsville-Leamington area.
- Reconductoring circuits J3E and J4E, which connects Keith TS and Essex TS to increase capacity of their conductors in 2010. This would improve security to the area by preventing overloading of these circuits if the supply to Lauzon was lost. It will also reduce congestion in west Windsor.
- Upgrading circuit K6Z between Kingsville Junction near South Woodslee and Belle River in 2022 to increase the capacity of its conductors to further address the capacity need in East Essex in the longer term.

Station Work:

- Installing two new autotransformers at Kingsville Junction near South Woodslee, where the 230 kV and 115 kV transmission lines cross, in 2010. This will provide additional supply to the 115 kV system.
- Completing station work at Keith in 2010 so that an autotransformer is not lost for an outage of circuit C22J . This will help address the security of supply.

Alternative #1 is shown in Figure 7.

Figure 7: Alternative #1 Proposed Facilities



Source: OPA

Although this alternative is feasible from a technological, construction and approvals point of view, it may not be easy to locate an autotransformer station right at the crossing of the 230 kV and 115 kV lines near South Woodslee. It may be necessary to locate that autotransformer station a short distance from this location. Additional costs and approvals could then be required as a new 115 kV line would be necessary to connect this station to the existing 115 kV system. It is anticipated that this 115 kV line could be accommodated on or beside the existing 230 kV right of way.

Also with this alternative, it is the OPA's understanding that the 230/115 kV autotransformers at Keith TS, which are approaching their end of life, would be replaced and upgraded from 125 MVA to 250 MVA under Hydro One's sustainment program.

6.2 Alternative#2 – Provide Additional 230 kV Supply

This alternative addresses all of the needs outlined in section 4.2 by: a) relying on acquiring the forecast Conservation and distributed generation potentials; and b) providing additional 230 kV supply to the W-E Area. Alternative 2 increases supply capacity by providing additional 230 kV supply to the area and transferring some of the loads off the 115 kV network. It reduces reliance on the existing autotransformers by diversifying to additional 230 kV supply. It also reduces the reliance on the existing Lauzon supply lines, C23Z/C24Z, by adding an additional line to supply the autotransformers at Lauzon TS. The entire area's load would no longer have to be supplied through the limiting 115 kV network, avoiding the need to curtail load in the event of losing the 230 kV supply to Lauzon TS.

The cost of the transmission component of this alternative is approximately $65 million. The transmission work would comprise the following:

Line Work:

- Building a new double-circuit 230 kV line from Sandwich Junction, near Maidstone, to Lauzon TS, in 2010. This new line would tap circuits C21J and C22J, and could likely be accommodated on the existing ROW. This new line would help address the W-E Area supply security need.
- Building a new double-circuit 230 kV line north from a new 230 kV station in the Leamington area to the existing 230 kV lines near Staples in 2010. This line would tap circuits C21J and C22J, which connect from Chatham TS to Keith TS. This line would supply a new station in the Leamington area in order to address inadequate supply capacity in East Essex.
- Reconductoring circuits J3E and J4E, which connect Keith station TS and Essex TS in 2010. By increasing the capacity of the conductors, this upgrade would help address the supply security need in the W-E Area and reduce congestion in west Windsor.

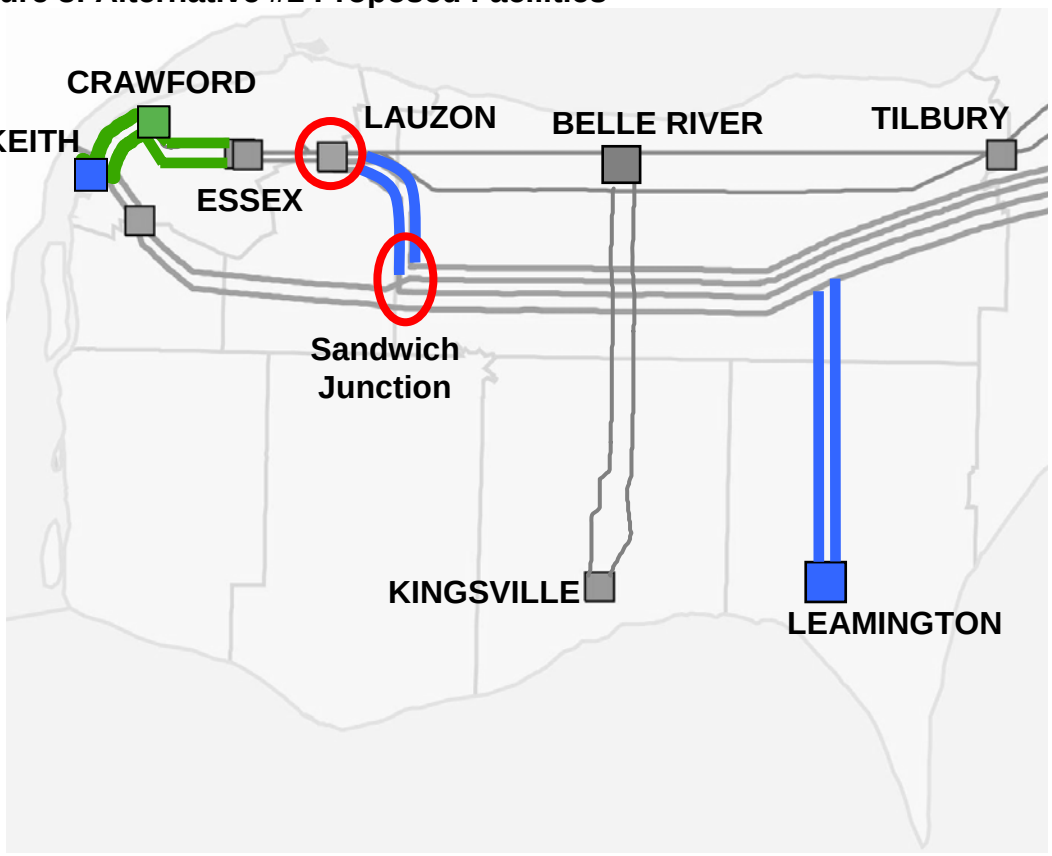
Station Work:

- Constructing a new 230 kV station in the Leamington area in 2010. This station would likely include two new transformers and eight new feeder positions.
- Upgrading Lauzon station in 2010 to address the supply security need. Full switching is required at the Lauzon station to terminate circuits C23Z and C24Z from

Chatham, the two existing 230/115 kV autotransformers, and the new 230 kV circuits from Sandwich Junction.

Alternative #2 is shown in Figure 8.

Figure 8: Alternative #2 Proposed Facilities



Source: OPA

A variation of this alternative was also examined. Construction of a line all the way from Keith TS to Lauzon TS was considered, but the benefits could not justify the additional expense or the greater community impact through the City of Windsor.

As with Alternative 1, it is OPA's understanding that the 230/115 kV autotransformers at Keith TS would be replaced and upgraded from 125 MVA to 250 MVA under Hydro One's sustainment program.

There is also a possibility for Hydro One to avoid some sustainment costs in the future when Kingsville TS reaches its end of life with this alternative.

There may be sufficient room on the existing right of way to accommodate the new line from Sandwich Junction to Lauzon TS. However, for this alternative, a new station site and a new right of way for its 230 kV connection line would be required north of the Town of Leamington.

7.0 ALTERNATIVE ANALYSIS

In order to identify a preferred plan, the OPA compared alternatives based on the six planning criteria: feasibility, reliability, flexibility, cost effectiveness, environmental performance and social acceptance.

7.1 Feasibility

Both alternatives are technically feasible and can be implemented in the required time frame. While both require a new station site, Alternative #2 additionally requires a new 230 kV right of way north of Leamington. Therefore, Alternative #1 is better in terms of feasibility than Alternative #2.

7.2 Reliability

Both alternatives address the needs identified in section 4.2, and meet the reliability standards and criteria.

7.3 Flexibility

Both options consist of lumpy investments which cannot be staged. Alternative #2 is somewhat more flexible as it provides additional capacity to meet possible future growth in East Essex and may permit more generation to be connected in the future in East Essex. It may also allow Hydro One to avoid some sustainment costs at Kingsville TS in the future.

7.4 Cost Effectiveness

To evaluate the costs of each option, a real rate of 4% was used to calculate the NPV of each alternative. Costs are based on estimates provided by Hydro One.

The total estimated capital cost for the transmission facilities described in Alternative #1 totals $48.1 million, as summarized in Table 7 below.

Table 7: Total Project Costs – Alternative #1

	Cost	Year	in 2007 $
Station Work			
New Autotransformer station at Kingsville Jct	24	2010	21.3
Station work at Keith	5	2010	4.5
Additional transformer upgrade cost at Kingsville TS	3	2010	2.7
Total Station Work	**32**		**28.5**
Line Work			
Upgrade of K6Z / K2Z between Kingsville Jct and station	12	2010	10.9
Reconductor J3E/J4E	7	2010	6.4
Upgrade of K6Z between Kingsville Jct and Belle River	4	2022	2.3
Total Line Work	**23**		**19.6**
Total			**48.1**

Source: OPA, Hydro One

The total estimated capital cost for the transmission facilities in Alternative #2 totals $65.4 million, as summarized in Table 8 below.

Table 8: Total Project Costs – Alternative #2

	Cost	Year	in 2007 $
Station Work			
230 kV Leamington Station	12	2010	10.9
Station work at Lauzon to provide full switching	27	2010	23.6
Total Station Work	**39**		**34.5**
Line Work			
230 kV line to Leamington Station	14	2010	12.7
230 kV line from Sandwich Jct to Lauzon station	13	2010	11.8
Reconductor J3E/J4E	7	2010	6.4
Total Line Work	**34**		**30.9**
Total			**65.4**

Source: OPA, Hydro One

Alternative #1 is therefore a more cost-effective solution than Alternative #2 by $17.3 million NPV.

7.5 Environmental Performance

Alternative #1 will have lower land requirements than Alternative #2. Alternative #1 requires a new station in the Kingsville Junction area, and possibly a short connection line to the 115 kV lines, K2Z/K6Z. Alternative #2 requires a new right-of-way to the Leamington area, in addition to a new station. Although it is expected that a new line from Sandwich to Lauzon TS could be accommodated on the existing right-of-way, there will be visual impacts with this piece of the alternative. Alternative #1 is therefore preferred from an environmental performance standpoint.

7.6 Social Acceptance

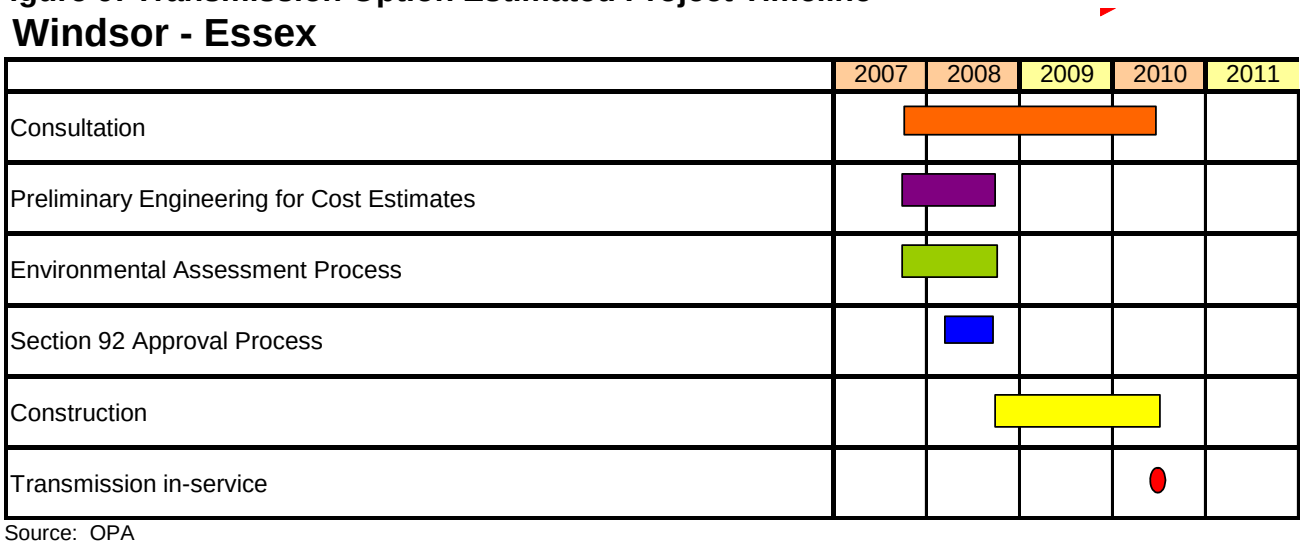
To date, no preference has been indicated for either alternative from a societal acceptance perspective through the stakeholder consultation process. As Hydro One proceeds with the EA process, it is expected that the community impacts of each alternative will be evaluated.

8.0 ESTIMATED TIMELINE

At this time, the OPA and Hydro One have not sufficiently consulted on the plan with stakeholders, local officials and the affected communities. Therefore, in this IPSP proceeding, the OPA is not seeking the OEB's approval of the need to construct the transmission facilities. It is the OPA's understanding that Hydro One will be proceeding with the EA process, including the necessary consultation with affected communities, to identify a station site for the new transformer station. Following this process, the OPA understands that Hydro One will file a Section 92 leave-to-construct application to the OEB. The OPA supports Hydro One's intention to proceed with the EA process, community consultation and a leave to construct proceeding.

Figure 9 is an estimated project timeline.

Figure 9: Transmission Option Estimated Project Timeline



Source: OPA

Ontario Energy Board (Board Staff) **INTERROGATORY #3**

Interrogatory

Reference: Ex B/T1/S5/p.6 – OPA Evidence on Need

At page 6 of the above reference, the OPA references the Integrated Regional Resource Plan ("IRRP") planning process in the Windsor-Essex Region and states that the need for the SECTR project was established as part of the regional planning process that was in place prior to the IRRP planning process.

What is the status of the plan that is being developed as part of the IRRP planning process?

How will the SECTR project be integrated into the regional plan that is being developed as part of the IRRP process for Windsor-Essex Region?

Response

The Windsor-Essex Region IRRP is currently being finalized and will be posted by April 28, 2015.

Regional planning was underway in the Windsor-Essex region prior to the OEB's formalization of the regional planning process. Regional planning was the process through which the SECTR project was recommended as a solution to address the near-term needs in the region. The regional planning process subsequently transitioned into the formalized process, and the 20-year regional plan, in part consisting of the SECTR project, is currently being documented in the forementioned IRRP.

Ontario Energy Board (Board Staff) **INTERROGATORY #4**

Interrogatory

Reference: Ex B/T1/S5/p.7 – OPA Evidence on Need

At page 7 of the above reference, it is stated that a study that was undertaken in 2010 determined that there was no immediate need for augmenting electricity supply in the Windsor-Essex Region. Please submit the relevant sections of the referenced study/assessment.

Response

No report was prepared as a result of the 2010-2011 study. The presentation, labelled as Attachment A to this exhibit, titled 'Windsor-Essex Regional Study Update Meeting 2' was presented to the regional planning working group in July, 2011 and it summarizes the recommendations at that time.

Attachment A

July 13, 2011 Windsor – Essex Regional Supply Update (Meeting 2)

Windsor-Essex Regional Study Update

Meeting 2

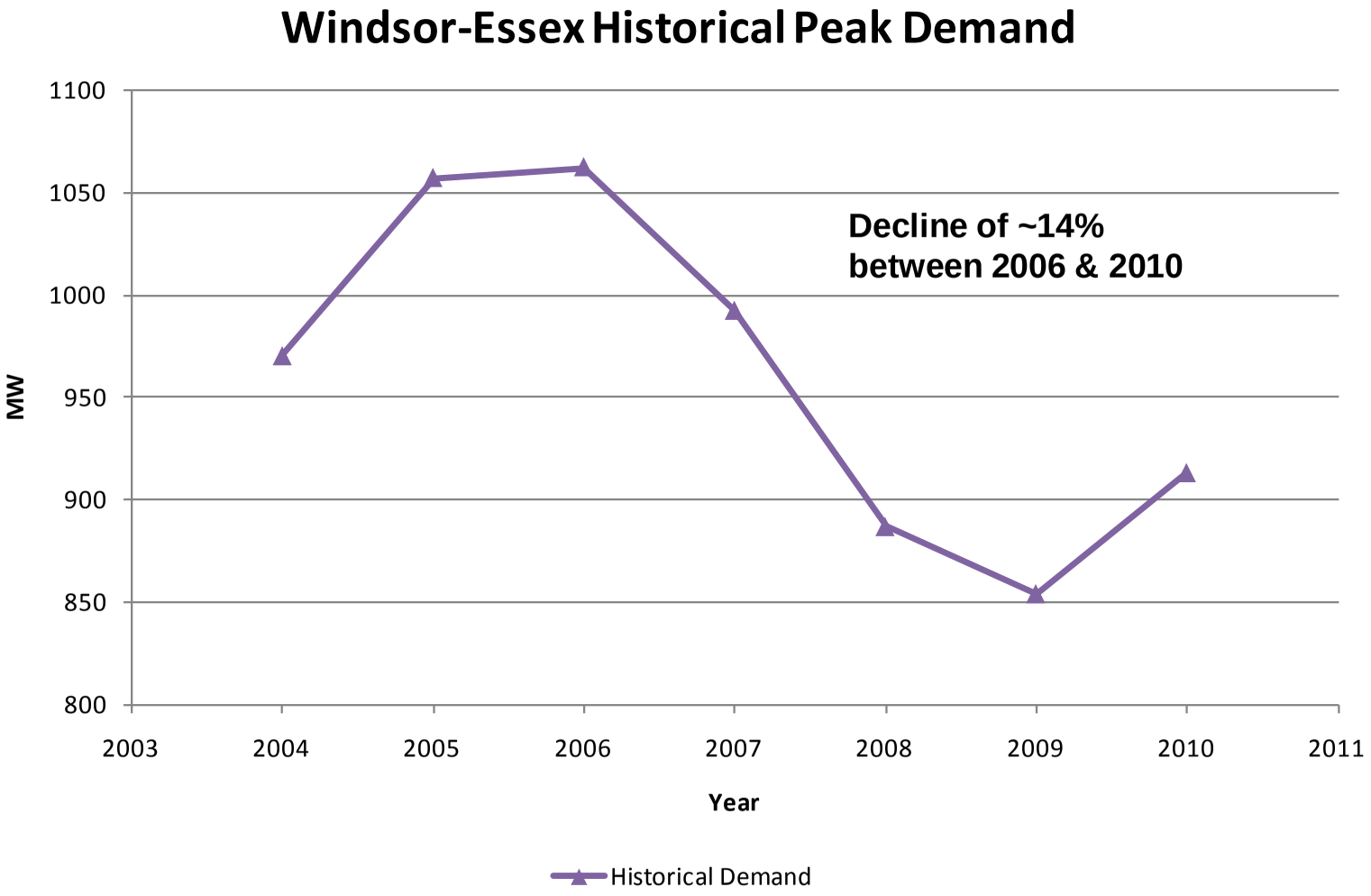
July 13, 2011

Bottom Line on Need

- The recent economic downturn has had a significant impact on demand in the Windsor-Essex area
  - Demand dropped by roughly 14% between 2006 (the historical system peak) and 2010
- This reduced demand, combined with aggressive conservation and the success of distributed generation under the FIT program, has lessened the need for reinforcement in the Windsor-Essex area
- A major investment in infrastructure would be difficult to justify at this time
  - Will need to continue monitoring demand in the area and investigate incremental solutions

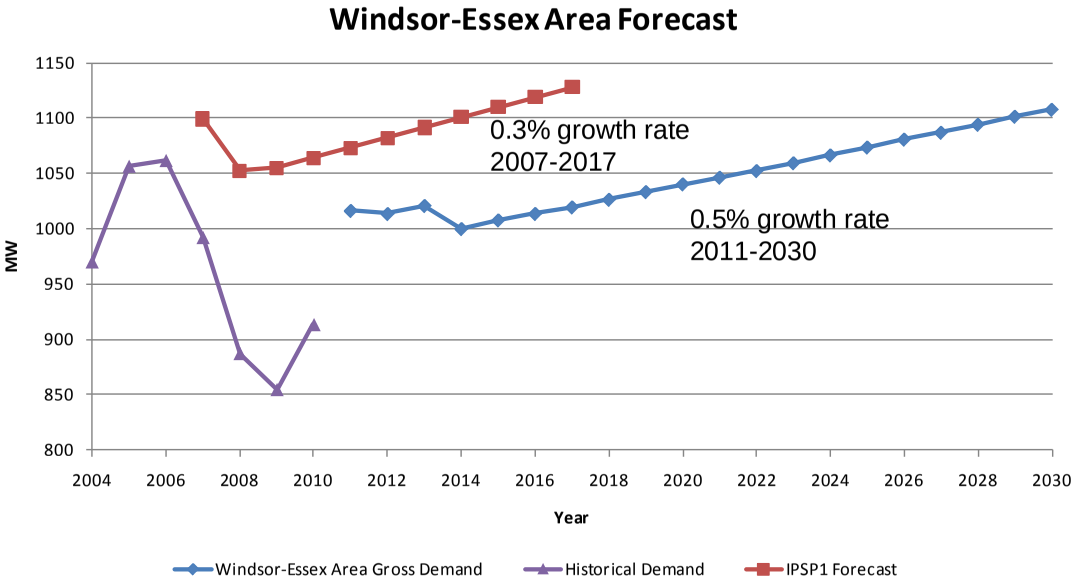
ONTARIO POWER AUTHORITY

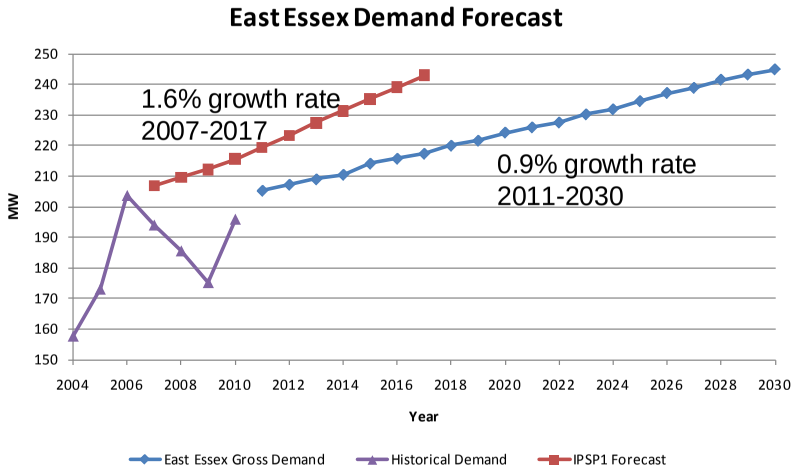
Historical Windsor-Essex Demand

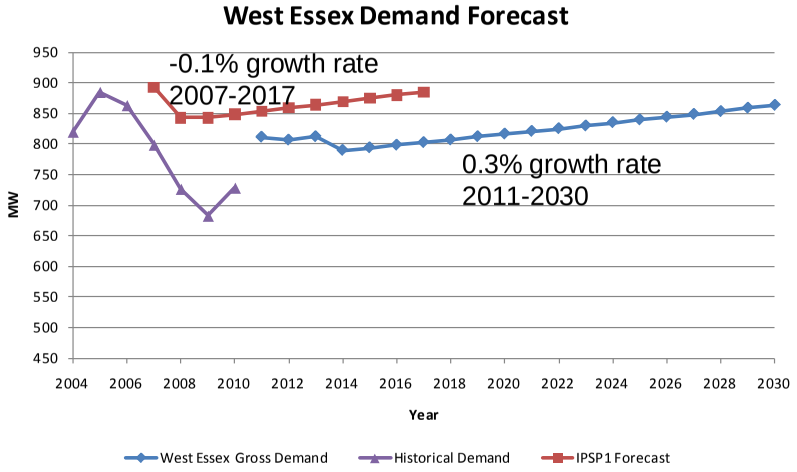


ONTARIO POWER AUTHORITY

Windsor-Essex Demand Forecasts from LDCs







ONTARIO POWER AUTHORITY

LDC Conservation Targets

- Nov. 12, 2010, OEB set two CDM targets for each LDC—a 2014 net annual peak demand savings target and a 2011-2014 net cumulative energy savings target—as part of the LDC licensing condition
- The total LDC CDM target is equal to 1,330 MW of provincial peak demand and 6,000 GWh of electricity consumption over 4 year period
- LDCs have submitted the CDM Strategies to the OEB outlining the plan and the budget to meet the target

LDC	Demand Reduction Target (MW)	Energy Savings Target (GWh)
Chatham-Kent Hydro Inc	9.67	37.28
E.L.K. Energy Inc.	2.69	8.25
ENWIN Utilities Ltd.	26.81	117.89
Essex Powerlines Corporation	7.19	21.54
Hydro One Networks Inc.	213.66	1,310.21

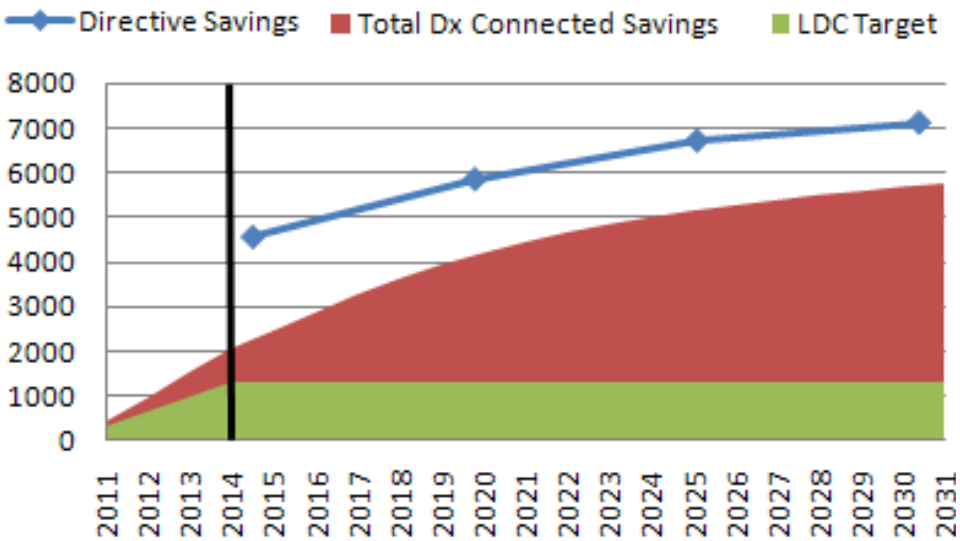
Source: http://www.ontarioenergyboard.ca/OEB/_Documents/EB-2010-0216/dec_order_CDM_directive_20101112.pdf

Provincial Conservation Targets

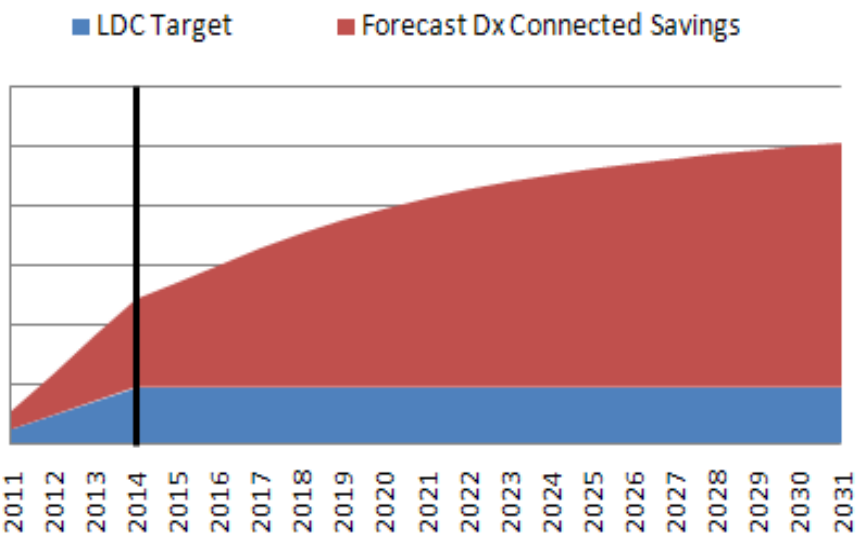
- In Feb. 2011, the Minister of Energy issued Supply Mix Directive establishing the conservation targets of 7,100 MW peak savings and 28TWh energy savings by 2030
- These targets will be met through a combination of programs and initiatives including: energy efficiency programs, building codes and equipment standards, demand response programs and TOU rates
- LDC targets are the subset of this Provincial CDM target

LDC Conservation Forecast vs. Target

Provincial Level Comparison

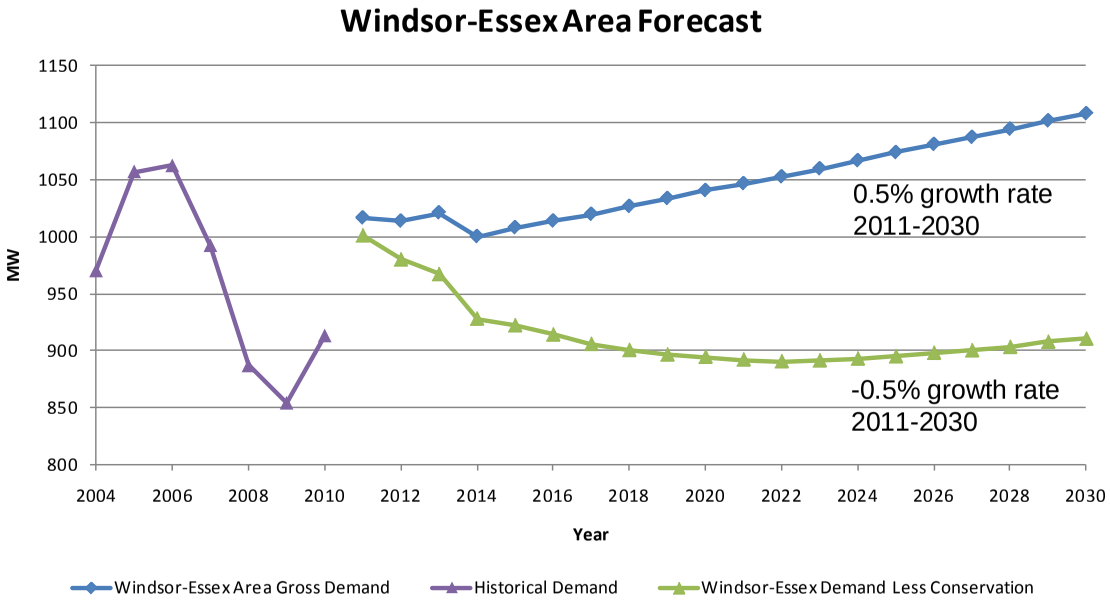


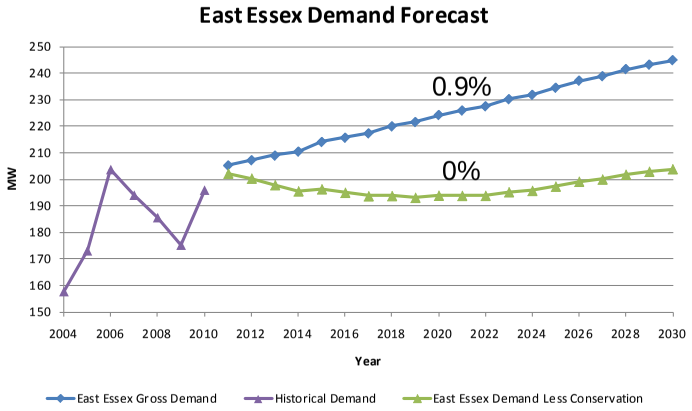
Study Area Comparison

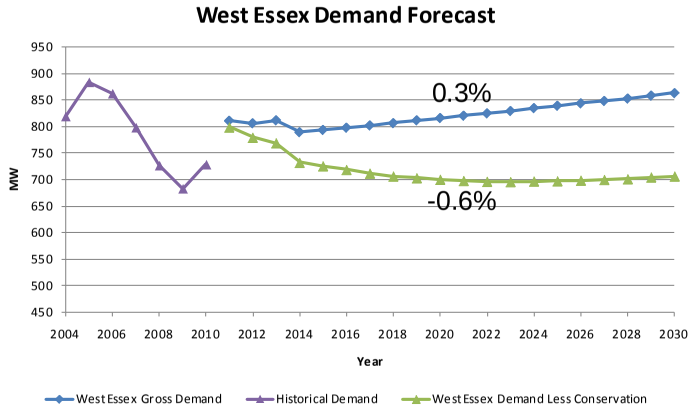


ONTARIO POWER AUTHORITY

Windsor-Essex Demand Forecast Net Conservation (Reference Case)







ONTARIO POWER AUTHORITY

Distributed Generation

- A second important consideration in the regional plan in distributed generation (DG)
- Two types of DG resources are considered

1. Existing and Committed DG
   - Contracted NUGs, RES 2 and 3 contracts, RESOP, CHP 1 contracts, FIT CAE and CAR contracts, microFIT contracts and conditional offers
2. Potential DG
   - Future FIT/microFIT, future CHP

Existing/Committed DG (Cumulative Installed MW)

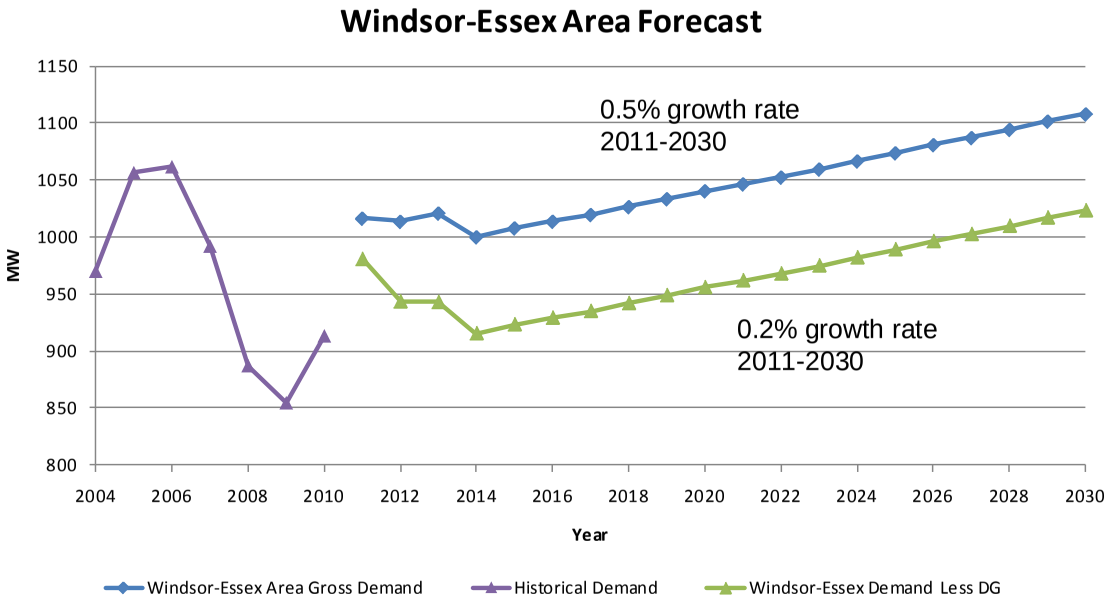
Station	Type	2010	2011	2012	2013	2014
Belle River TS	Solar	-	0	0	2	3
	Wind	-	10	10	10	10
Crawford	Solar	-	-	-	0	0
Essex	Solar	-	0	0	0	0
Keith	Solar	-	0	46	48	47
Kingsville TS	Bio	-	2	12	12	12
	Solar	-	1	2	6	9
	Wind	6	6	6	6	6
Lauzon	Bio	-	-	-	-	0
	Solar	-	1	2	6	12
	Wind	-	20	20	20	20
Malden TS	Solar	-	0	1	3	6
	Wind	-	50	50	50	51
Tilbury TS	Solar	-	0	5	6	6
Tilbury West HVDS	Solar	-	0	0	2	2
	Wind	-	10	10	10	10
Walker #2	Solar	-	0	0	0	2
WALKER TS	Solar	-	0	1	1	2
TOTAL	Solar	**-**	**2**	**58**	**76**	**90**
	Wind	**6**	**96**	**96**	**96**	**97**
	Bio	**-**	**2**	**12**	**12**	**12**

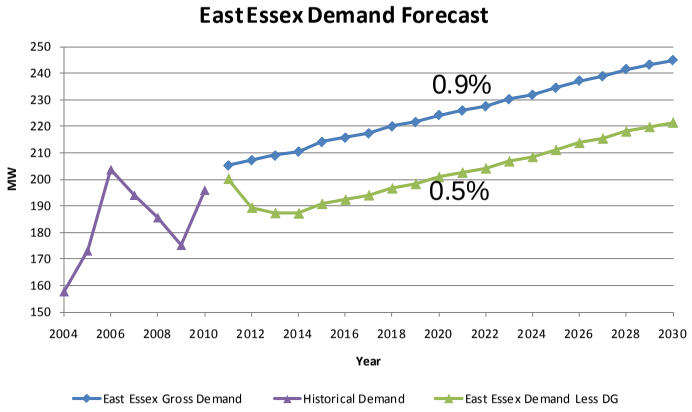
ONTARIO POWER AUTHORITY

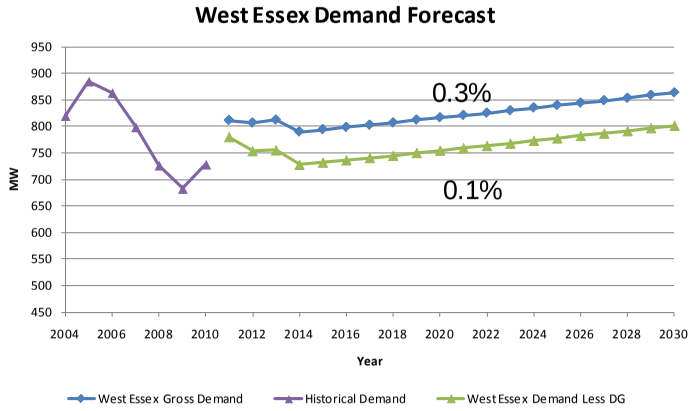
Wind and Solar Regional Capacity Contribution Methodology

- Identified the top 10% of the summer peak demand hours for each of the IESO zones from 2004-2008
- Selected the AWS simulated site with the lowest average summer hourly generation over the study years for each IESO zones
- Calculated the average hourly capacity contribution for the selected site during the top 10% peak demand hours for each of the study years
- Selected the lowest average capacity contribution for the IESO West zone for use in the Windsor-Essex regional study

Windsor-Essex Demand Forecast Net Committed DG (Reference Case)

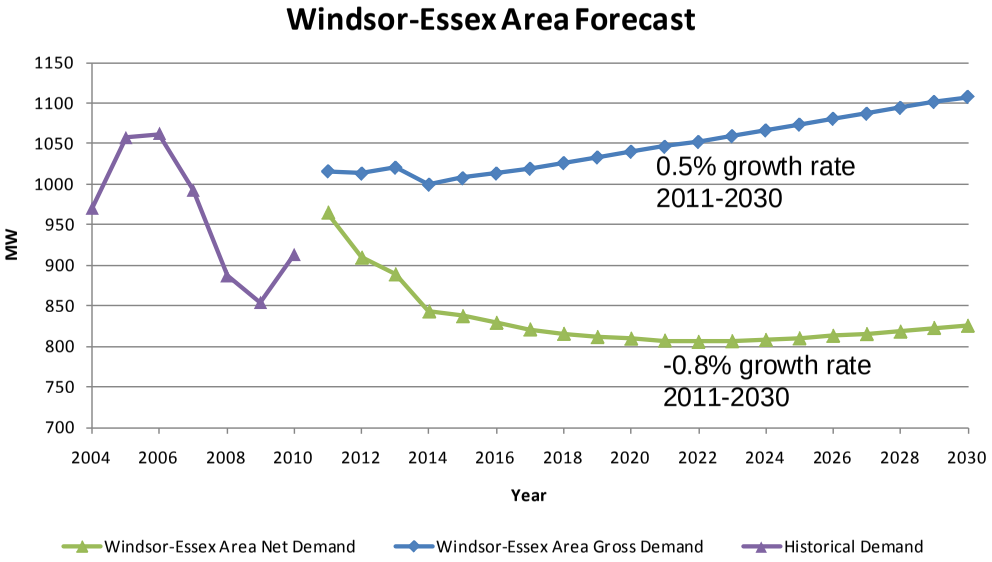


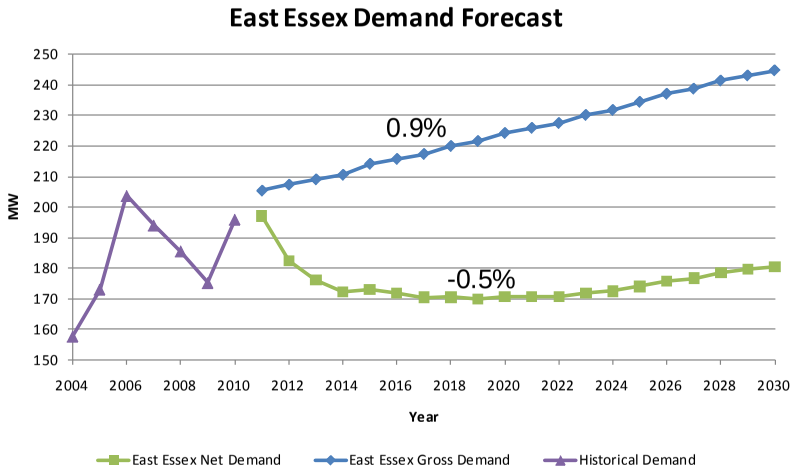


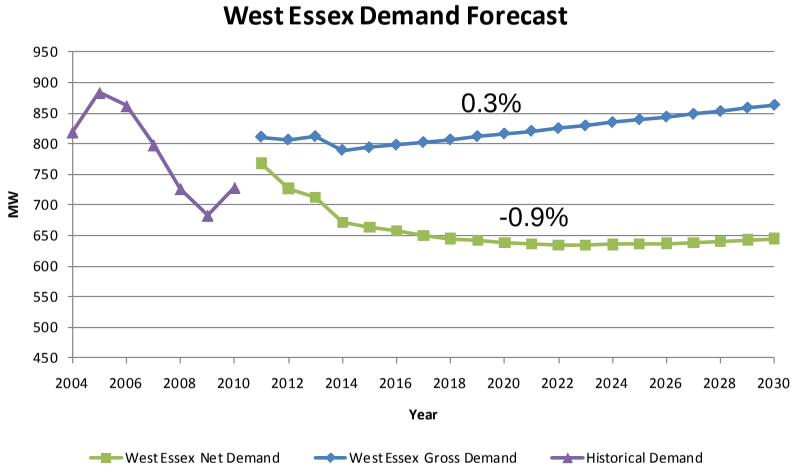


Note: Does not include Great Northern Trigen (11 MW) or transmission connected DG, these are modeled separately in the study

Windsor-Essex Demand Net Conservation and Distributed Generation (Reference Case)







ONTARIO POWER AUTHORITY

Updated Study Results

Needs Identified	Detailed Need Components	2009 Study Results	Updated Results -- Reference Demand (assumes NUG continued operation)
Supply capacity to East Essex	Thermal overloading of the K6Z circuit on the Kingsville Tap following the loss of K2Z	Exceeded throughout the study period (~40 MW by 2020)	Exceeded in 2011, remained within LMC for the rest of study period
	Kingsville TS limitations	Within station capacity throughout the study period Property constraints at Kingsville TS prevent additional feeders. New Station needed in ~2012	TBD with H1 Tx and Dx – is this still a problem?
	Thermal overloading of K2Z (Lauzon Jct x Woodslee Jct) following the loss of K6Z	Exceeded throughout the study period (~40 MW by 2020)	Exceeded in 2011, remained within LMC for the rest of study period
Supply capacity to the Windsor-Essex 115 kV network	Thermal overloading of J4E following the loss of the J3E, or of the remaining auto following the loss of one of the Keith autos	Within LMC throughout study period (monitor DG and conservation development)	Within LMC throughout study period
Supply Security to Windsor-Essex	Voltage collapse following the loss of C22J/C24Z and the Keith T12 auto by configuration with BB out of service	Within LMC throughout study period (monitor DG and conservation development)	Within LMC throughout study period (Net demand peaks are in the range of 800-960 MW)
	Failure to restore the Belle River, Kingsville, Tilbury and Tilbury West loads within the required times following the loss of C23Z/C24Z	Exceeded restoration requirement throughout the study period	Exceeded restoration requirement throughout the study period
Congestion	Overloading of J3E/J4E and the Keith autos will all elements in-service and all of the generation in Windsor-Essex dispatched	Throughout the study period	J3E/J4E overloaded throughout the study period Keith auto overloaded throughout study period

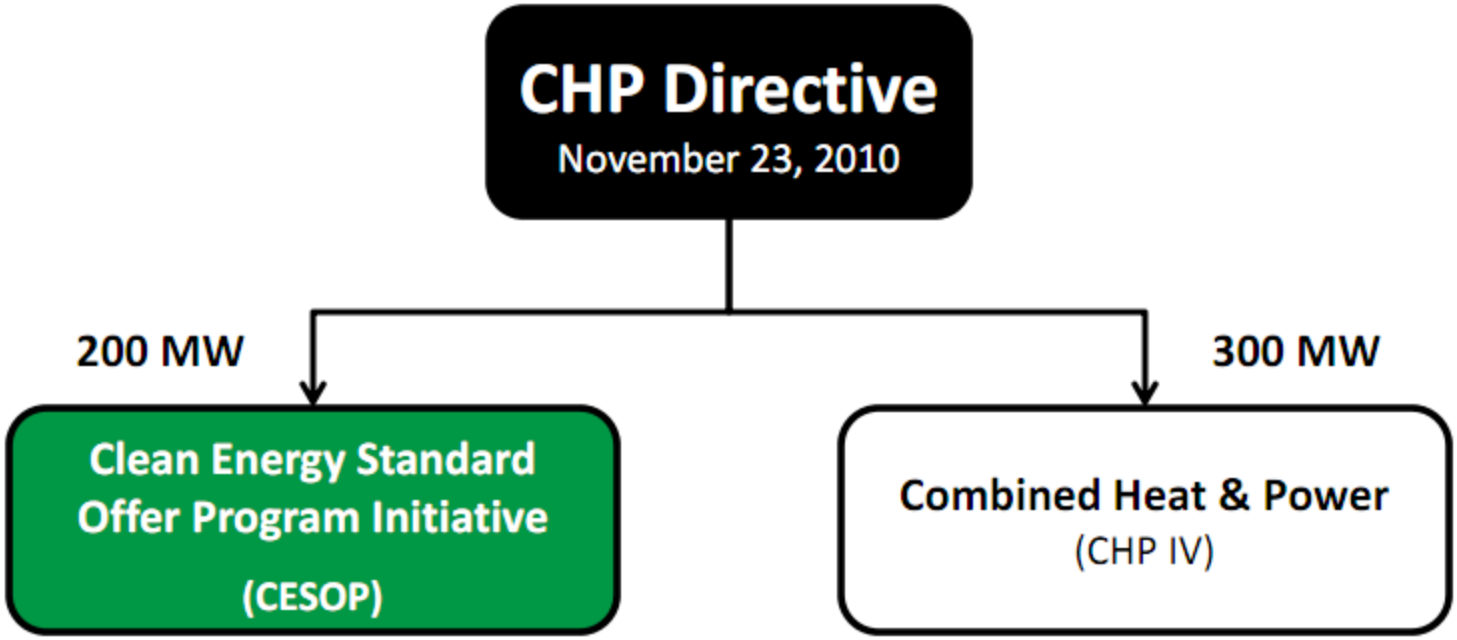
Study Recommendations

- In the 2009 study it was a major transmission reinforcement was recommended for the area:
  - A new Leamington TS and associated 230 kV line (in-service for 2012), as well as a new 230 kV line from Sandwich Junction to Lauzon TS and station upgrades, replacing the Keith 230/115 kV autos, and reconductoring J3E and J4E (timing to be determined)
- Based on the updated study results, incremental solutions could include:
  - Transmission
  - Distribution
  - Conservation
  - Distributed generation

Potential DG

- Significant FIT interest awaiting ECT, and microFIT applications waiting for conditional offers
- Significant potential for CHP
  - On November 23, 2010, the OPA received a directive authorizing the procurement of individually negotiated CHP projects greater than 20 MW in capacity
  - The same directive also include authorizing the procurement of CHP projects of 20 MW or less through a standard offer program that is limited to cost-effective projects located in areas of the province where they can be accommodated in the local distribution system and where there are local benefits

CESOP and CHP IV

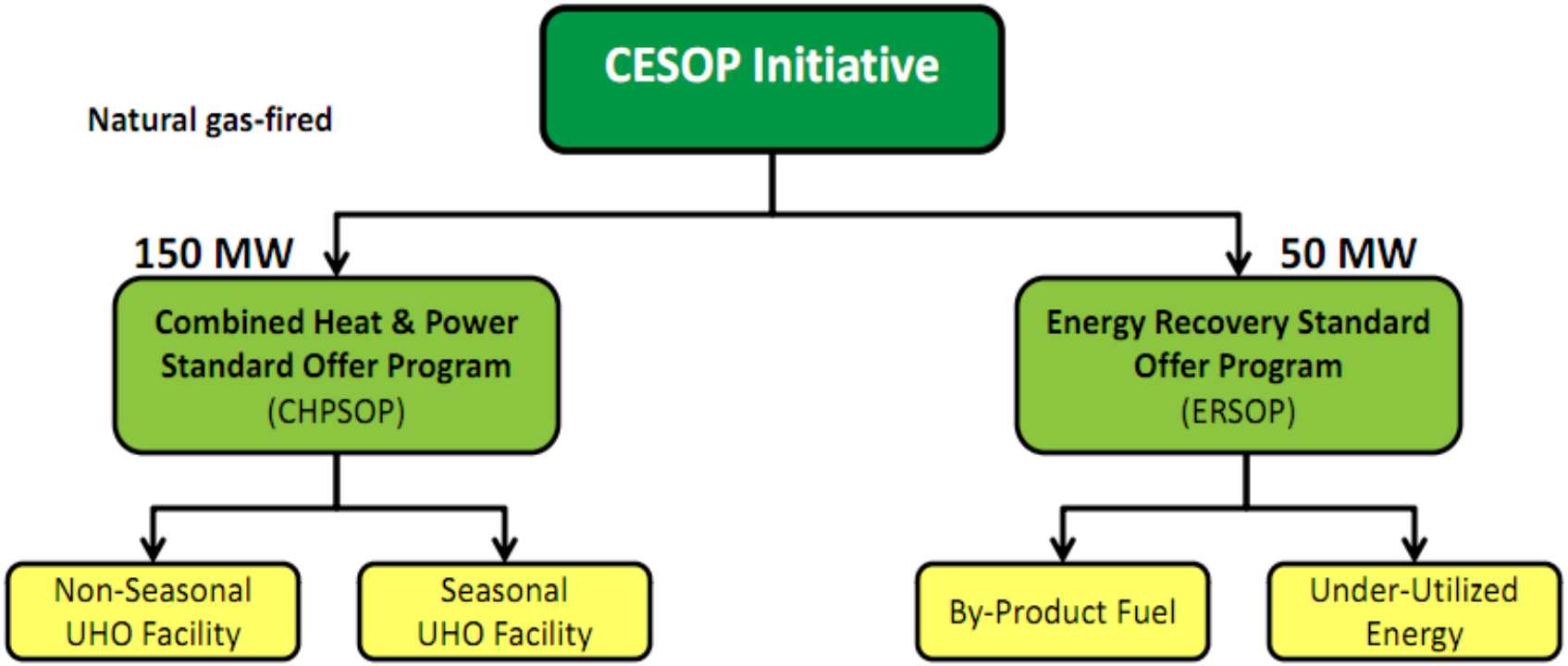


- Smaller projects (≤ 20MW)
- Distribution connected
- Standard-offer program

- Larger projects (> 20 MW)
- Distribution and transmission connected

ONTARIO POWER AUTHORITY

CESOP Initiative



ONTARIO POWER AUTHORITY

Potential for CHP in the Windsor-Essex Area

- During the first launch period, CESOP was limited to certain areas of the Province
  - This launch period was concluded on June 30, 2011
- The full 200 MW target was not allocated and therefore a second province-wide launch period was made available
  - This launch period will run from July 1 to August 31, 2011
- Potential CHP was not included in the reference net demand forecast
- Additional CHP procurement in the Windsor-Essex area could act as one of the incremental solutions for the area

Conclusions and Next Steps

- A significant reduction in demand in the Windsor-Essex area has lessened the need for major reinforcement
- Need to identify and assess incremental solutions to help maintain reliability in the area and mitigate the risk of a higher growth scenario
- Continuous monitoring

Ontario Energy Board (Board Staff) **INTERROGATORY #5**

Interrogatory

Reference: Ex B/T1/S5/p.13 & 14 – OPA Evidence on Need

At page 14, the OPA states:

> "The summer peak demand planning forecast of the Windsor-Essex area is shown in Figure 5, along with the gross demand and net demand for the area. Within the Windsor-Essex area, the planned peak demand reduction between 2014 and 2033 is approximately 150 MW from CDM, and approximately 15 MW from DG".

At p. 13 the OPA estimates CDM impact to be 172 MW (65MW+107MW) by 2033. Further, with respect to the impact of DG, at p. 14 the OPA estimates the impact to be 80MW by 2033. These impacts appear to be different from those that are quoted in the extract above. Please clarify the apparent inconsistency.

Response

Data on the table below is related to Figure 5 on page 15 of the above reference, as follows:

- The planned peak reduction due to CDM shown in the following table is the difference between the Gross Demand and the Net Demand shown in Figure 5 (data for Figure 5 is provided in response to Interrogatory #6).

- The planned peak reduction due to DG shown in the following table is the difference between the Net Demand and the Planning Forecast shown in Figure 5.

There is no inconsistency between the values quoted in the Interrogatory. 172 MW and 80 MW are the cumulative levels of CDM and DG, respectively, which are expected to contribute to the planning forecast in 2033. These values can be observed in the table below under the year 2033. The planned peak demand reductions between 2014 and 2033 stated on page 14 are the differences between the 2033 and 2014 levels of CDM and DG, respectively, reflecting the fact that some CDM and DG were already contributing to the planning forecast in 2014. In other words, the 150 MW of planned peak reduction from CDM described at page 14 can be calculated by subtracting the 22 MW of CDM shown in the table below for 2014 from the 172 MW of CDM shown in 2033. The 15 MW of DG described at page 14 can be calculated in a similar manner.

Forecast Planned Peak Reduction Due to CDM and DG

Windsor-Essex Regional Forecast	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
CDM	22	28	37	41	46	61	76	81	87	94	105	111	119	128	138	144	152	161	170	172
DG	65	73	75	77	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80

Ontario Energy Board (Board Staff) **INTERROGATORY #6**

Interrogatory

Reference: Ex B/T1/S5/p.15 & 16 – Figure 5 and 6 – OPA Evidence on Need

Please provide the annualized values in table format for Gross Demand, Net Demand and Planning Forecast Demand that were used to produce the graphs in Figure 5 and 6 at the above reference.

Response

Please see the table on page 2 of this exhibit.

Annualized Values for Gross Demand, Net Demand and Planning Forecast Demand

Windsor-Essex Regional Forecast	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross Demand	968	978	989	1001	1010	1019	1029	1038	1047	1057	1066	1075	1084	1092	1100	1109	1117	1126	1134	1143
Net Demand	946	950	952	960	964	958	953	957	960	962	961	964	965	964	962	965	965	964	964	971
Planning Forecast	881	877	877	882	884	879	873	877	880	882	881	884	885	885	882	885	885	884	884	891

Kingsville Leamington Area	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Gross Demand	164	170	174	179	182	184	187	188	191	193	196	198	201	204	206	209	212	214	217	220
Net Demand	160	165	168	172	173	173	173	173	175	176	176	177	179	180	180	182	183	183	184	187
Planning Forecast	145	147	149	152	153	152	152	153	154	155	155	157	158	159	160	161	162	163	164	166

Ontario Energy Board (Board Staff) **INTERROGATORY #7**

Interrogatory

Reference: Ex B/T1/S5 – OPA Evidence on Need – J3E-J4E Subsystem Restoration Needs

At the reference on page 40, lines 5-16, Hydro One describes the implication of its preferred solution of constructing the new Leamington TS and states in part that:

> The 95 MW of demand which would be transferred from Kingsville TS to Leamington TS in 2016 would correspondingly reduce the J3E-J4E subsystem demand to approximately 655 MW that year. This is within approximately 30 MW of the restoration capability for the period up to 2030, as described in Section 5.2.1, however the restoration capability is expected to decline beyond that date, due to the contract expiry date for the East Windsor Cogeneration Centre. […]The restoration capability described in Section 5.2.1 is therefore able to substantially meet the reduced restoration need for the J3E-J4E subsystem.

(a) What other measures would be needed to fully meet the restoration needs of the J3E-J4E subsystem, which basically would cover the 30 MW gap identified in the first reference, and what are the corresponding costs.
(b) What are the implications of not fully meeting the ORTAC requirements in this case under the stated assumptions?
(c) What other measures and their estimated costs in the event that the load in the J3E/J4E subsystem, during the study period, exceed the current forecast, in terms of meeting fully the ORTAC requirements.

Response

(a) Upgrading the J3E/J4E circuits from Keith TS to Essex TS to 1,600 amps, installing 50 MVar of reactive support, and replacing the end-of-life autotransformers at Keith TS with 250 MVA units, rather than a like-for-like replacement with 125 MVA units would cover the 30 MW gap. The cost corresponding to this measure would be approximately $22.5 million.

Alternatively, contracting the 74 MW TransAlta Windsor generation facility beyond its current contract expiry date of December 2016 would cover the 30 MW gap. Where Non-Utility Generator contracts have been negotiated it has been on the basis of their value to the bulk system. A resolution on the contracting status for this facility is anticipated later this year.

(b) The restoration requirement for the J3E-J4E subsystem has been determined at the time of system peak, as per the ORTAC, reflecting the short period of time per year when the system is most stressed. Within the restoration timeline specified in the ORTAC the restoration

requirement decreases as demand declines after the peak. System contingencies occurring at times of the year when demand is lower would have lower restoration requirements. The alternative of not fully meeting the peak requirement can be compared to alternatives for providing additional restoration capability in terms of the additional cost. The SECTR project substantially addresses the restoration need for the J3E-J4E subsystem, based on the peak forecast.

(c) The option of upgrading the J3E-J4E circuits, installing reactive support, and upgrading the Keith TS autotransformers described in response to part (a) would accommodate significantly more demand growth than indicated in the planning forecast. Additional investments for restoration purposes would likely not be required under a high growth scenario.

Ontario Energy Board (Board Staff) **INTERROGATORY #8**

Interrogatory

Reference: Ex B/T1/S5 – OPA Evidence on Need – Transmission Connected Generation

At the reference on page 28, lines 5 – 7, it is indicated that the gas-fired generating units at Brighton Beach GS which is connected to the 115 kV bus at Keith TS, allows the capability of the J3E/J4E transmission line to be fully utilized post-contingency.

At the reference on page 35, lines 7 – 16 it states in part that:

> The contract for the TransAlta Windsor generating station expires in December, 2016, reducing the amount of generation capability within the J3E-J4E subsystem which is available for restoration. Re-contracting this gas-fired generation would help meet the restoration requirement in the J3E-J4E subsystem, but would leave a gap of approximately 76 MW of unmet restoration requirement. As noted in Section 4.2, the contract for West Windsor Power also expires in 2016, however, this generating station is connected to the Essex 115 kV bus and is therefore not part of the J3E-J4E subsystem. Large generation is therefore not a feasible means of addressing the restoration needs of the J3E-J4E subsystem. The OPA may proceed to negotiate a new contract for one or both of these facilities if the new contract results in cost and reliability benefits for Ontario. [emphasis added].

At the same reference on page 30, lines 10 – 13 it states that:

> The OPA's provincial forecast shows that Ontario will experience a capacity shortfall beginning around 2019. The 180 MW constrained capacity at Brighton Beach GS could, however, advance the need for system capacity resources. The capital cost of supplying 180 MW of peaking capacity is approximately $160 million based on the cost of a simple cycle gas-fired generator.

(a) Please confirm that the generation of West Windsor is connected to the Keith 115 kV Bus, and not to the Essex 115 kV Bus as Hydro One indicated on page 35 of the reference.
(b) If the answer to (a) is affirmative, please comment on the view that in the event that the West Windsor contract is renewed by the OPA, its generation output would contribute to load restoration by allowing the capability of the J3E/J4E transmission line to be fully utilized post-contingency, same as the Brighton Beach units connected at the 115 kV bus at Keith.
(c) If the answer to (a) above is affirmative, and in the event that the OPA is successful in renegotiating its contract with West-Windsor (107 MW) and the TransAlta Windsor (74 MW) prior to their expiry in 2016, please comment on whether or not such a measure would address the 76 MW gap to meet the restoration time for the J3E/J4E subsystem identified at the above reference on page 35, lines 9 -11.
(d) Please elaborate on the view that renewal of the two noted contracts by the OPA in 2016 appear to be more economic, given that the noted generating facilities are in place, and thus

their capital costs have been recovered, than the alternative of relieving the 180 MW of Brighton Beach constrained capacity by a 180 MW of peaking capacity at a cost of $160 million based on a simple cycle gas-fired generator as stated at page 30 of the reference.

(e) Notwithstanding whether renegotiating the two noted contracts is the most economical solution, please provide an evaluation of the value of that 180 MW bottled generation using the forecast Hourly Ontario Energy Price ("HOEP") for the study period. In providing that analysis, please provide all assumption including the probability of all bottled generation events, the number of hours in each event and amount of bottled energy as well as the corresponding cost.

Response

(a) The Interrogatory is correct that West Windsor Power is connected to the Keith 115 kV bus, not the Essex 115 kV bus, which was incorrectly stated on page 35 of the reference.

For clarity, page 35, lines 11-13 should read:

As noted in Section 4.2, the contract for West Windsor Power also expires in 2016, however, this generating station is connected to the **Keith** 115 kV bus and is therefore not part of the J3E-J4E subsystem.

(b) The restoration capability of circuits J3E-J4E is limited to approximately 440 MW, based on their thermal capability. In the event that Brighton Beach GS were not available to contribute to load restoration up to the full capability of the J3E-J4E circuit then West Windsor Power could provide similar benefit, however there is no incremental benefit to having both facilities available.

(c) The unmet restoration requirement described on page 35, line 10 of the reference is the remaining requirement if the contract for TransAlta Windsor generating station were extended. Because West Windsor Power is connected to the Keith 115 kV bus and therefore not part of the J3E-J4E subsystem it cannot provide restoration capability.

For clarity, the combination of the SECTR project and TransAlta Windsor would fully address the restoration need.

(d) The constraint on the operation of generation connected at Keith TS was described in addition to the supply capacity and restoration needs which were identified based on the ORTAC. The rationale for recommending the SECTR project is to address these two needs; however the project also provides additional system benefit by reducing this constraint. The estimated cost of supplying alternative peak capacity described on page 30, lines 12-13 of the reference was included to give an indication of the value of this additional benefit.

(e) The IESO uses an overnight cost of $900/kW for a generic Simple Cycle Gas Turbine. For 180 MW, this works out to $162 million. The value is supported by IESO's procurement experience, public information, and confidential consulting reports.

Ontario Energy Board (Board Staff) **INTERROGATORY #9**

Interrogatory

Kingsville TS Reinforcement Cost
Reference: Ex B/T6/S3 "Draft SIA Report, May 9, 2014"/pp. 12-13
Ex B/T4/S3/p.3/lines 6-19

At the first reference, the draft SIA report in analyzing the "Kingsville Load Transfer Options" indicated that option B, proposed by Hydro One, which involves retaining two transformers with 54 MW of load at Kingsville TS and transfer the remaining load to the new TS (about 95 MW), is better than option A, which involves retaining four transformers with 124 MW. The draft SIA report however stated in part that:

> With two transformers retained at Kingsville in option B, for loss of one transformer, post-contingency loading above the 10-day long term rating (LTR) will occur on the remaining transformer with the more limiting rating. Should option B be retained, Hydro One has indicated that they have plans to replace this transformer with a new transformer that has a higher 10-day LTR

At the second reference, Hydro One stated in part that

> With the establishment of Leamington TS sufficient load will be transferred from Kingsville TS to Leamington TS. This will reduce the need for the current four transformers at Kingsville TS to two transformers. Three of the transformers at Kingsville TS are at end-of-life with planned replacement in 2015 (under Hydro One Transmission's Sustainment program). With the planned load transfer to Leamington TS, only one of these three transformers will need to be replaced. The estimated cost to replace three transformers is $18M, while the estimated cost to replace one transformer and reconfigure the station to a two-transformer station is $12M. This represents a $6M reduction in cost due to the SECTR Project.

(a) Please indicate whether the fourth transformer at Kingsville TS that will remain in use has a higher 10-day LTR capability required to meet the post-contingency loading as stated in the SIA report as noted in the first reference.
(b) If the fourth transformer does not meet the higher 10-day LTR capability noted in the first reference, would Hydro One purchase a second transformer? And in that event would there be an additional cost of $6M to the project?
(c) Please provide a description of the work required to reconfigure Kingsville TS to a two-transformer station, and a breakdown of the $6M cost including any new system elements such as breakers.

Response

(a) The four transformers at Kingsville TS are 25/33/42 MVA units. Three of these are at end-of-life (1950's vintage). The fourth transformer (2000's vintage) has a summer 10-day LTR of approximately 70 MVA and will be retained. Option B involves decommissioning of two of the end-of-life transformers and replacement of the third with a transformer having a summer 10-day LTR of at least 60 MVA. This will meet the post-contingency loading requirement at Kingsville TS since the plan is to retain approximately 54 MW of load at the station.

(b) There would be no need to purchase a second transformer, since as stated in (a) above, the retained transformer and the replacement transformer would meet the need of the station.

(c) The estimated cost to replace one transformer and reconfigure Kingsville TS to a two-transformer station is $12M (the $6M reference in the question is the resultant savings due to the SECTR project). The work and cost breakdown are as follows:

Transformer (plus spill containment, nose and fire walls):	$3.25M
PCT add-on:	$3.5
Switchyard reconfiguration:	$2.0
Replace switches (line, transformer and tie):	$0.5
Removals:	$1.0
Contingency:	$1.75
Total:	**$12.0M**

Ontario Energy Board (Board Staff) **INTERROGATORY #10**

Interrogatory

Land Matters

Reference: Land Matters – Ex B/T6/S7 and Filing Requirements from Transmission and Distributions Applications, dated May 12, 2012 ("LTC Filing Requirements")

Please provide the following information in relation to the proposed transmission facilities (Transmission Line and Leamington TS)

(a) Please submit a map showing the route/location of the proposed facilities and the land parcels along the route with PIN/LOT No. for the properties on which or adjacent to which the proposed facilities are to be located.
(b) Please submit a map showing the right-of-way dimensions and an indication of where the route crosses privately owned land.
(c) Please submit as a confidential filing a landowner list (in table format) identifying the PIN/LOT number and the property owner. Please ensure the landowner list is consistent with the information in part (a).

Response

The proposed transmission facilities will cross 40 privately-owned properties, seven municipal road allowances, six municipal owned properties and one owned by Hydro one Distribution (future site of Leamington TS).

(a) Please refer to Attachment A - Proposed SECTR Transmission Corridor Map.

(b) Please refer to Attachment A - Proposed SECTR Transmission Corridor Map and Attachment B - Property Type Listing.

(c) Please refer to Confidential filing Exhibit I-P1, Tab 1, Schedule 10, 'Attachment C - Property Ownership Listing'.

ATTACHMENT A
Proposed SECTR Transmission Corridor Map

MIDDLE RD

MIDDLE RD

C23Z C21J

C24Z

C22J

ROCHESTER TOWNLINE RD

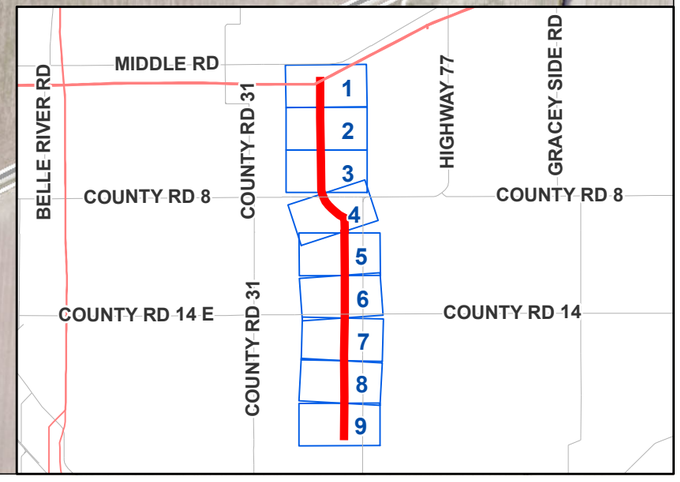
750550058

750550002

SOUTH MIDDLE RD

LAKESHORE RD 243

750560068



hydro one

inergi

Produced By: Inergi LP (GIS Services)
Date: October 9, 2013/ Revised: March 3, 2015
Map13-115_Leamington_Tile_w_oBuffer

Copyright Hydro One Networks Inc. All rights reserved. No part of this drawing may be redistributed or reproduced in any form by any photographic, electronic, mechanical or any other means, or used in any information storage or retrieval system. Neither Hydro One Networks Inc. nor any of its affiliates assumes liability for any errors or ommissions.
NOT TO BE REPRODUCED OR REDISTRIBUTED CONFIDENTIAL TO HYDRO ONE NETWORKS INC.

- Existing Transmission Lines
- Leamington Proposed Centreline
- Roads
- Parcels
- Water
- Leamington Proposed ROW (130 Ft)

HYDRO ONE NETWORKS INC.

LEAMINGTON AREA PROPOSED TRANSMISSION

Tile 1 / 9 1:7,000 0 100 200 m

hydro one

inergi

Produced By: Inergi LP (GIS Services)
Date: October 9, 2013/ Revised: March 3, 2015
Map13-115_Leamington_Tile_w_oBuffer

Copyright Hydro One Networks Inc. All rights reserved. No part of this drawing may be redistributed or reproduced in any form by any photographic, electronic, mechanical or any orther means, or used in any information storage or retrieval system. Neither Hydro One Networks Inc. nor any of its affiliates assumes liability for any errors or ommissions.

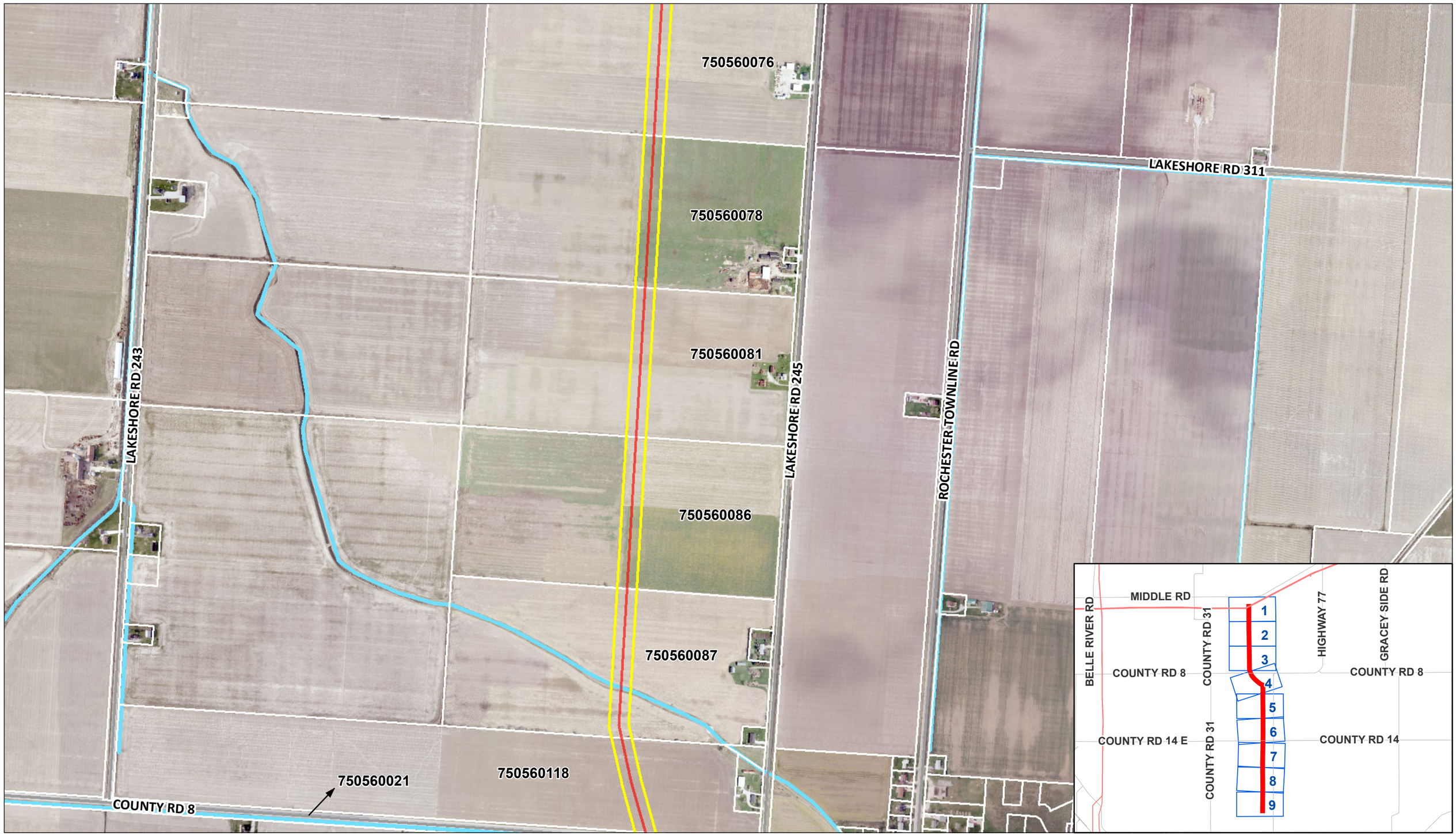
NOT TO BE REPRODUCED OR REDISTRIBUTED CONFIDENTIAL TO HYDRO ONE NETWORKS INC.

- Existing Transmission Lines
- Leamington Proposed Centreline
- Roads
- Parcels
- Water
- Leamington Proposed ROW (130 Ft)

HYDRO ONE NETWORKS INC.

LEAMINGTON AREA PROPOSED TRANSMISSION

Tile 2 / 9 1:7,000 0 100 200 m



hydro one

inergi

Produced By: Inergi LP (GIS Services)
Date: October 9, 2013/ Revised: March 3, 2015
Map13-115_Leamington_Tile_w_oBuffer

Copyright Hydro One Networks Inc. All rights reserved. No part of this drawing may be redistributed or reproduced in any form by any photographic, electronic, mechanical or any orther means, or used in any information storage or retrieval system. Neither Hydro One Networks Inc. nor any of its affiliates assumes liability for any errors or ommissions.

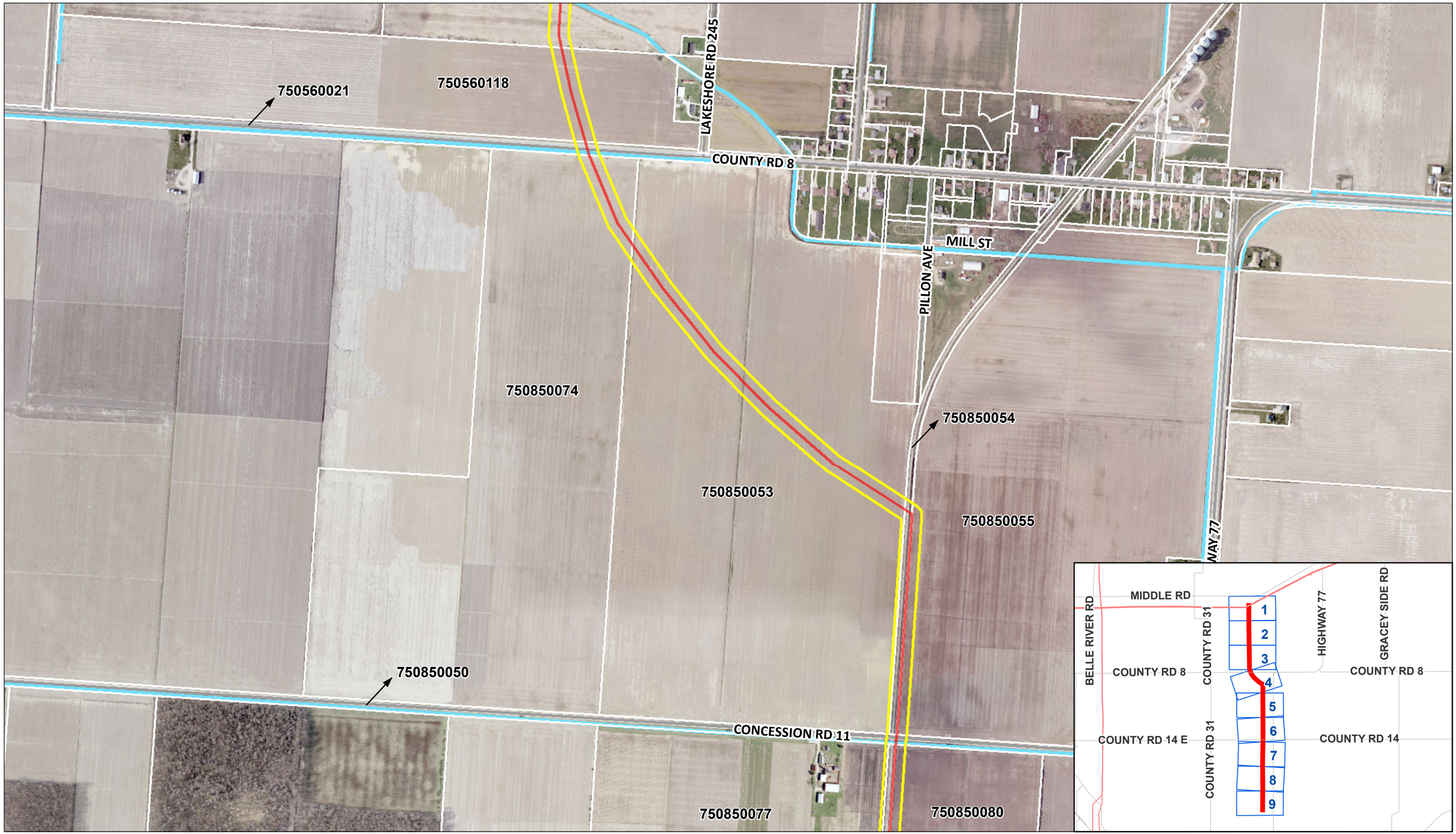
NOT TO BE REPRODUCED OR REDISTRIBUTED CONFIDENTIAL TO HYDRO ONE NETWORKS INC.

- Existing Transmission Lines
- Leamington Proposed Centreline
- Roads
- Parcels
- Water
- Leamington Proposed ROW (130 Ft)

HYDRO ONE NETWORKS INC.

LEAMINGTON AREA PROPOSED TRANSMISSION

Tile 3 / 9 1:7,000 0 100 200 m



hydro one

inergi

Produced By: Inergi LP (GIS Services)
Date: October 9, 2013/ Revised: March 3, 2015
Map13-115_Leamington_Tile_w_oBuffer

Copyright Hydro One Networks Inc. All rights reserved. No part of this drawing may be redistributed or reproduced in any form by any photographic, electronic, mechanical or any other means, or used in any information storage or retrieval system. Neither Hydro One Networks Inc. nor any of its affiliates assumes liability for any errors or ommissions.

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

- Existing Transmission Lines
- Leamington Proposed Centreline
- Roads
- Parcels
- Water
- Leamington Proposed ROW (130 Ft)

HYDRO ONE NETWORKS INC.

LEAMINGTON AREA PROPOSED TRANSMISSION

Tile 4 / 9 1:7,000 0 100 200 m

CONCESSION RD 11

CONCESSION 11 RD

750850077

750850080

750850079

HIGHWAY 77

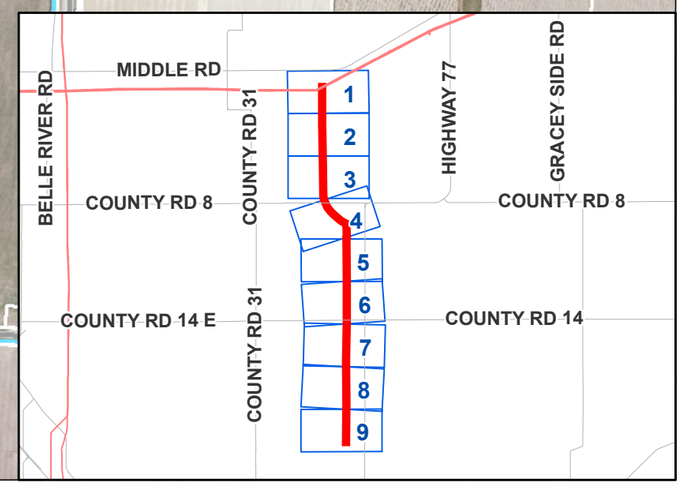
750850084

MERSEA 10 RD

750850052

750860123

750860198



hydro one

inergi

Produced By: Inergi LP (GIS Services)
Date: October 9, 2013/ Revised: March 3, 2015
Map13-115_Leamington_Tile_w_oBuffer

Copyright Hydro One Networks Inc. All rights reserved. No part of this drawing may be redistributed or reproduced in any form by any photographic, electronic, mechanical or any orther means, or used in any information storage or retrieval system. Neither Hydro One Networks Inc. nor any of its affiliates assumes liability for any errors or ommissions.

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

- Existing Transmission Lines
- Leamington Proposed Centreline
- Roads
- Parcels
- Water
- Leamington Proposed ROW (130 Ft)

HYDRO ONE NETWORKS INC.

LEAMINGTON AREA PROPOSED TRANSMISSION

Tile 5 / 9 1:7,000 0 100 200 m

MERSEA 10 RD

CONCESSION 10 RD

750850052

750860123

750860198

750860158

750860159

HIGHWAY 77

750860186

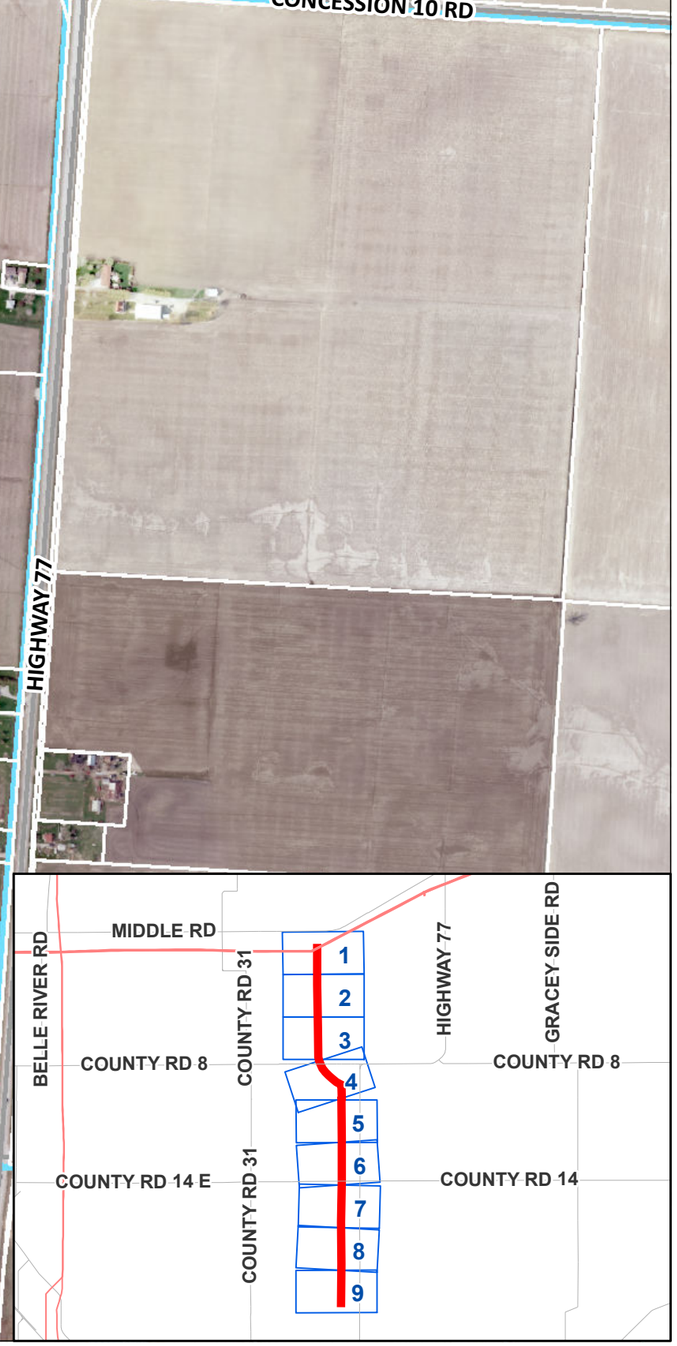
750860152

COUNTY RD 14

750860052

750860191

750860148



hydro one

inergi

Produced By: Inergi LP (GIS Services)
Date: October 9, 2013/ Revised: March 3, 2015
Map13-115_Leamington_Tile_w_oBuffer

Copyright Hydro One Networks Inc. All rights reserved. No part of this drawing may be redistributed or reproduced in any form by any photographic, electronic, mechanical or any other means, or used in any information storage or retrieval system. Neither Hydro One Networks Inc. nor any of its affiliates assumes liability for any errors or ommissions.

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

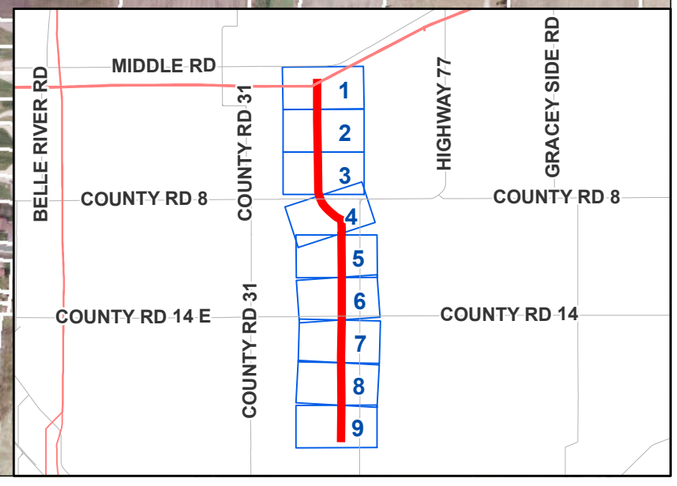
- Existing Transmission Lines
- Leamington Proposed Centreline
- Roads
- Parcels
- Water
- Leamington Proposed ROW (130 Ft)

HYDRO ONE NETWORKS INC.

LEAMINGTON AREA PROPOSED TRANSMISSION

Tile 6 / 9 1:7,000 0 100 200 m

750860052
750860191
750860148
750860147
750860192
750860135
750860051
CONCESSION RD 8
750930262
750930146
COUNTY RD 14
HIGHWAY 77



hydro one
inergi

Produced By: Inergi LP (GIS Services)
Date: October 9, 2013/ Revised: March 3, 2015
Map13-115_Leamington_Tile_w_oBuffer

Copyright Hydro One Networks Inc. All rights reserved. No part of this drawing may be redistributed or reproduced in any form by any photographic, electronic, mechanical or any other means, or used in any information storage or retrieval system. Neither Hydro One Networks Inc. nor any of its affiliates assumes liability for any errors or ommissions.
NOT TO BE REPRODUCED OR REDISTRIBUTED CONFIDENTIAL TO HYDRO ONE NETWORKS INC.

- Existing Transmission Lines
- Leamington Proposed Centreline
- Roads
- Parcels
- Water
- Leamington Proposed ROW (130 Ft)

HYDRO ONE NETWORKS INC.

LEAMINGTON AREA PROPOSED TRANSMISSION

Tile 7 / 9 1:7,000 0 100 200 m

CONCESSION RD 8

750930146

750930262

750930148

HIGHWAY 77

750930240

750930341

750930354

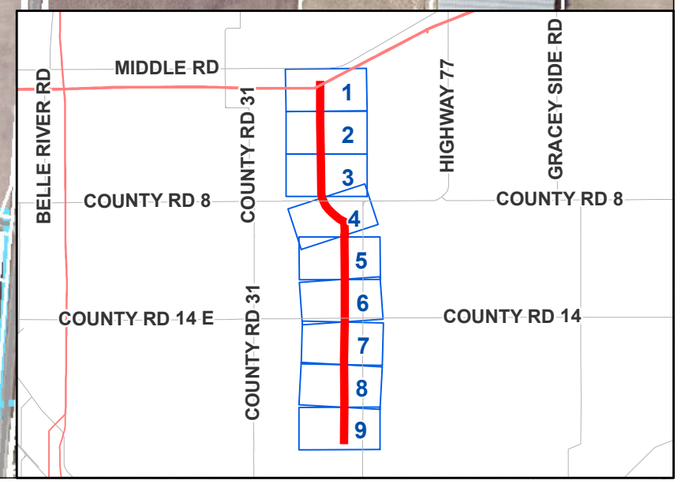
750930329

750930053

CONCESSION RD 7

750930257

750930134



hydro one

inergi

Produced By: Inergi LP (GIS Services)
Date: October 9, 2013/ Revised: March 3, 2015
Map13-115_Leamington_Tile_w_oBuffer

Copyright Hydro One Networks Inc. All rights reserved. No part of this drawing may be redistributed or reproduced in any form by any photographic, electronic, mechanical or any orther means, or used in any information storage or retrieval system. Neither Hydro One Networks Inc. nor any of its affiliates assumes liability for any errors or ommissions.
NOT TO BE REPRODUCED OR REDISTRIBUTED CONFIDENTIAL TO HYDRO ONE NETWORKS INC.

- Existing Transmission Lines
- Leamington Proposed Centreline
- Roads
- Parcels
- Water
- Leamington Proposed ROW (130 Ft)

HYDRO ONE NETWORKS INC.

LEAMINGTON AREA PROPOSED TRANSMISSION

Tile 8 / 9 1:7,000 0 100 200 m

750930134

750930257

750930317

750930315

750930319

750930130

750930271

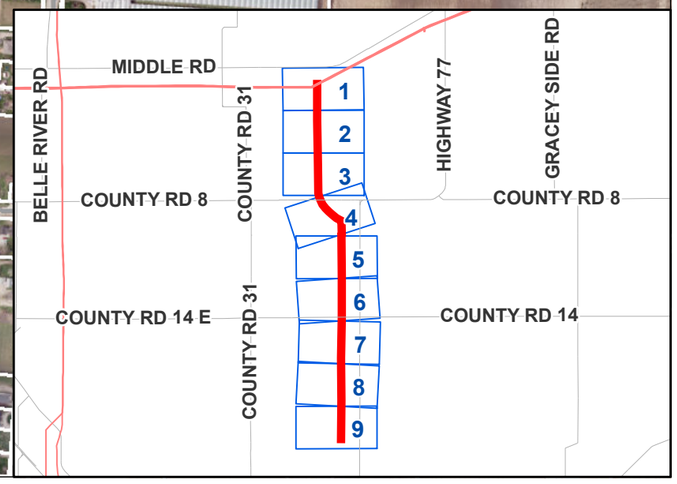
750930135

750930157

HIGHWAY-77

CONCESSION RD 6

BRUNER RD



hydro one

inergi

Produced By: Inergi LP (GIS Services)
Date: October 9, 2013/ Revised: March 3, 2015
Map13-115_Leamington_Tile_w_oBuffer

Copyright Hydro One Networks Inc. All rights reserved. No part of this drawing may be redistributed or reproduced in any form by any photographic, electronic, mechanical or any other means, or used in any information storage or retrieval system. Neither Hydro One Networks Inc. nor any of its affiliates assumes liability for any errors or ommissions.

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

- Existing Transmission Lines
- Leamington Proposed Centreline
- Roads
- Parcels
- Water
- Leamington Proposed ROW (130 Ft)

HYDRO ONE NETWORKS INC.

LEAMINGTON AREA PROPOSED TRANSMISSION

Tile 9 / 9 1:7,000 0 100 200 m

ATTACHMENT B
Property Type Listing

	PIN	Property Type
1	**75055-0058 (R)**	Agriculture
2	**75055-0002 (LT)**	Road Allowance - S Middle Road
3	**75056-0068 (LT)**	Agriculture
4	**75056-0070 (LT)**	Agriculture
5	**75056-0073 (LT)**	Agriculture
6	**75056-0072 (LT)**	Agriculture
7	**75056-0075 (LT)**	Agriculture
8	**75056-0076 (LT)**	Agriculture
9	**75056-0078 (LT)**	Equestrian Farm
10	**75056-0081 (LT)**	Agriculture

	PIN	Property Type
11	**75056-0086 (LT)**	Agriculture
12	**75056-0087 (LT)**	Agriculture
13	**75056-0118 (LT)**	Agriculture
14	**75056-0021 (LT)**	Road Allowance - County Rd 8
15	**75085-0074 (LT)**	Agriculture
16	**75085-0053 (LT)**	Agriculture
17	**75085-0054 (LT)**	Municipal Corridor
18	**75085-0055 (R)**	Agriculture
19	**75085-0050 (LT)**	Road Allowance - Concession Rd 11
20	**75085-0077 (LT)**	Agriculture

	PIN	Property Type
21	**75085-0079 (LT)**	Municipal Corridor
22	**75085-0080 (LT)**	Agriculture
23	**75085-0084 (LT)**	Agriculture
24	**75085-0052 (LT)**	Road Allowance - Mersea Rd 10
25	**75086-0123 (LT)**	Greenhouse
26	**75086-0159 (LT)**	Municipal Corridor
27	**75086-0198 (LT)**	Agriculture
28	**75086-0158 (LT)**	Agriculture
29	**75086-0186 (LT)**	Greenhouse
30	**75086-0152 (LT)**	Commercial Land
31	**75086-0052 (LT)**	Road Allowance - County Rd 14

	PIN	Property Type
32	**75086-0191 (LT)**	Commercial Land
33	**75086-0147 (LT)**	Municipal Corridor
34	**75086-0192 (LT)**	Agriculture
35	**75086-0148 (LT)**	Agriculture
36	**75086-0135 (LT)**	Commercial Land
37	**75086-0051 (LT)**	Road Allowance - Concession Rd 8
38	**75093-0146 (LT)**	Agriculture
39	**75093-0148 (LT)**	Municipal Corridor
40	**75093-0262 (LT)**	Agriculture
41	**75093-0240 (LT)**	Agriculture
42	**75093-0341 (LT)**	Agriculture
43	**75093-0354 (LT)**	Greenhouse

	PIN	Property Type
44	**75093-0329 (LT)**	Agriculture
45	**75093-0053 (LT)**	Road Allowance - Concession Rd 7
46	**75093-0134 (LT)**	Equestrian Farm
47	**75093-0135 (LT)**	Municipal Corridor
48	**75093-0257 (LT)**	Greenhouse
49	**75093-0317 (LT)**	Greenhouse
50	**75093-0315 (LT)**	Greenhouse
51	**75093-0130 (LT)**	Agriculture
52	**75093-0319 (LT)**	Greenhouse
53	**75093-0271 (LT)**	Greenhouse
54	**75093-0157 (LT)**	Future TS

CONFIDENTIAL FILING
ATTACHMENT C - Property Ownership Listing

Ontario Energy Board (Board Staff) **INTERROGATORY #11**

Interrogatory

Reference: Land Matters – Ex B/T6/S7

(a) The evidence states that the corridor for the transmission line crosses 39 privately owned properties, a rail corridor and eight municipal road allowances. For each of the 39 properties, and for additional properties required for the Transmission Station, please provide in table format, the PIN/LOT Numbers, description of property (residential, agricultural, greenhouses, commercial etc.), description of infrastructure to be located on the property, type of land rights required and whether property-owner and Hydro One have successfully executed a land use agreement.

(b) What is the status of negotiations between Hydro One and the Municipality of Leamington, with respect to lands that are owned by the municipality?

Response

(a) Please refer to Board Staff Interrogatory response 10 (Exhibit I-P1, Tab 1, Schedule 11, Attachment B, '*Property Type Listing*'). Hydro One will be securing permanent easement rights on all privately-owned properties. Final determination of the location of tower placement on each property will be made post-OEB approval during the final Engineering Design phase of the project, subsequent to topographic survey, locates, etc. Hydro One will not be executing a land use agreement until OEB Board approval is obtained

(b) Negotiations regarding land owned by the Municipality of Leamington will proceed once Hydro One has received Ontario Energy Board approval for the Project and has agreements in place with parties with respect to capital contributions required that will be addressed in Phase 2 of this OEB proceeding. That said, the Municipality of Leamington is aware and is supportive of the Project which is evidenced in Exhibit B, Tab 6, Schedule 2, Attachment 1, through Letter of Endorsement for the Project by the Municipality of Leamington.

Comber Wind LP (Comber) **INTERROGATORY #1**

Interrogatory

Reference

(1) Exhibit B, Tab 2, Schedule 2 - Map of Proposed Facilities
(2) Exhibit B, Tab 2, Schedule 4 - Cross Section of the Tower Types - Existing and Proposed
(3) Exhibit B, Tab 6, Schedule 7 - Land Matters
(4) OEB, Decision and Order dated February 26, 2015 in Application by Suncor Energy Products Inc. for leave to construct (EB-2014-0022)

Preamble

Reference (1) shows the location of the proposed transmission line as extending north from the proposed Leamington TS to the proposed Leamington JCT. The map shows two road crossings, at County Road 14 and at County Road 8.

Reference (3) states that the proposed transmission line will cross eight municipal road allowances.

Reference (2) provides an illustration of a steel lattice tower design with a total height of 121 feet and clearance from the ground to the lowest wire of 51 feet.

Questions/Requests

(a) Please identify all municipal roads that will be crossed by the proposed transmission line.
(b) Please identify all existing electricity distribution lines that will be crossed by the proposed transmission line, including along the municipal roads referred to in (a), above, or otherwise, as well as the name of the owner of the line that is being crossed and any other party that has facilities attached to or running along such line pursuant to joint use arrangements.
(c) For each existing distribution line (including attachments such as low voltage collection lines associated with renewable energy generation facilities) that will be crossed by the proposed transmission line, please identify (i) the height of the existing poles and/or conductors on the line, and (ii) the clearance between such existing poles/conductors and the lowest hanging wires on the proposed transmission line.
(d) If Hydro One plans to use a tower design other than that provided in Reference (2) at the location of any crossing of existing distribution facilities, please provide illustrations of the relevant tower designs with relevant dimensions.
(e) Please confirm that Hydro One's use of the tower design illustrated in Reference (2), or as otherwise indicated in response to (d), above, will result in clearances at the locations of any crossing of existing distribution facilities that are sufficient to comply with all applicable technical and safety standards, as well as to avoid adverse impacts on the distribution facilities that are being crossed. Please include references to the relevant standards in the

response. Please also confirm whether the relevant standards are the same as those with which Suncor is required to comply pursuant to the Board's February 26, 2015 decision granting leave to construct in EB-2014-0022 and, if not, explain.

(f) During construction of the proposed transmission line, will Hydro One require outages on any distribution lines that its proposed transmission line will cross? If so, what are the expected durations of such outages?

(g) What are Hydro One's plans for scheduling and coordinating any outages referred to in (f) with directly affected parties?

(h) Please clarify whether Hydro One will require any modifications to be made to any of the existing distribution facilities that will be crossed by the proposed transmission facilities. If so, please describe what modifications would be required.

(i) Please explain Hydro One's position with respect to cost responsibility for the necessary modifications to existing distribution facilities referred to in (h), if any.

Response

(a)

Municipal Roads Crossed by Proposed 230 kV Transmission Line
South Middle Road
County Road 8
Concession Road 11
Mersea 10 Road
County Road 14
Concession Road 8
Concession Road 7

(b) Hydro One has identified the proposed transmission line will make crossings with the following Hydro One Distribution lines:

- Mersea (Concession) Road 7 - Blytheswood DS F2 and Kingsville TS M10
- Mersea (Concession) Road 8 - Blytheswood DS F2
- County Road 14 - Blytheswood DS F1 twice as well as a circuit crossing County Road 14 parallel to the proposed Hydro One transmission line.
- Mersea (Concession) Road 10 - Blytheswood DS F1
- Mersea (Concession) Road 11 - Blytheswood DS F1
- County Road 8 - Blytheswood DS F1

Hydro One records show that the proposed transmission line will make crossings with the following Brookfield distribution lines, subject to field verification:

- South Middle Road – along the road
- Distribution line approximately 1.4 km north of Hwy 77

(c) The heights of poles and associated conductors have not been determined at this stage. Hydro One intends to proceed with a survey at the detailed design stage to determine heights of the existing poles and/or conductors on the distribiton lines. The proposed transmission line will be designed to maintain Hydro One standard clearances between the lowest hanging wire on the proposed line and the distribution poles/conductors

(d) At this time Hydro One expects the tower design in reference 2 above, will be used at the location of crossing with exisiting distribution facilities, however final determination will be made at the detail design stage. Hydro One will inform affected property owners of tower design changes.

(e) Confirmed. For all situations where there are crossings of distribution facilities, Hydro One standard clearances will be used which are generally more stringent than CSA 22.3. This is consistent with the Boards' February 26, 2015 Decision with Reasons ("Suncor Decision") regarding the Suncor transmission line application EB-2014-0022, where it is required to comply with Hydro One standard clearances.

(f) Hydro One would typically ask for distribution line outages when necessary. The duration of such outages will be determined based on availability of the outage and in conjunction with owner and/or operator of the distribution line in advance of the construction work. Any outage would be planned and staged to minimize overall impacts to customers.

(g) See part (f) above.

(h) Hydro One does not foresee the need for any modifications to exisiting distribution facilities at this time.

(i) Hydro One Transmission expects to be bound by the same Board rulings and orders as those contained in the Suncor Decision (EB-2014-0022), whereby the Board ordered the cost responsibility for any current costs of a distribution company or generation company as a result of the transmission line construction project to be met by the company constructing the transmission line. Hydro One Transmission expects the Board would issue a similar order to that of the Suncor Decision, most notably, order numbers 4 and 5 on page 17 of that decision that are;

> *4 - Suncor shall construct its Transmission Facilities at a sufficient height to maintain the applicable Hydro One standard clearence from the five existing Hydro One private primary connections.*

> *5 - Suncor shall pay the cost of construction of an underground secondary connection to replace the existing Hydro One overhead secondary connection at the point of intersection of the existing Hydro One overhead secondary connection with Suncor's Transmission Facilities.*

Consistent with the Suncor Decision, Hydro One Transmission expects it would not be subject to any future costs relating to any distributor or generator as a result of the transmission line construction.