



REGIONAL PLANNING PROCESS
ANNUAL STATUS REPORT
2015

NOVEMBER 1ST, 2015

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EXECUTIVE SUMMARY

As part of the Transmission System Code^[1] (“TSC”) amendments on August 26, 2013, a new provision was introduced in Section 3C.3.3 of the TSC requiring transmitters to submit an annual report to the Ontario Energy Board (“OEB”) on November 1st of each year, which identifies the status of the regional planning for their respective regions. This Report is the second Annual Status Report produced by Hydro One Networks Inc. (“Hydro One”) and provides an update to the accomplishments and progress of regional planning activities between November 2014 and October 2015.

Progress to Date

Since the regional planning process was introduced, Hydro One, Local Distribution Companies (“LDCs”), and the Independent Electricity System Operator (“IESO”) have met mandatory timelines to complete each of the regional planning phases with the exception of the Northwest Ontario Integrated Regional Resource Plan (“IRRP”)¹.

One of several major initiatives in 2015 is the development of Regional Infrastructure Plans (“RIP”), which is the final product of the regional planning process. From a wires infrastructure perspective, the RIP is the most important phase in the regional planning process because it provides a comprehensive source of information for regional power system infrastructure (wires) plans. The RIP is initiated as a final step in the regional planning process. Normally, this happens after the completion of the IRRP for the region (unless IRRP is not required) to assess and provide a consolidated wires plan for every region. There were eight IRRPs completed in 2015. Two of the IRRPs are for regions where sub-regional IRRPs are still under development. These two regions are Northwest Ontario and Burlington to Nanticoke. Consequently, the development of corresponding RIPs is currently underway for the other six regions, namely Greater Ottawa, GTA North, GTA West, Kitchener-Waterloo-Cambridge-Guelph (“KWCG”), Metro Toronto, and Windsor-Essex Regions. These six RIPs will be completed by the end of Q1 2016.

Other key accomplishments include:

- Timely completion of four Needs Assessments (“NA”) for Group 2 regions;
- Timely completion of four Scoping Assessments (“SA”) in Group 1 and 2;
- Completion of six Local Plan (“LP”) reports, with three others underway in various regions;
- Planning, development and/or execution of work for several transmission projects to address a number of near-term needs are currently underway; and
- Provision of Planning Status Letters to LDCs for their rate applications in a timely manner.

A summary of the status of regional planning for each region is shown in Table 1.

¹ Northwest Ontario IRRP delay was indicated in the 2014 report to the OEB^[2] and it is anticipated that the IRRP for this region will be completed by the end of Q2 2016.

Remaining Work

The regional planning process is actively underway and is following the process developed by the Planning Process Working Group (“PPWG”) that the OEB established. The RIP reports for the remaining Group 1 regions (Burlington to Nanticoke, GTA East and Northwest Ontario) will be initiated in 2016 following the completion of their respective IRRPs, which are expected to be completed by Q3 2016. It is anticipated that RIP reports for all Group 1 regions will be completed by Q1 2017.

There are three sub-regions in Group 2 where recommendations were to undertake and develop IRRP reports. These three IRRPs are expected to be completed by the end of 2016. Although subject to the completion of IRRP reports, it is anticipated that RIPs for Group 2 will be completed by Q2 2017. For the Group 3 regions, the regional planning process will begin by the end of 2015 with the initiation of the NA. As per the timelines in the TSC, the first cycle of the regional planning process should be completed by the end of August 2017.

Table 1. Regional Planning Status Summary

Group	Region	Sub-Region	NA	SA	IRRP	RIP
1	Burlington to Nanticoke	Brant				
		Bronte			In Progress	
		Greater Hamilton			Not Required	
		Caledonia-Norfolk		Not Required	Not Required	
	Greater Ottawa	Ottawa				In Progress
		Outer Ottawa		Not Required	Not Required	
	GTA East	Oshawa-Clarington			Not Required	
		Pickering-Ajax-Whitby			In Progress	
	GTA North	York				In Progress
		Western		Not Required	Not Required	
	GTA West	Northwestern				In Progress
		Southern			Not Required	
	Kitchener-Waterloo-Cambridge-Guelph (KWCG)					In Progress
	Metro Toronto	Central Downtown				In Progress
		Northern		Not Required	Not Required	
	Northwest Ontario	North of Dryden				
		Greenstone-Marathon			In Progress	
Thunder Bay				In Progress		
West of Thunder Bay				In Progress		
Remote Communities				In Progress		
Windsor-Essex					In Progress	
2	East Lake Superior*		Status to be provided by the main transmitter			
	London Area	Greater London			In Progress	
		Alymer-Tillsonburg			Not Required	
		Strathroy			Not Required	
		Woodstock			Not Required	
		St. Thomas			Not Required	
	Peterborough to Kingston			Not Required		
South Georgian Bay/Muskoka	Barrie/Innisfil			In Progress		
	Parry Sound/Muskoka			In Progress		
Sudbury/Algoma			Not Required			
3	North of Moosonee*		Status to be provided by the main transmitter			
	Chatham/Lambton/Sarnia		Needs Assessment ("NA") to start in Q4 2015			
	Greater Bruce/Huron					
	Niagara					
	North/East of Sudbury					
	Renfrew					
	St. Lawrence					

* Hydro One is not the main transmitter in this region




	Completed (including Deemed Completed)
	Not Required
	In Progress

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1. INTRODUCTION

The process for electric power system planning in the province of Ontario underwent a significant procedural change in 2013. A new regional planning process, which enables transparent, coordinated and cost-effective planning of regional transmission and distribution systems, was mandated by the Ontario Energy Board (“OEB”) on August 26, 2013 through amendments to both the Transmission System Code^[1] (“TSC”) and the Distribution System Code^[3] (“DSC”). This process is outlined in the Planning Process Working Group (“PPWG”) Report to the Board, titled “The Process for Regional Infrastructure Planning in Ontario”^[4], revised May 17, 2013.

As part of the TSC amendments, a new provision was introduced in Section 3C.3.3 of the TSC requiring transmitters to submit an annual report to the Board on November 1st of each year, which identifies the status of the regional planning process and its products in their respective regions. This second Annual Status Report produced by Hydro One Networks Inc. (“Hydro One”) provides an update to the accomplishments and progress of the regional planning activities from November 2014 to October 2015. It also identifies the plans and projects already in execution to address some of the needs.

The balance of the Report is structured as follows:

- Section 2 provides an overview of the regional planning process and the grouping of the regions for study purposes.
- Sections 3, 4, and 5 discuss the various regional planning activities and plans or projects completed or being undertaken in each of the Group 1, 2, and 3 regions.
- Section 6 summarizes Hydro One’s observations on the regional planning process after its second year of implementation, and provides an outlook of activities that will take place over the next couple years.

2. REGIONAL PLANNING PROCESS OVERVIEW

Bulk system planning, regional planning, and distribution planning are the three levels of planning for the electricity system in Ontario. Bulk system planning typically looks at issues that impact the system on a provincial level, and require longer lead times and larger investments. Comparably, planning at the regional and distribution level looks at issues on a more regional or localized level. Typically, the regional planning horizon is in the near- to medium-term, and may not require the same magnitude of investments as bulk system planning.

The regional planning process begins with a Needs Assessment (“NA”) step of the process which is led by the transmitter to determine if there are regional needs that require coordinated regional planning activities and, if so, what is the general scope and which Local Distribution Companies (“LDC”) should be involved in the planning activities.

At the end of the NA, a decision is made as to whether further regional coordination is necessary to address some or all of the regional needs. If no further regional coordination is required, any necessary investments are planned directly by the LDCs (or customer) or in conjunction with the transmitter through a Local Plan (“LP”) phase that addresses near-term localized needs to be addressed by wires (transmission or distribution) solutions.

In situations where identified regional needs require coordination at the regional or sub-regional levels, the Independent Electricity System Operator (“IESO”) then initiates the Scoping Assessment (“SA”) phase. During this phase, the IESO, in collaboration with the transmitter and impacted LDCs, reviews the information collected as part of the NA phase, along with additional information on potential non-wires or resource (e.g., Conservation and Demand Management, distributed generation, etc.) alternatives and makes a decision on the most appropriate regional planning approach. The approach is either to develop a Regional Infrastructure Plan (“RIP”), which is led by the transmitter, or an Integrated Regional Resource Plan (“IRRP”), which is led by the IESO.

The IRRP phase assesses alternatives to wires options at a higher or more macro level, but sufficient to permit a comparison with resource options to address the needs. The LDCs’ Conservation and Demand Management (“CDM”) targets as well as contracted Distributed Generation (“DG”) plans are provided by IESO and considered as part of each step in the regional planning process.

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

As a final step of the regional planning process, Hydro One as a lead transmitter always develops and publishes a RIP report for the region. This may be referenced as supporting evidence in a rate or Leave-to-Construct approval application.

Figure 1 illustrates the various steps of the regional planning process that include NA (also referred to as Needs Screening), SA (also called Scoping Process), LP, IRRP, and RIP. The methodologies used in the NA and RIP step are described further in Appendix A and B, respectively.

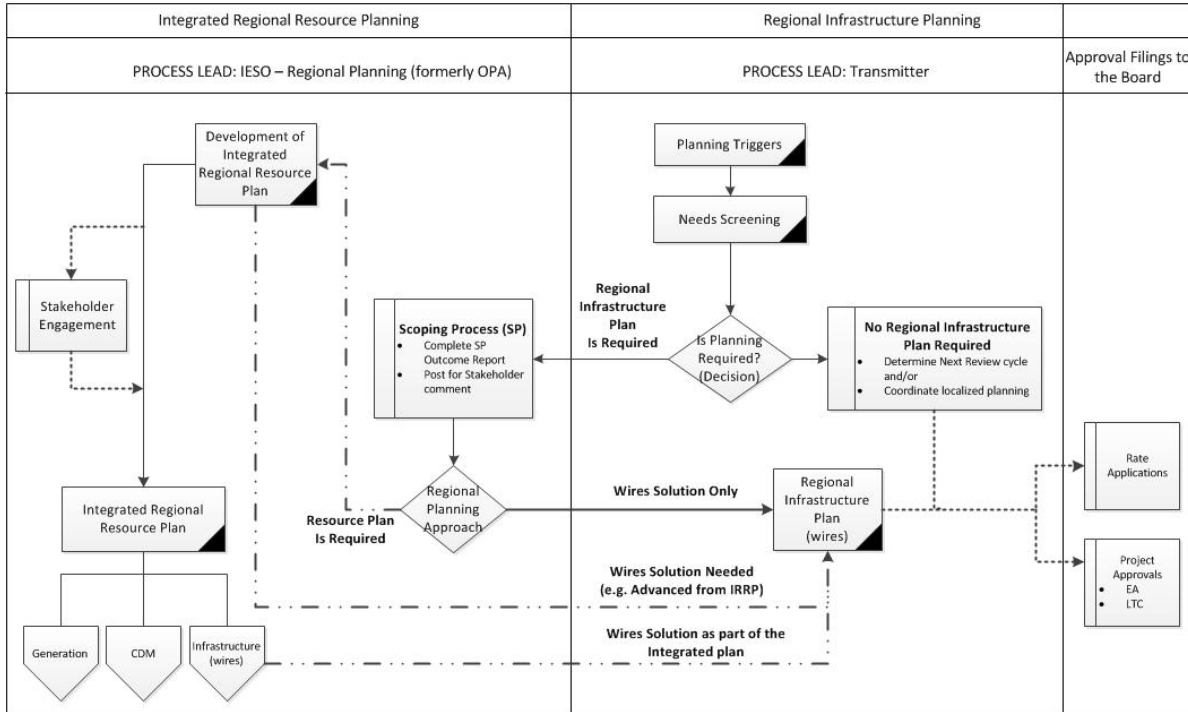


Figure 1. Regional Planning Process Flowchart

2.1 REGIONAL GROUPING

To manage and prioritize regional planning activities, the province was divided into 21 regions and assigned to 3 groups. Hydro One is the main transmitter in all regions, except the East Lake Superior and North of Moosonee Regions. For each regional planning activity at the regional or sub-regional level, a study team is established with representatives from the IESO, Hydro One, and LDCs. During the regional planning process, study team may subdivide a region into one or more sub-regions based on electrical characteristics, contiguity and needs for efficient and affective assessment. In some cases, no further regional coordination may be required for a sub-region. The planning regions are listed in Table 2 and shown geographically in Figure 2.

Table 2. Regional Grouping

Group 1
Burlington to Nanticoke
Greater Ottawa
GTA East
GTA North
GTA West
KWCG
Metro Toronto
Northwest Ontario
Windsor-Essex

Group 2
East Lake Superior
London Area
Peterborough to Kingston
South Georgian Bay/Muskoka
Sudbury/Algoma

Group 3
Chatham/Lambton/Sarnia
Greater Bruce/Huron
Niagara
North of Moosonee
North/East of Sudbury
Renfrew
St. Lawrence

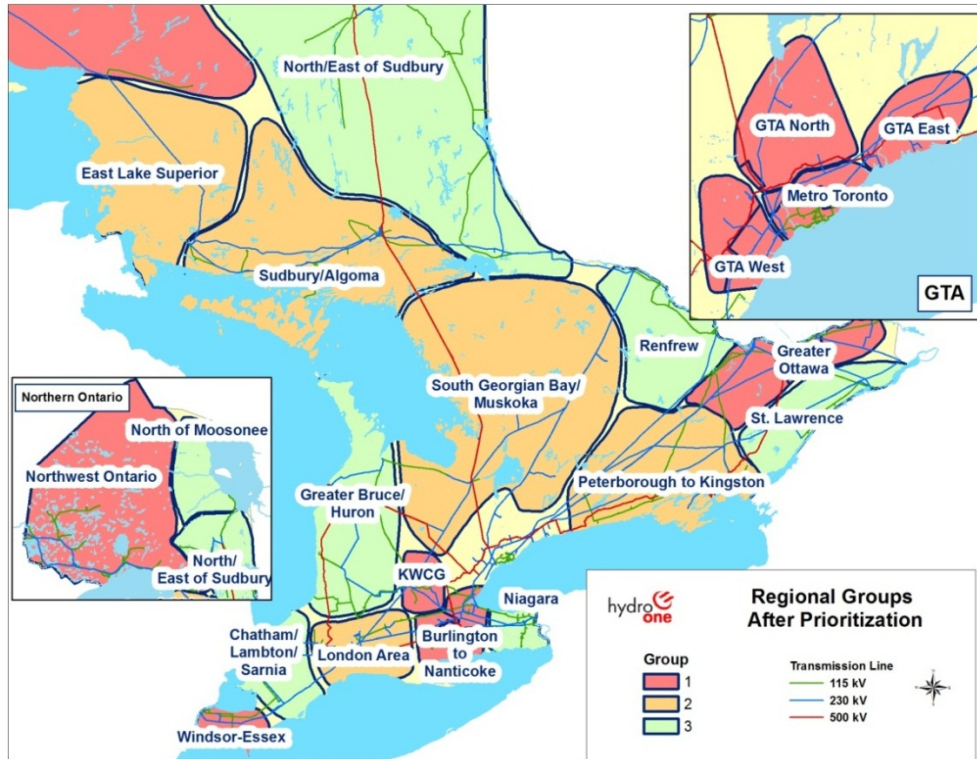


Figure 2. Regional Planning Regions

2.2 CONSERVATION & DEMAND MANAGEMENT, AND DG

CDM is taken into account in the planning assessments at each step of the regional planning process. It is based on requirements of individual LDCs to comply with conservation targets that are to be achieved through the provision of CDM programs to each customer segment in their service area^[5]. The CDM information was provided by the IESO and prepared jointly by the LDC and the IESO for regional planning assessments.

Consistent with Section 21.2.2 (g) of the IESO License and Section 3C.3 of the TSC, the IESO has provided peak demand offsets resulting from LDC CDM programs and total installed and effective capacity of IESO contracted DG projects which have come into service or are under development for regions or sub-regions in which an IRRP has been completed. The CDM and DG summary provided by the IESO is attached in Appendix C.

It is worth noting that peak demand offsets resulting from LDC CDM programs provided by the IESO are total offsets to be achieved by the LDC within its service territory and hence may not be limited to the specific IRRP region. In addition, contracted DG plans have also been taken into account during planning assessment. Both, CDM and DG information was used to develop a net forecast from the gross load forecast provided by the LDCs.

3. STATUS OF GROUP 1 REGIONS

Groups of regions were prioritized based on the urgency and anticipated near-term and mid-term needs in the region or where regional planning activities were already underway prior to the TSC and DSC amendments were placed in Group 1. For regions where regional planning activity was already underway, Needs Assessment and/or Scoping Assessment phase were deemed to be complete and no reports were developed. The Study Team determined that these regions were already in the SA or IRRP phase of the process.

Group 1 regions primarily encompass areas where regional planning activities were already underway prior to the TSC and DSC amendments for the regional planning process in August, 2013. Studies for these areas were transitioned to the appropriate step of the new process, and additional sub-regions were identified for areas either not covered previously or to appropriately subdivide a new region being assessed. These regions and/or sub-regions include:

- Central Toronto area (part of Metro Toronto Region)
- York area (part of GTA North Region)
- Northwest GTA area (part of GTA West Region)
- Ottawa area (part of Greater Ottawa Region)
- Brant area (part of Burlington to Nanticoke Region)
- KWCG Region
- Windsor-Essex Region
- North of Dryden (part of Northwest Ontario Region)
- GTA East Region was expedited at the request of the LDCs in the region and reprioritized from Group 2 to Group 1.

The development of RIP is currently underway in six out of the nine Group 1 regions, and is expected to be completed by Q1 2016. The scope of the RIP includes: confirmation of needs and identification of any new needs that may have emerged since the beginning of the regional planning process for that region, and development of a consolidated wires plan to address needs where wires solution is determined as the most appropriate approach. The six regions that are in the RIP phase are: Greater Ottawa, GTA North, GTA West, KWCG, Metro Toronto, and Windsor-Essex. In parallel, planning and development work for transmission or distribution projects that are required to address urgent or near-term needs are also being carried out by Hydro One and/or the affected LDCs.

For the remaining three Group 1 regions, namely Burlington to Nanticoke, GTA East, and Northwest Ontario, IRRPs are currently being developed, and are expected to be completed by Q3 2016. RIP reports are expected to be completed by Q2 2017.

3.1 BURLINGTON TO NANTICOKE

The Burlington to Nanticoke Region comprises the municipalities of Burlington, Hamilton, Oakville, Brantford, Brant County, Haldimand County, and Norfolk. For regional planning purposes, the region is divided into 4 sub-regions:

- **Brant** Sub-Region: This sub-region encompasses the County of Brant, City of Brantford and surrounding areas. The electricity supply to this area is provided by three step-down stations, namely Brant TS, Powerline MTS and Brantford TS.
- **Bronte** Sub-Region (also referred to as the Burlington and Oakville Sub-Region): This sub-region encompasses Burlington Hydro and Oakville Hydro service territory.
- **Greater Hamilton** Sub-Region: This sub-region encompasses City of Hamilton and surrounding areas, supplied by Horizon Utilities Inc. and Hydro One Distribution.
- **Caledonia-Norfolk** Sub-Region: This sub-region covers the southern part of the Burlington to Nanticoke Region, and includes the Haldimand and Norfolk County.

Planning for the Brant Sub-Region was already underway prior to new regional planning process and was deemed to be in the IRRP phase. The IRRP for the Brant Sub-Region was completed in April, 2015.

An NA was carried out for the remaining sub-regions and it was determined that the needs identified in the Caledonia-Norfolk Sub-Region do not require further regional coordination. The Bronte and Greater Hamilton Sub-Regions were recommended to be further assessed in SA. The SA determined that an IRRP should be undertaken to further assess the needs in the Bronte Sub-Region; however, the needs in the Greater Hamilton Sub-Region can be addressed directly by the transmitter and the LDCs through LP.

3.1.1 Brant Sub-Region

The Brant IRRP identified that there is an immediate need for additional transmission supply capacity in the **Brant-Powerline 115kV subsystem**. In 2014, a wires plan was developed to install capacitor banks at Powerline MTS to provide some capacity relief and they were placed in-service in August, 2015. Additionally, based on the LDCs load forecast, an immediate need was identified to provide additional 115kV line capacity in the sub-region. Options and a resulting wires plan were developed by Hydro One as part of the Brant IRRP Working Group. The preferred option requires the installation of three 115kV in-line breakers to connect existing circuits B12/B13 from Burlington to B8W from Woodstock. Hydro One is awaiting a decision from LDCs to proceed with this project.

3.1.2 Bronte Sub-Region

The Bronte Sub-Region includes the area served by Bronte TS, supplied by 115kV circuits B7/B8 from Burlington TS and Cumberland TS. The study area also extends to include the adjacent transformer stations, namely Palermo TS, Tremaine TS, Glenorchy MTS, and Oakville TS #2.

Capacity needs were identified at **Bronte TS** and they are being further assessed as part of the IRRP, expected to be completed in Q2 2016. The system restoration issue at Burlington TS for the loss of two

autotransformers is being assessed as part of the bulk system planning study led by the IESO which is outside the scope of regional planning. However, the study team will be provided updates on the outcomes to ensure coordination.

3.1.3 Greater Hamilton Sub-Region

Several local needs that were identified in this sub-region, as described below, were assessed and addressed through LP by Hydro One and the affected LDCs. The final consolidated LP report was approved by LDCs and published in October 2015.

- **Dundas TS T3/T4 and T5/T6 Station Capacity:** There are two 115/27.6kV step-down transformer pairs at Dundas TS (T3/T4 and T5/T6). The load at the T3/T4 pair has exceeded the normal supply capacity, but the combined capacity of both pairs is sufficient over the study period. As a result, the study team recommended that the LDCs (Hydro One Distribution and Horizon Utilities) plan and undertake distribution load transfers from the T3/T4 pair to T5/T6 pair to mitigate capacity issues.
- **Mohawk TS Station Capacity:** The load at Mohawk TS marginally exceeds normal supply capacity. The Mohawk TS T1/T2 transformers are approaching end of life and are already scheduled for replacement in 2018 with larger capacity transformers, which will address this issue.
- **Nebo TS T3/T4 Station Capacity:** The load at Nebo TS T3/T4 DESN marginally exceeds normal supply capacity. The Nebo TS T3/T4 transformers are approaching end of life and are already scheduled for replacement with larger capacity transformers in 2022. The capacity of the new replacement transformers will be sufficient over the study period. In the interim, the study team recommended that Horizon Utilities manage the overload (under contingency) by distribution load transfers to other stations in the area.
- **Power Factor at Cumberland TS:** The power factor at Cumberland TS under peak load conditions is lagging slightly below the requirement of 0.9. The study team recommended that Burlington Hydro install capacitor banks on distribution system and/or work with their load customers supplied by Cumberland TS to meet the power factor requirement of 0.9.
- **Power Factor at Kenilworth TS:** The power factor at Kenilworth TS is lagging below the requirement of 0.9. The study team recommended that Horizon Utilities install capacitor bank on distribution system and/or work with load customers supplied by Kenilworth TS to meet the power factor requirement of 0.9.
- **Power Factor at Beach TS (115 kV T3/T4 DESN):** The power factor at Beach TS is leading beyond the requirement of 0.9. The study team reviewed this requirement and recommended that this can be managed by operational measures and no further action is required at this time.
- **System Reliability, Operation and Load Restoration:** In some cases, double circuit lines in the region carry loads in excess of the 150 MW and 250 MW restoration thresholds. Provincial reliability requirements for load curtailment at these threshold levels are subject to shorter restoration times than

the standard eight hours for smaller loads. The study team recommended that no action is required at this time based on the historical reliability data for the circuits in the region.

3.1.4 Caledonia-Norfolk Sub-Region

Needs in this sub-region are being addressed directly by the LDC, namely Hydro One Distribution. Under peak load conditions and single contingency, there may be low voltage issues at **Norfolk TS** and **Bloomsburg MTS**. The coincident load at Norfolk TS and Bloomsburg TS can be managed by load transfers and kept below the area supply limit of 87MW. The study team recommended that Hydro One Distribution manage the low voltage issues in the Norfolk area by distribution loads transfers to neighboring stations.

3.2 GREATER OTTAWA

The Greater Ottawa Region covers the municipalities bordering the Ottawa River from Stewartville in the West to Hawkesbury in the East and North of Highway 43. The Greater Ottawa Region has been divided into two sub-regions for the purpose of regional planning.

- **Ottawa Area** Sub-Region: This sub-region covers the central part of the Greater Ottawa Region and includes the City of Ottawa and the surrounding municipalities. The national capital sub-region is a large, diverse area with a mix of electricity customers including government and commercial facilities, light industry, and residential consumers. It is the second largest urban centre in Ontario with a population over 1.1 million.
- **Outer Ottawa** Sub-Region: Includes the eastern and western portion of the sub-region. The eastern portion extends from the city of Clarence-Rockland, municipality of Casselman and eastward to Champlain Township. Along the Ottawa River there are several LDC owned distribution stations supplied by the 115kV circuit 79M1. The western portion of the sub-region is located to the West of Kanata.

Planning for the Ottawa Area Sub-Region was already underway prior to the new regional planning process and was deemed to be in the IRRP phase. The IRRP for the Ottawa Area Sub-Region was completed in April, 2015.

An NA was conducted for the Outer Ottawa Sub-Region. The NA determined that further regional coordination is not required and the needs in this sub-region can be addressed most effectively by wires solutions through LP.

The NA, SA, IRRP is complete for the Region and the development of RIP is currently in progress for the Greater Ottawa Region, and is expected to be completed by the end of 2015.

3.2.1 Ottawa Area Sub-Region

The following needs identified in the IRRP for this sub-region were recommended to be addressed by wires solutions. Hydro One has initiated the RIP for this region to further assess and develop plans for these needs.

- Additional capacity needs have been identified in the **Downtown Ottawa** area. The study is considering the upgrade of transformation capacity at several of the existing transformer stations and reconfiguration of the distribution network to accommodate load growth.
- Additional capacity needs have been identified in the **South Nepean** area. The options may include upgrade of circuits **S7M** or **L2M** from 115kV to 230kV and the construction of a new station in the area.
- **Bilberry Creek TS** equipment is approaching end-of-life. There is opportunity to assess both retire and/or refurbish this station. The medium term nature of this need allowed for further planning and assessment of alternatives. Accordingly, investment decisions have been deferred to the next regional planning cycle.
- **The Merivale TS 230/115kV autotransformers** may reach their capacity in the near and mid-term based on the current load forecast. It is proposed to add additional transformation capacity at the station. The need date is being reviewed and will depend on the growth and development in the area.

Several **Greater Ottawa** regional needs have already moved from the planning to execution phase. They are described below with the expected in-service date provided in brackets.

- **Hawthorne TS Capacity** – Addressed by replacing two of the older autotransformers with larger capacity units (Q2 2018).
- **A4K Capacity** – Relieve the loading of circuit A4K by providing an additional supply to Overbrook TS from a tap to circuit A6R (Q2 2019).
- **S7M Capacity** – Mitigated by addressing localized line to ground clearances issues thus increasing the circuit capacity (Q2 2015 – complete).
- **Supply reliability of the Almonte TS and Terry Fox TS** – Reliability will be improved with the installation of an in-line breaker on circuit M29C thus reducing exposure to faults on this circuit which supplies both stations (Q4 2015).

3.2.2 Outer Ottawa Sub-Region

The NA phase of the regional planning process determined that further regional coordination is not required in this sub-region. Based on the load forecast provided by the Hawkesbury Hydro and Hydro One Distribution over the near and medium-term there were no capacity issues.

The other need was to assess potential load restoration issues for the loss of circuits B5D/D5A. Hydro One and Hawkesbury Hydro undertook a local planning assessment. It was determined that the risk was small and acceptable based on a review of historical reliability performance over the past ten years. No further action is required at this time.

3.3 GTA EAST

The GTA East Region comprises the municipalities of Pickering, Ajax, Whitby, Oshawa and parts of Clarington and other parts of Durham Region.

The GTA East SA Report, completed in September, 2014, divided the region into two sub-regions for the purpose of regional planning.

- **Pickering-Ajax-Whitby** Sub-Region: This sub-region includes the area served by Cherrywood TS, Whitby TS, and the 230kV transmission system covering most of the City of Pickering, Town of Ajax, part of the Town of Whitby, and part of the Townships of Uxbridge and Scugog.
- **Oshawa-Clarington** Sub-Region: This sub-region includes the area served by Thornton TS, Wilson TS, and the 230kV transmission system encompassing the City of Oshawa, part of the Municipality of Clarington and part of the Township of Scugog.

3.3.1 Pickering-Ajax-Whitby Sub-Region

The SA recommended that the needs in this sub-region be addressed through an IRRP, which is currently in progress and expected to be completed in Q3 2016. Potential load restoration issues, station capacity needs at Whitby TS T1/T2, and potential resource options (e.g., CDM, DG) are being assessed as part of the IRRP to recommend an integrated approach or to proceed with a wires plan to address the needs.

3.3.2 Oshawa-Clarington Sub-Region

The SA recommended that the needs in this sub-region are local in nature and they can be effectively addressed by a wires only solution. An LP study team consisting of Hydro One and LDCs (i.e., Oshawa PUC Networks, Veridian Connections, Whitby Hydro Electric, and Hydro One Distribution) completed a LP Report for this sub-region in May, 2015. To address the station capacity need at Wilson TS and Thornton TS, the study team recommended building a new transformer station at the Clarington TS site. The LDCs will look to initiate the connection process for the new station.

In addition, to address the issue of feeder capability utilization at Thornton TS, the study team recommended that the LDCs (i.e., Oshawa PUC Networks and Whitby Hydro Electric) carry out a distribution planning assessment and develop an implementation plan to manage and optimize utilization of feeder capability at Thornton TS.

3.4 GTA NORTH

The GTA North Region is approximately bounded by the Regional Municipality of York, and also includes parts of the City of Toronto, Brampton, and Mississauga. For the purpose of regional planning, the region was divided into two sub-regions.

- **York Sub-Region:** This sub-region is further classified into Southern York and Northern York areas to reflect the layout of the electricity infrastructure. Southern York area includes the municipalities of Vaughan, Markham, and Richmond Hill; while the Northern York area encompasses the municipalities of Aurora, Newmarket, King, East Gwillimbury, Whitchurch-Stouffville and Georgina, as well as some load in Simcoe County that is supplied from the same electricity infrastructure.
- **Western Sub-Region:** This sub-region comprises the Western portion of the City of Vaughan, roughly bordered geographically by Highway 407 on the south, King-Vaughan Road on the north, Highway 50 on the west, and Islington Avenue on the east.

Planning for the York Sub-Region was already underway prior to the new regional planning process and was deemed to be in the IRRP phase. An IRRP for the York Sub-Region was completed in April, 2015. The NA for the GTA North Western Sub-Region determined that further coordination regional planning is required and restoration needs will be further assessed as part of the NW GTA IRRP. NA, SA, IRRP are now complete and the development of RIP is currently in progress for the GTA North Region, and is expected to be completed in Q1 2016.

3.4.1 York Sub-Region

Several near term needs and the preferred wires approach to meet those needs were identified in the York IRRP.

- To provide additional transformation supply capability and meet near-term demand growth in Vaughan, a new transformer station, **Vaughan MTS #4**, is under development by PowerStream. The station will connect to the 230kV transmission lines **B82V/B83V**. The project is expected to be completed in spring 2017.
- Hydro One is developing a plan for switching facilities at **Holland TS** to meet load security and restoration needs in the Northern York area, specifically in the areas supplied by 230kV transmission circuits **B82V/B83V**. This project is expected to be completed in 2017.
- Load security and restoration needs were identified in the Southern York area for the loss of double 230kV transmission circuits **V71P/V75P** which supply loads in Vaughan and Richmond Hill. Sectionalizing the double-circuit lines by installing new switching facilities was recommended as the preferred alternative to address the restoration needs. This project is expected to be completed in 2018.

Additional transmission capacity may be needed in the medium- and long-term in Markham, Vaughan, and Northern York areas. Due to the medium and long-term nature of these needs, further planning studies will be undertaken in the next regional planning cycle.

3.4.2 Western Sub-Region

The NA for the Western Sub-Region identified a potential load restoration issue for the loss of 230kV circuits V43 and V44. No capacity needs were identified based on the LDC load forecast over the near and medium-term.

The study team recommended that the potential load restoration issue be assessed as part of the IESO led bulk system planning study. IESO is assessing this in conjunction with the restoration needs stemming from GTA West Northwestern Sub-Region IRRP. The bulk system planning is outside the scope of regional planning, however the study team will be provided an update on the outcomes to ensure coordination.

3.5 GTA WEST

The GTA West Region covers the Regional Municipalities of Halton and Peel, and comprises of the municipalities of Brampton, South Caledon, Halton Hills, Mississauga, Milton, and Oakville. For the purpose of regional planning, the region was divided into two sub-regions.

- **Northwestern** Sub-Region: This sub-region includes the municipalities of Brampton, Milton, Halton Hills, and southern Caledon.
- **Southern** Sub-Region: This sub-region comprises the municipalities of Mississauga and Oakville.

Planning for Northwestern Sub-Region was already underway prior to new regional planning process and was deemed to be in the IRRP phase. An IRRP for the Northwestern Sub-Region was completed in April, 2015. The NA and SA for the Southern Sub-Region determined that the needs identified in this sub-region can be addressed by either LP or a bulk system planning study. Further regional coordination is not required.

The NA, SA, IRRP are now complete and the development of RIP is currently in progress for the GTA West Region, and is expected to be completed in Q1 2016.

3.5.1 Northwestern Sub-Region

There is a near-term need for additional station capacity at Halton TS which supplies Halton Hills Hydro and Milton Hydro. The recommendations from the regional planning process is to build two new step-down stations: one to provide supply for Halton Hills Hydro loads (**Halton Hills Hydro MTS**), expected to be required in 2018 at the earliest; and second to supply Milton Hydro load (**Milton TS #2**), expected

to be required in 2020. Further planning is being undertaken as part of the GTA West RIP phase of the regional planning process which is currently in progress.

A medium-term need for additional supply capacity to Pleasant TS was also identified. There are 3 DESNs at Pleasant TS supplied by 230kV circuits **H29/H30** circuits. Due to load growth forecasted at Pleasant TS, these circuits are expected to reach their thermal capacity by 2023 at the earliest. Hydro One will reassess this need during the next regional planning cycle.

The NWGTA IRRP also identified that the thermal capacity of **T38B/T39B** may be exceeded with a single-circuit contingency and Halton Hills GS out of service in the medium-term. This is being further assessed as part of the IESO led bulk system planning study along with some restoration issues in the sub-region. Bulk system planning is outside the scope of regional planning, however, the study team will be provided an update on the outcomes to ensure coordination.

3.5.2 Southern Sub-Region

The peak load at **Erindale TS T1/T2** (230/27.6kV) currently exceeds the normal supply capacity of the station. The LP report recommended that Enersource Hydro Mississauga Inc. build a new 44/27.6kV distribution station to utilize extra capacity on the 44kV system.

Identified transmission capacity need of 230kV circuits R14T, R17T, R19TH, and R21TH is being addressed by IESO as part of a bulk system planning study, in conjunction with other load restoration needs in the sub-region (i.e., Cooksville TS to Oakville TS #2 and Richview to Trafalgar circuits (R14T, R17T, R19TH, and R21TH)). The study team will be provided an update on the outcomes to ensure coordination.

3.6 KITCHENER-WATERLOO-CAMBRIDGE-GUELPH (KWCG)

The KWCG Region includes the municipalities of Kitchener, Waterloo, Cambridge and Guelph, as well as portions of Perth and Wellington counties and the townships of Wellesley, Woolwich, Wilmot and North Dumfries.

Planning for the KWCG Region was already underway prior to the new regional planning process and was deemed to be in the IRRP phase. The IRRP for the region was completed in April, 2015. The development of RIP for the region is now currently underway, and is expected to be completed by the end of 2015.

In parallel, two transmission projects are being developed by Hydro One to address near-term supply and load restoration needs in the area. The Guelph Area Transmission Refurbishment Project (GATR) has been approved by the OEB and is expected to be in-service in 2016. The development work for the switching facilities at **Galt Junction** to improve reliability in the Cambridge and Kitchener areas is also underway. These near-term actions will address electricity needs in the area over the next 20 years.

3.7 METRO TORONTO

The Metro Toronto Region comprises the municipality of Toronto. It includes the area roughly bordered geographically by Lake Ontario to the south, Steeles Avenue to the north, Highway 427 to the west and Regional Road 30 to the east. For the purpose of regional planning, the region was divided into two sub-regions.

- **Central Downtown Sub-Region:** The Central Downtown Sub-Region includes the core of the city, and is made up mainly of commercial towers, multi-unit residential and condominium towers, and mixed residential and commercial land uses. The downtown area has been identified in the City of Toronto Official Plan as an important area for future growth, and the current pace of building development indicates that growth is well underway. Electricity to this area is mainly supplied by the 115kV Hydro One transmission system. It includes the area extending northward from Lake Ontario to within 0.5 km of Highway 401, westward to the Humber River, and eastward to Victoria Park Avenue.
- **Northern Sub-Region:** The Metro Toronto Northern Sub-Region includes the area roughly bordered geographically by Highway 401 on the south, Steeles Avenue on the north, Highway 427 on the west and Regional Road 30 on the east in addition to the area east of the Don Valley Parkway and north of O'Connor Dr. This Sub-Region comprises the northern portion of the municipality of Toronto.

Planning for the Central Downtown Sub-Region was already underway prior to the new regional planning process and was deemed to be in the IRRP phase. An IRRP for the Central Downtown Sub-Region was completed in April, 2015. The NA for the Northern Sub-Region, completed in June, 2014, determined that the needs identified in this sub-region can be addressed by LP and further regional coordination is not required.

With the completion of NA and IRRP, the development of RIP is currently in progress for the Metro Toronto Region, and is expected to be completed in Q1 2016.

3.7.1 Central Downtown Sub-Region

Over the last decade, a number of transmission/distribution projects have been underway or completed to address supply capability, reliability, and equipment end-of-life issues in the Central Downtown Sub-Region, such as: the new underground cables connecting **John TS to Esplanade TS**; **Midtown 115kV** transmission reinforcement between Leaside and Bridgman TS; rebuilding **Hearn SS** for the incorporation of 550MW Portlands Energy Centre; 115kV breaker upgrades at **Leaside TS** and **Manby TS**; underground cable refurbishment between **Riverside Junction** and **Strachan TS**; and a new 115kV switching station to connect the new customer transformer station (**Clare R. Copeland MTS**) in downtown Toronto expected to be in-service in 2016.

Currently, a wires only approach has been identified in the sub-region to be a preferred solution to address near- and medium- term needs after taking into account the CDM and DG considerations.

- To mitigate the identified needs, station and distribution feeder expansion/load transfer at **Runnymede TS** and **Horner TS** are recommended to provide capacity relief at Runnymede TS and Fairbank TS, as well as to Manby TS and Horner TS.
- **Richview to Manby Transmission Reinforcement** will be required around 2020. Options are being investigated for upgrading the existing lines or building new circuits.
- A potential need for capacity relief to Esplanade TS and Copeland MTS in the downtown core area is anticipated as early as 2021. A plan for **Copeland MTS phase 2**, which involves the installation of additional transformers at the existing Copeland MTS site, is being further assessed by Toronto Hydro. Findings of this study will be an input in the next planning cycle.
- A potential supply security risk at Manby TS is being addressed by Hydro One by installing a special protection scheme (“SPS”) to protect equipment overloading. It is expected to be in service by 2017.

3.7.2 Northern Sub-Region

A need for capacity increase was identified for the 230kV transmission circuit **C10A**, as the flow on the circuit may exceed its limited-time emergency rating following certain contingencies during peak load conditions. A local wires plan was developed by Hydro One and Toronto Hydro to uprate the circuit which is anticipated to be complete in 2016.

3.8 NORTHWEST ONTARIO

The Northwest Region is a large geographic area, stretching from the town of Marathon to the western and northern borders of the province, with diverse characteristics. Therefore this region has been divided into five sub-regions for the purpose of regional planning.

- **North of Dryden** Sub-Region: Includes the portion of the Northwest Region north of the cities of Dryden and Kenora that includes Ear Falls, Red Lake and Pickle Lake. The sub-region has residential, commercial and mining load, as well as hydroelectric generation. This sub-region will supply the Remote Communities sub-region and has the potential for supplying the future Ring of Fire mining load.
- **Greenstone-Marathon** Sub-Region: This sub-region covers the southeastern portion of the Northwest Region. The sub-region has distribution load and light industry, with proposal for a new mine, future potential mines and potential connection of pumping stations for a pipeline.

- **Thunder Bay Sub-Region:** Includes the city of Thunder Bay and its vicinity. The sub-region has residential, commercial and industrial load, as well as dispatchable and embedded generation, supplied by the distribution and transmission facilities.
- **West of Thunder Bay Sub-Region:** Includes the portion of the Northwest Region from of the western boundary of Thunder Bay sub-region up to and including the cities of Dryden and Kenora in the north. The sub-region has residential, commercial and mining load, as well as biomass and hydroelectric generation. It supplies the North of Dryden sub-region and, in the future, the Remote Communities, when the generation in that sub-region is insufficient to meet the demand. Several LDCs serve the customers in this sub-region.
- **Remote Communities Sub-Region:** Includes the northern portion of the Northwest Region that is currently not connected to the grid. The remote communities in this sub-region are served by diesel generation. The Ring of Fire and other parts of this sub-region have potential for future mining developments.

3.8.1 North of Dryden Sub-Region

Planning for North of Dryden Sub-Region started prior to the new regional planning process. The IESO has issued the IRRP report, dated January 27, 2015, which has identified the need for increased capacity to meet the anticipated increased demand from the mining sector, including the potential for supply to the Ring of Fire, and connection of the Remote Communities. Currently, there are two transmission infrastructure investments that are being further planned and developed to meet the near-term electricity needs north of Dryden:

- building a new 230 kV transmission line from the Dryden/Ignace area to Pickle Lake
- need for additional capacity to be addressed by upgrade the existing transmission lines from Dryden to Ear Falls and from Ear Falls to Red Lake (115 kV line - E4D)

Two proponents have expressed interest in developing and constructing the proposed transmission line from Dryden/Ignace area to Pickle Lake. Hydro One's role in this initiative is that of the Connecting Transmitter and will follow the connection requirements as per the TSC and Transmission Connection Process.

For the second need, customers seeking additional transmission capacity have requested estimates to upgrade the 115kV line. Hydro One is planning and undertaken engineering design to upgrade transmission line E4D and install capacitor banks at Red Lake and develop an estimate for the customers.

3.8.2 Greenstone-Marathon Sub-Region

For the Greenstone-Marathon sub-region, the IRRP phase is currently underway. The Working Group has published an interim report, dated June 22, 2015, for this sub-region. This report has assessed the need for increased capacity for Hydro One Distribution load, as well as potential new mining load and proposed pumping stations of a pipeline in this sub-region.

There are several staged options to meet the above needs, such as +40 MVar of reactive compensation, a new 230kV single-circuit line from the East-West Tie near Nipigon or Marathon to Longlac, new 230/115 kV auto-transformer and related switching and voltage control facilities at Longlac TS along with a new 115kV single-circuit line from Longlac TS to Manitouwadge TS and related switching and voltage control facilities.

However, to meet the forecast demand only from LDCs, no new system enhancements are required. Accordingly, these new industrial and/or mining loads will be monitored and investments will be initiated once the formal connection request is made by the customer(s).

Following the completion of IRRP for the region in Q2 2016, Hydro One will initiate the RIP. In the short-term, the course of action will depend on the plans and decisions of the mine and pipeline proponents.

3.8.3 Thunder Bay and West of Thunder Bay Sub-Region

For the Thunder Bay Sub-region and the West of Thunder Bay Sub-region the IRRP is underway. The IRRP is expected to be completed in Q1 2016.

3.8.4 Remote Communities Sub-Region

A draft Connection Plan has been issued for the Remote Communities sub-region by the IESO (second draft posted August 2014). A reference plan is expected to be complete by the end of 2015.

3.9 WINDSOR-ESSEX

The Windsor-Essex Region is the most southerly portion of Ontario, extending from Chatham southwest to Windsor. It consists of the City of Windsor, the Municipality of Leamington, the Town of Amherstberg, the Town of Essex, the Town of Kingsville, the Town of Lakeshore, the Town of LaSalle, the Town of Tecumseh, and the Township of Pelee, as well as the western portion of the Municipality of Chatham-Kent.

Planning for Windsor-Essex Region was already underway prior to new regional planning process and was deemed to be in the IRRP phase. The IRRP for the region was completed in April, 2015. The development of RIP for the region is now currently underway, and is expected to be completed by the end of 2015.

The regional planning findings have indicated that part of this region's needs will be addressed by the new Supply to Essex County Transmission Reinforcement (SECTR) project, plus planned sustainment work in the area. The SECTR project consists of:

- Installation of a new 230 kV-supplied transformer station near Leamington.

- Construction of a 13 km double-circuit 230 kV to connect the existing C21J/C22J circuits to the new transformer station.

Together these facilities will meet the supply capacity needs of the Kingsville-Leamington area over the forecast period and address the restoration need in the Windsor-Essex region.

Hydro One received a “Leave to Construct” approval for the SECTR project from the OEB on July 16, 2015. The project is planned to be in service in March 2018.

4. STATUS OF GROUP 2 REGIONS

Regions were prioritized into three groups based on their anticipated near-term and mid-term needs and the urgency to address them. Group 2 regions were expected to have fewer and less urgent needs than the Group 1 regions. This expectation was supported by the Group 2 NAs. Group 2 consists of the following regions:

- East Lake Superior (Led by Great Lakes Power)
- London Area
- Peterborough to Kingston
- South Georgian Bay/Muskoka
- Sudbury/Algoma

The NA for all Group 2 Regions is now complete. The SA for London Area and South Georgian Bay/Muskoka Regions is also complete and the IRRP phase is currently underway for both of these regions. These IRRPs are expected to be completed by the end of 2016.

Several LP activities are also underway or completed in London Area, Peterborough to Kingston, and Sudbury/Algoma Regions to address local needs that have been identified.

IRRP for the region is expected to be complete by the end of 2016 and RIPs expected to be completed by Q2 2017.

4.1 EAST LAKE SUPERIOR

This region is supplied by Great Lakes Power (GLP) Transmission and is wholly owned by Brookfield Infrastructure Partners. The region supplies two distribution companies namely Sault Ste. Marie PUC and Algoma Power Inc. The regional transmission system connects with provincial grid at Wawa TS and Mississagi TS, north of Thessalon. The GLP Transmission Company owns 560 kilometers of 230 kV, 115 kV and 44 kV transmission lines.

The NA for the region concluded that no further regional coordination is required. The Annual Status Report for this region falls within the accountability of Great Lakes Power which is the lead transmitter for this region.

4.2 LONDON AREA

The London Area includes the municipalities of Oxford County, City of Woodstock, Middlesex County, City of London, Elgin County, and City of St. Thomas.

The NA and SA for the London Area Region were completed in April, 2015, and August, 2015, respectively. Based on the SA results, the London Area Region was divided into five sub-regions based on electrical supply boundaries for further regional planning purposes:

- **Greater London** Sub-Region: Includes customers of London Hydro and Hydro One Distribution, supplied by Buchanan DESN TS, Clarke TS, Highbury TS, Nelson TS, Talbot TS, and Wonderland TS.
- **Aylmer-Tillsonburg** Sub-Region: Includes customers of Erie Thames Powerlines, Tillsonburg Hydro, and Hydro One Distribution, supplied by Aylmer TS and Tillsonburg TS.
- **Strathroy** Sub-Region: Includes customers of Entegrus and Hydro One Distribution, supplied by Strathroy TS.
- **Woodstock** Sub-Region: Includes customers of Woodstock Hydro and Hydro One Distribution, supplied by Ingersoll TS, Woodstock TS, Commerce Way TS, and Karn TS.
- **St. Thomas** Sub-Region: Includes customers of St. Thomas Energy Inc., London Hydro, and Hydro One Distribution, supplied by Edgeware TS and St. Thomas TS.

Capacity and load restoration needs were identified in the Greater London Sub-Region and an IRRP is being developed to address them. This IRRP is expected to be completed in Q4 2016. Supply capability limitations were identified in Aylmer-Tillsonburg Sub-Region. Hydro One is initiating a wires planning study while the IRRP is still underway. Recommendations from this study will ultimately become part of the regional RIP report. Local planning with affected LDCs and Hydro One will address needs in the Strathroy Sub-Region and Woodstock Sub-Region. The St. Thomas Sub-Region requires no further planning at this time.

4.3 PETERBOROUGH TO KINGSTON

The Peterborough to Kingston Region includes the area roughly bordered geographically by the municipality of Clarington on the West, North Frontenac County on the North, Frontenac County on the East and Lake Ontario on the South.

The needs identified in the NA for the region, completed in February, 2015, determined no further coordinated regional planning is required. The needs identified will be addressed as follows:

- Hydro One will lead the LP assessment with Hydro One Distribution and Kingston Hydro and develop a plan to balance load within **Gardiner TS**.
- IESO will assess and develop a plan for the contingencies associated with the 115kV circuit **Q6S** and 230kV circuit **P15C** as part of its bulk system planning study for the area. Bulk system planning is outside the scope of regional planning, however the study team will be provided an update on the outcomes to ensure coordination.

4.4 SOUTH GEORGIAN BAY/MUSKOKA

The geographical area of the South Georgian Bay/Muskoka Region is the area roughly bordered by West Nipissing on the North-West, the Algonquin Provincial Park on the North-East, Scugog on the South, Erin on the South-West and Grey Highlands on the West.

The NA carried out for this region identified several needs that require regional coordination, and concluded that these needs should be reviewed further under the SA. As a result of the SA completed in June 2015 the region was divided into two sub-regions as follows:

- **Barrie/Innisfil** Sub-Region includes the areas supplied by Midhurst TS, Barrie TS, Everett TS, and Alliston TS, and transmission circuits E8V/E9V, E3B/E4B, and M6E/M7E.
- **Parrie Sound/Muskoka** Sub-Region includes the areas supplied by Parry Sound TS, Waubaushene TS, Orillia TS, Bracebridge TS, Muskoka TS, and Minden TS, and transmission circuits M6E/M7E and E26/E27.

As a result, the IRRPs are currently underway for each of the sub-regions. Both IRRPs are expected to be completed in Q4 2016. Additional local wires needs identified in the NA will be addressed by Hydro One and the impacted LDCs. In addition, needs related to the bulk system for this region will be addressed as part of the IESO's bulk system planning study in parallel with the IRRP phase. Bulk system planning is outside the scope of regional planning. However, the study team will be provided an update on the outcomes to ensure coordination.

The Barrie/Innisfil Sub-Region is forecasted to experience significant growth and the assessment determined the following needs:

- Barrie TS reaching station capacity;
- Barrie TS transformers and infrastructure nearing end-of-life;
- E3B/E4B circuits reaching thermal loading capacity; and,
- 230/115kV auto-transformer T1 at Essa TS nearing end-of-life.

Since Barrie TS is nearing end-of-life and reaching its maximum capacity, Hydro One is working with IESO, PowerStream, InnPower Hydro Distribution Systems and Hydro One Distribution to develop a plan to replace the aging infrastructure while also addressing the growth related needs. The concerns with the upstream infrastructure supplying Barrie TS – the Essa 230/115kV auto-transformers and the E3B/E4B double-circuit transmission line – will also be assessed and considered in this plan.

4.5 SUDBURY/ALGOMA

The Sudbury to Algoma Region includes the municipalities of Greater Sudbury and Espanola and Hydro One Distribution serves the remainder of the Region. The area is supplied from transformer stations Clarabelle TS, Coniston TS, Elliot Lake TS, Larchwood TS, Manitoulin TS and Martindale TS.

The NA has determined that there are no capacity, system reliability and operating needs in this region for which regional coordination is required. Needs identified are local in nature and an LP report was completed in September 2015 to address voltage concerns at **Manitoulin TS**. The report concluded that no infrastructure investments are required within this regional planning cycle.

5. STATUS OF GROUP 3 REGIONS

Group 3 consists of the following regions:

- Chatham/Lambton/Sarnia
- Greater Bruce/Huron
- Niagara
- North of Moosonee (led by Five Nations Energy Inc.)
- North/East of Sudbury
- Renfrew
- St. Lawrence

The regional planning process for Group 3 regions will be initiated by the end of 2015 beginning with the NA phase.

6. CONCLUSION AND NEXT STEPS

The regional planning process is now actively underway and is following the process developed by the Process Planning Working Group that the Board established. Members from the IESO, LDCs and Hydro One transmission are represented on study teams during the various phases of the regional planning process. Team members have been able to make right decisions and undertake the appropriate level of planning based on the assessment of needs. For example, the concept of local planning is being effectively used by the study team to address needs where straight forward wires only options are the obvious choice. These needs do not require regional coordination and are addressed by the transmitter and affected LDC (or customer). Other needs were further assessed during the IRRP and RIP phases of the regional planning process. Frequently, ‘wires’ planning is initiated in parallel with IRRP when the study team determines that a wires approach is the best alternative to address a need.

The sharing of information by the study team members and the publishing of reports and other relevant information on the Hydro One and IESO websites allows stakeholders to be aware of future plans that may influence their planning strategies. This transparency and stakeholder engagement was intended as one of the hallmarks of the regional planning process as envisioned by the Board.

Since the regional planning process was introduced, Hydro One, LDCs, and the IESO have met mandatory timelines to complete each of the regional planning phases with the exception of the Northwest Ontario IRRP². Other key accomplishments include:

- Timely completion of four NA for Group 2 regions;
- Timely completion of four SA in Group 1 and 2;
- Completion of six LP reports and three others are underway in various regions;
- Planning, development and/or execution of work for several transmission projects to address a number of near-term needs are currently underway; and
- Provided Planning Status Letters to LDCs for their rate applications in a timely manner.

From a wires infrastructure perspective, the RIP is the most important phase in the regional planning process because it provides a comprehensive source of information for regional power system infrastructure (wires) plans. Specifically, the RIP will develop and provide a report to address all the needs in the regions including a consolidated account of infrastructure plans developed during NA, SA, LP and IRRP for the region. RIPs for six regions in Group 1, namely Greater Ottawa, GTA North, GTA West, KWCG, Metro Toronto, and Windsor-Essex, are already underway and expected to be completed by Q1 2016. The RIP for the remaining Group 1 regions (i.e., Burlington to Nanticoke, GTA East and NW Ontario) will be initiated in 2016 following the completion of their respective IRRPs, which are expected to be completed by Q3 2016. It is anticipated that RIP reports for all Group 1 regions will be completed by the end of Q1 2017.

² Northwest Ontario IRRP delay was indicated in the 2014 report to the OEB^[2] and it is anticipated that the IRRP for this region will be completed by the end of Q2 2016.

Currently there are three IRRPs in Group 2 regions that are underway, which are expected to be completed by the end of 2016. Although subject to the completion of IRRP reports, it is anticipated that RIRPs for Group 2 will be completed by Q2 2017.

The regional planning process for Group 3 regions will be triggered, beginning with the NA in Q4 2015. As per the timelines in the TSC, the first cycle of the regional planning process should be completed by the end of August 2017.

REFERENCES

- [1] Ontario Energy Board. “Transmission System Code”. Last Revised August 26, 2013 (Originally Issued on July 14, 2000).
- [2] Hydro One Networks Inc. “Regional Planning Process – Annual Status Report”. November 1, 2014.
- [3] Ontario Energy Board. “Distribution System Code”. Last Revised April 15, 2015 (Originally Issued on July 14, 2000).
- [4] “Planning Process Working Group Report to the Board – The Process for Regional Infrastructure Planning in Ontario”. March 13, 2013. Last Revised May 17, 2013.
- [5] Ontario Energy Board. “Conservation and Demand Management Requirement Guidelines For Electricity Distributors”. Last Revised December 19, 2014.
- [6] Independent Electricity System Operator. “Ontario Resource and Transmission Assessment Criteria (ORTAC)”. Issue 5.0. August 22, 2007.

APPENDIX A. NEEDS ASSESSMENT DATA AND METHODOLOGY

NA has two distinct phases, namely:

- Data Collection, and
- Study.

A.1 Needs Assessment – Data Collection Phase

This phase collects the initial data and information for the regional planning process and also establishes the study team and the communication protocols. The key activities and the appropriate timelines of each of activity are illustrated in table below.

Table 3. Data Collection Phase

Key Activity	Description	Typical Timelines from Kickoff (days)
Pre-meeting Conference Call	Notify stakeholders of upcoming activities	(before kickoff)
Kickoff email	Provide data spreadsheets to be filled by study team (LDCs, IESO)	0
Face to Face Meeting		45
Data Collection Completed		60

The bulk of the activities in this phase take place between the kickoff email (trigger for Data Collection) and the face-to-face meeting around the 45th day of the 60-day. Study team members were strongly encouraged to provide the requested information during this period so that any clarifications or corrections can be discussed at the face-to-face meeting. Generally speaking full 60 days were required to gather the necessary data and information. The PPWG report^[4] and the Codes^[3,4] outlined some of the basic information and data that LDCs must provide (such as load forecast) in a timely manner. In addition, Hydro One, in consultation with study team members, developed a list of additional information that would form the basis for NA. The following information and data was collected by the team members for each of the regions.

A.1-1 Load Forecast

LDCs are mandated by the August 2013 Code amendments to provide a ten year load forecast for the NA. The forecast would be the yearly peak load (either summer or winter as appropriate) of the transformer stations supplying the LDC and should be the coincident load forecast aggregated for all feeders at the DESN level.

LDCs directly connected to transmission facilities that have embedded LDCs connected provided the load forecast from their embedded LDCs and included it in their load forecast to the transmitter. Hydro One developed a template for LDCs so that data and information could be submitted in a consistent manner for efficient processing and analysis by the study team.

Large industrial customer load and load displacement generation can have an impact on the transmission system and therefore can influence regional planning significantly. Attempts were made to obtain their forecast and in the absence of any response, assumptions were made based on best information available to the study team.

A.1-2 Distributed Generation and Conservation and Demand Management

During the Information Gathering phase, the OPA provided a 10-year forecast of DG and CDM targets for the region. Hydro One developed a template for the OPA so that data and information could be submitted in a consistent manner for efficient processing and analysis by the study team.

In order to produce accurate net demand forecasts for each of the regional planning activities, a standard set of assumptions were made by the OPA to account for the effect of future CDM and DG programs. Future conservation achievement was estimated by taking the 2013 Long Term Energy Plan (“LTEP”) conservation forecast and comparing it to the Ontario provincial peak demand forecast. This produced a peak demand percent offset amount for the province as a whole, which could be applied to peak demand forecasts in a region to estimate the effect of conservation programs. Note that this conservation forecast formed a baseline to a specific year, since existing conservation levels are already factored into a starting year’s forecast.

To estimate the effect of future DG projects, the OPA provided Hydro One and study team with a list of all contracted projects which had not yet reached commercial operation. Peak capacity factors by technology type could be assumed to be consistent with the IESO assumptions for long term assessments, which were 13.6% for wind and 34.0% for solar in 2013. All other fuel types (biogas, CHP, etc.) were assumed at full capacity during periods of peak demand.

The OPA is mandated by the TSC as per Section 3C.3.3 to provide, for the preparation of this report, the investments in CDM and DG in regions for which an IRRP has been completed. However, all IRRPs in Group 1 are still underway and, therefore, this information is not available at the time of the report.

A.1-3 Historical Loads and Operational Information

The IESO provided historical load data to set a reference point to which future load growth could be applied and for data reconciliation as described in Section E.3. In addition, the IESO also provided any operational and/or supply reliability issues that should be considered as part of regional planning consistent with the ORTAC^[6]. For NA, these issues included:

- Any post contingency voltage and/or power factor issue,
- Load Security Criteria (Section 7.1 of ORTAC) – maximum load that can be curtailed with one or two elements out of service,
- Load Restoration Criteria (Section 7.2 of ORTAC) – maximum restoration time as a function of the amount of load interrupted.

A.1-4 Facility Rating and Planned Investments/Replacements

For each region involving Hydro One assets, Hydro One provided equipment ratings, planned transmission investments over the next five years, replacement plans for any end of useful life of major equipment over the next five years, and historical loading from its Network Management System. Where required, LDCs were requested for ratings of facilities that they owned.

A.2 Needs Assessment – Study Phase

Once the Information Gathering phase and data reconciliation is complete, the 60-day NA phase is initiated.

The key activities and timelines in this phase are identified in Table 4. The process was devised so as to allow reasonable time for the study team and lead transmitter to evaluate the regional needs as per the NA methodology described in Section 3, while also allowing time for team members to provide their input and comments within the Code-mandated 60-day timeline.

Table 4. Needs Assessment Study Phase

Key Activity	Description	Timeline from kickoff (days)
Kickoff Email	Inform study team participants of beginning of the NA phase	0
Draft Report Review, Face to Face Meeting	Discuss comments on draft NA Report and agree on changes	45
Final Report for Study Team Approval	Email final report to study team participants	60
Post NA Report	Post NA report on Hydro One regional planning website	Within a few days of the approval date

The outcome of NA phase will be one (or more) of the following:

- No Coordinated Planning Required** – Study team analysis and assessment of the load supply capability in the region indicated that there are no foreseeable capacity issues over the next 10 years, which may require coordinated regional planning. As a result, the needs identified in the NA are local and can be preferably addressed by wires only solution(s) between the transmitter and LDCs; or the region or sub-region will be reassessed in the next planning cycle or earlier if there is a planning trigger due to another unforeseen need(s) prior to the next planning cycle.
- SA Required** – The needs identified in the NA require further assessment to determine if a solution(s) with a possible resource component should be considered or further coordinated planning is required. Accordingly, the SA led by the IESO will assess to confirm if a RIP or an IRRP or a combination of the two should be undertaken to address the regional issues identified in NA.

A.3 Needs Assessment – Methodology

Hydro One developed a NA methodology and assumptions to be used for NA phase and sought endorsement by the study team. This helped expedite the NA phase and complete the report in the Code-mandated 60 days.

Study team members reviewed the historical loads and future load growth to ensure that the historical loads and load forecast used in the assessment were reasonably correct and properly aggregated at a regional or sub-regional level. Where required, the summer peak loads were adjusted for extreme weather conditions according to Hydro One's methodology.

The load forecast provided by the LDCs was translated into a growth rate for the region or a relevant sub-region. This growth was applied onto the 2013 summer peak load as a reference point to identify any line or transformation capacity needs. To identify emerging capacity needs in the region and determine whether or not further coordinated regional planning should be undertaken, the study was performed observing all elements in service and one element out-of-service.

A.3-1 Capacity Needs

The gross demand forecast is used to develop a worst case scenario to first identify regional or sub-regional capacity needs. Both the gross demand forecast and the net demand forecast (which deducts forecasted CDM and DG contributions from the gross demand forecast) were used to confirm and determine the timing of the needs. In addition, a review of any ongoing and/or planned development projects in the region was undertaken during the study period.

A.3-2 Supply Reliability and Transmission Adequacy

Load reliability, security and transmission adequacy assessment is based on the ORTAC criteria that were introduced by the IESO in 2007. It is worth noting that prior to 2007 this criteria document was a guide for connection facilities and provided greater flexibility to customers on investments when reliability benefits were small and investment costs were significant for rate payers.

APPENDIX B. REGIONAL INFRASTRUCTURE PLANNING METHODOLOGY

B.1 Regional Infrastructure Plan

The outcome of the Regional Infrastructure Planning (RIP) phase is the RIP report which provides a consolidated account of all infrastructure planning developed during the current regional planning cycle. It includes not only the plans developed after the triggering of RIP but also any wires plan (e.g. Local Plans) which may have been triggered previously in this cycle. Resource options (e.g. CDM and DG) which may have been proposed in the IRRP are also described.

The RIP phase is officially triggered after the completion of all IRRPs in the region. However, this does not preclude the transmitter from being proactive and initiating planning studies on needs that require regional coordination as soon as they are identified during any of the earlier regional planning phases (such as NA, SA or IRRP). For instances where no regional IRRP is required, the RIP will be triggered after the last completed phase of the regional planning process.

The key activities in the RIP phase are listed in Table 5 with their respective timelines.

Table 5. RIP Phase

Key Activity	Description	Typical timelines from kickoff (days)
Kickoff Meeting	Outline process to team members. Request updates for Load Forecasts, CDM and DG.	0
Data Review and Validation	Update information if required	30
Preferred Options Identified	Identify options and select preferred option	120
Draft Report Review	Prepare draft report, review and finalize with team members	150
Report Published	Publish final report	180

It should be pointed out that some of the RIP activities may have been completed as part of earlier phases of the regional planning process. If the data, assumptions and criteria used for such activities are consistent with those provided prior to the RIP phase, it can be concluded that the results and recommendations are still valid. For such cases, in the interest of efficiency and expediency, these activities were not repeated during the RIP phase even though they are described in the RIP report.

B.2 Data Review and Validation

At the beginning of the RIP phase LDCs are requested to provide updates to load forecasts provided for the IRRP or earlier phases of the Regional Planning process. If no updates are required, the latest forecast will be used. The IESO will also be requested to provide updates regarding CDM and DG information.

Extreme weather correction models and high/low growth scenarios are taken into consideration when using the load forecasts to assess the regional needs.

B.3 Preferred Options

Weirs options are generated by the transmitter during this stage of the RIP phase. Options are developed based on their feasibility and cost effectiveness for addressing the identified needs. During the generation of preferred options, it is not uncommon for the “status quo” option to be considered before other, generally more costly options, are considered. If feasible and cost effective, the “status quo” may preclude the generation of additional options and may be selected, by default, as the preferred option. Whenever more than one option is considered, a budgetary estimate of each option is obtained to assist the preferred option selection.

The preferred option for each need addressed by an infrastructure solution is selected based on their long term cost/benefit. The rationale for the selection is then documented and recorded in the draft of RIP report for review and approval by the team members.

B.4 RIP Report

A draft of the RIP report undergoes a review by all team members and every effort is made to ensure that the concerns of each member is taken into account and reflected in the report.

As per the timelines mandated by the OEB and inserted in the TSC, the RIP report must be completed within 6 months of the RIP kickoff meeting and publish on the transmitter’s website.

APPENDIX C. CONSERVATION AND DG STATUS

The table below shows the most recently available verified peak demand offsets resulting from conservation programs by LDCs. Because verified results only become available in September for the previous calendar year, the data shown is based on 2014 (inclusive of programs and persistence from 2012 through 2014). Due to the methodology used in monitoring and evaluating programs, verified results can only be provided by LDC, and not by planning region.

Table 6. Conservation Status Update

Region	Sub-Region	LDC	Verified Net Annual Peak Demand Savings Persisting in 2014 (MW)
Windsor-Essex		ELK Energy Inc.	1
		Entegrus Inc.	6.4
		EnWin Utilities Ltd.	17.5
		Essex Powerlines Corp.	3.2
		Hydro One Distribution	167.4 ⁽¹⁾
Burlington to Nanticoke	Brant	Brantford Power Inc.	9
		Brant County Power Inc.	1.6
		Hydro One Distribution	167.4 ⁽¹⁾
Metro Toronto	Central Downtown	Toronto Hydro	206.3
KWCG		Kitchener-Wilmot Hydro	15.8
		Waterloo North Hydro	8.1
		Cambridge and North Dumfries Hydro	11.9
		Guelph Hydro Electric Systems Inc.	20
		Hydro One Distribution	167.4 ⁽¹⁾
Northwest Ontario	North of Dryden	Hydro One Distribution	167.4 ⁽¹⁾
GTA West	Northwestern	Hydro One Brampton	27.9
		Milton Hydro	3.9
		Halton Hills Hydro	2.9
		Hydro One Distribution	167.4 ⁽¹⁾
Greater Ottawa	Ottawa	Hydro Ottawa Limited	60.1
		Hydro One Distribution	167.4 ⁽¹⁾
GTA North	York	PowerStream Inc.	73 ⁽²⁾
		Newmarket Tay Power Distribution Ltd	4.6 ⁽²⁾
		Hydro One Distribution	167.4 ⁽¹⁾

Note (1): Total Hydro One Distribution conservation achievement for 2014 is 167.4 MW (for its entire service area).

Note (2): Savings for the LDC's entire service area

The table below shows the total installed and effective capacity of IESO Contracted Distributed Generation (“DG”) projects which have come into service or under development since the base period of the region/sub-region load forecast. This does not include net or behind the meter generation. This table does not include projects which had already been in service prior to this date, except in cases where a new contract was formed to account for incremental capacity of a facility. The equivalent effective capacity for these new generation sources is based on capacity factors consistent with the assumptions applied in the region/sub-region load forecast. Data is based on the IESO contract list as of July 31, 2015.

Table 7. DG Status Update

Region	Sub-Region	Station	Installed Capacity (MW)	Effective Capacity (MW)	Load Forecast Base Period
Windsor-Essex		Kingsville TS	19.43	12.34	January 1, 2013
		Belle River TS	0.62	0.27	
		Tilbury West TS	0.8	0.35	
		Tilbury TS	0	0	
		Lauzon TS	7.25	3.19	
		Walker TS #1	1.78	0.78	
		Walker TS #2	1.92	0.84	
		Essex TS	0.27	0.12	
		Crawford TS	0.66	0.29	
Burlington to Nanticoke	Brant	Brant TS	9.77	3.91	Summer 2012
		Brantford TS	3.34	1.34	
		Powerline MTS	1.48	0.59	
Metro Toronto	Central Downtown	Bermondsey TS DESN2	0.2	0.07	2013
		Carlaw TS	0.16	0.05	
		Cecil TS DESN2	0.09	0.03	
		Ellesmere TS	0.39	0.13	
		Esplanade TS	0.78	0.78	
		Fairbank TS DESN1	0.16	0.05	
		Fairbank TS DESN2	0.07	0.02	
		Gerrard TS DESN1	2.73	2.73	
		Horner TS	0.33	0.11	
		John TS DESN2	0.04	0.01	
		John TS DESN3	3.85	3.85	
		Main TS	0.14	0.05	
		Manby TS DESN1	0.14	0.05	
		Manby TS DESN3	0.2	0.07	
		Runnymede TS	0.3	0.1	
		Scarboro TS DESN1	0.4	0.13	
		Scarboro TS DESN2	0.31	0.11	
		Sheppard TS DESN1	0.66	0.22	
Sheppard TS DESN2	0.44	0.15			

		Warden TS	0.96	0.33	
		Wiltshire TS DESN1	0.21	0.07	
KWCG		Cambridge #1	2.8	0.8	Summer 2010
		Galt TS	2.8	1.2	
		Preston TS	1.7	0.5	
		Cedar TS	1	0.3	
		Hanlon TS	0.6	0.2	
		Arlen MTS	0	0	
		Campbell TS	6.5	2	
		Wolverton DS	0.4	0.1	
		Puslinch DS	0.8	0.2	
		Fergus TS	44.7	7.2	
		Kitchener #6	1.6	0.5	
		Kitchener #8	0.6	0.2	
		Kitchener #3	1.1	0.3	
		Kitchener #7	1.3	0.4	
		Kitchener #5	1.3	0.4	
		Detweiler TS	0	0	
		Kitchener #1	0.4	0.1	
		Kitchener #4	0.6	0.2	
		Kitchener #9	0.9	0.3	
		Scheifele TS	2.1	0.6	
		Waterloo #3	0.7	0.2	
Elmira TS	4.8	3.8			
Rush MTS	0.2	0.1			
Northwest Ontario	North of Dryden	(None)	-	-	-
GTA West	Northwestern	Bramalea TS	4.38	1.49	Summer 2012
		Goreway TS	5.48	1.86	
		Halton TS	2.2	0.75	
		Jim Yarrow MTS	2.39	0.81	
		Kleinburg TS	4.12	3.53	
		Pleasant TS	6.22	2.11	
		Tremaine TS	0.3	0.1	
		Woodbridge TS	0.65	0.22	
Greater Ottawa	Ottawa	Albion TS	0.67	0.2	Summer 2012
		Bilberry Creek TS	1.06	0.32	
		Bridlewood MTS	0.21	0.06	
		Carling TS	29.79	20.97	
		Centre Point MTS	0.05	0.01	
		Cumberland DS	0.23	0.07	
		Cyrville MTS	0.29	0.09	

		Ellwood MTS	0.1	0.03	
		Fallowfield DS	0.01	0	
		Greely DS	0.31	0.09	
		Hawthorne TS	1.29	0.39	
		Hinchey TS	0.06	0.02	
		Kanata MTS #1	0.98	0.3	
		King Edward TS	0.1	0.03	
		Limebank MTS	0.37	0.11	
		Lincoln Heights TS	0.15	0.05	
		Lisgar TS	0.05	0.02	
		Manordale MTS	0.03	0.01	
		Manotick DS	0.51	0.49	
		Marchwood MTS	0.12	0.04	
		Marionville DS	0.73	0.56	
		Merivale MTS	0.12	0.04	
		Moulton MTS	0.04	0.01	
		Navan DS	0.05	0.02	
		Nepean TS	1.56	0.47	
		Overbrook TS	0.71	0.21	
		Richmond MTS	0.26	0.08	
		Riverdale TS	0.15	0.05	
		Russell DS	0.02	0.01	
		Russell TS	1.86	0.56	
		South Gloucester DS	0.04	0.01	
		South March TS	1.01	0.3	
		Uplands MTS #2	0.12	0.03	
		Wilhaven DS	1.54	0.46	
		Woodroffe TS	0.16	0.05	
GTA North	York	Holland TS	1.7	0.6	Summer 2013
		Armitage TS	7.4	2.5	
		Brown Hill TS	10.6	3.6	
		Richmond Hill MTS	2	0.7	
		Vaughan 1 MTS	3.1	1	
		Vaughan 2 MTS	2.9	1	
		Vaughan 3 MTS	1.6	0.6	
		Buttonville TS	1	0.3	
		Markham 1 MTS	1.2	0.4	
		Markham 2 MTS	4.8	4.2	
		Markham 3 MTS	3.6	3.2	
		Markham 4 MTS	0.1	0	

Other Electricity System Initiatives, as identified by the IESO, include:

- KWCG Region: The Region of Waterloo is currently working with local utilities to develop a regional community energy plan/strategy and has received funding under the Ministry of Energy's Municipal Energy Plan program.
- GTA North – York Sub-Region: PowerStream will be implementing its new Micro Grid project (a proof-of-concept trial) over the next two years.

APPENDIX D. NEEDS ASSESSMENT REPORT LINKS

Burlington to Nanticoke (May 23, 2014):

<http://www.hydroone.com/RegionalPlanning/Burlington/Documents/Needs%20Assessment%20Report%20-%20Burlington%20to%20Nanticoke%20Region.pdf>

Greater Ottawa – Outer Ottawa Sub-Region (July 28, 2014):

<http://www.hydroone.com/RegionalPlanning/Ottawa/Documents/Needs%20Assessment%20Report%20-%20Greater%20Ottawa%20-%20Outer%20Ottawa%20SubRegion.pdf>

GTA East (August 11, 2014):

http://www.hydroone.com/RegionalPlanning/GTA_East/Documents/Needs%20Assessment%20Report%20-%20GTA%20East%20Region.pdf

GTA North – Western Sub-Region (June 27, 2014):

<http://www.hydroone.com/RegionalPlanning/GTANorth/Documents/Needs%20Assessment%20Report%20-%20GTA%20North%20-%20Western%20Subregion.pdf>

GTA West – Southern Sub-Region (May 30, 2014):

<http://www.hydroone.com/RegionalPlanning/GTAWest/Documents/Needs%20Assessment%20Report%20-%20GTA%20West%20-%20Southern%20Subregion.pdf>

Metro Toronto – Northern Sub-Region (June 11, 2014):

<http://www.hydroone.com/RegionalPlanning/Toronto/Documents/Needs%20Assessment%20Report%20-%20Metro%20Toronto%20-%20Northern%20Subregion.pdf>

London Area (April 1, 2015): ^{NEW}

<http://www.hydroone.com/RegionalPlanning/LondonArea/Documents/Needs%20Assessment%20Report%20%20London%20Region%20%20April%202015.pdf>

Peterborough to Kingston (February 10, 2015): ^{NEW}

[http://www.hydroone.com/RegionalPlanning/Peterborough/Documents/Needs%20Assessment%20Report%20%20Peterborough%20to%20Kingston%20%2010_Feb_2015%20\(FINAL\).pdf](http://www.hydroone.com/RegionalPlanning/Peterborough/Documents/Needs%20Assessment%20Report%20%20Peterborough%20to%20Kingston%20%2010_Feb_2015%20(FINAL).pdf)

South Georgian Bay/Muskoka (March 3, 2015): ^{NEW}

<http://www.hydroone.com/RegionalPlanning/SGBMuskoka/Documents/Needs%20Assessment%20Report%20%20South%20Georgian%20BayMuskoka%20%2003%20Mar%202015.pdf>

Sudbury/Algoma (March 12, 2015): ^{NEW}

<http://www.hydroone.com/RegionalPlanning/SudburyAlgoma/Documents/Needs%20Assessment%20Report%20%20Sudbury%20Algoma%20Mar12%202015.pdf>

APPENDIX E. LOCAL PLANNING REPORT LINKS

GTA East Region – Wilson TS and Thornton TS Station Capacity Mitigation (May 15, 2015): ^{NEW}

http://www.hydroone.com/RegionalPlanning/GTA_East/Documents/Local%20Planning%20Report%20-%20WilsonThornton%20-%2015_May_2015%20-%20Final.pdf

GTA West Region – Erindale TS T1/T2 DESN Capacity Relief (July 9, 2015): ^{NEW}

http://www.hydroone.com/RegionalPlanning/GTAWest/Documents/Local%20Planning%20Report%20-%20Erindale%20TS%20Capacity%20-%2009_July_2015.pdf

Greater Ottawa Region (September 22, 2015): ^{NEW}

<http://www.hydroone.com/RegionalPlanning/Ottawa/Documents/Local%20Planning%20Report%20-%20B5D-D5A%20Load%20Restoration.pdf>

Sudbury/Algoma Region – Manitoulin TS Low Voltage Regulation (September 30, 2015): ^{NEW}

<http://www.hydroone.com/RegionalPlanning/Sudbury-Algoma/Documents/Local%20Planning%20Report%20-Sudbury-Algoma%20Sep30-15.pdf>

Peterborough to Kingston Region – Gardiner TS Load Balancing (October 7, 2015): ^{NEW}

<http://www.hydroone.com/RegionalPlanning/Peterborough/Documents/Local%20Planning%20Report%20-%20Gardner%20TS%20Load%20Balancing.pdf>

Burlington to Nanticoke Region (October 28, 2015): ^{NEW}

<http://www.hydroone.com/RegionalPlanning/Burlington/Documents/Local%20Planning%20Report%20-%20Burlington%20to%20Nanticoke%20Region.pdf>

APPENDIX F. SCOPING ASSESSMENT LINKS

Burlington to Nanticoke Scoping Assessment (September 25, 2014):

http://www.ieso.ca/Documents/Regional-Planning/Burlington_to_Nanticoke/Scoping%20Assessment%20Outcome%20Report.pdf

GTA East Scoping Assessment (December 15, 2014): ^{NEW}

http://www.ieso.ca/Documents/Regional-Planning/GTA_East/GTA-East-Scoping-Assessment-Final-Report.pdf

GTA West – Southern Sub-Region Scoping Assessment (September 19, 2014):

http://www.ieso.ca/Documents/Regional-Planning/GTA_West/Scoping-Assessment-Outcome-Report-September-2014.pdf

Northwest Ontario Scoping Assessment (January 28, 2015): ^{NEW}

http://www.ieso.ca/Documents/Regional-Planning/Northwest_Ontario/Final_Northwest_Scoping_Process_Outcome_Report.pdf

London Area Scoping Assessment (August 28, 2015): ^{NEW}

http://www.ieso.ca/Documents/Regional-Planning/London-Area/London_Area_Scoping_Assessment_Report_TOR_for_IRRP_and_RIP.pdf

South Georgian Bay/Muskoka Scoping Assessment (June 22, 2015): ^{NEW}

<http://www.ieso.ca/Documents/Regional-Planning/South-Georgian-Bay-Muskoka/SGBM-Scoping-Process-Outcome-Report-Final-20150622.pdf>

APPENDIX G. IRRP LINKS

Burlington to Nanticoke – Brant Sub-Region IRRP (April 28, 2015): ^{NEW}

http://www.ieso.ca/Documents/Regional-Planning/Burlington_to_Nanticoke/2015-Brant-IRR-Report.pdf

Greater Ottawa – Ottawa Sub-Region IRRP (April 28, 2015): ^{NEW}

http://www.ieso.ca/Documents/Regional-Planning/Greater_Ottawa/2015-Ottawa-IRR-Report.pdf

GTA North – York Sub-Region IRRP (April 28, 2015): ^{NEW}

http://www.ieso.ca/Documents/Regional-Planning/GTA_North/2015-York-Region-IRR-Report.pdf

GTA West – Northwestern Sub-Region IRRP (April 28, 2015): ^{NEW}

http://www.ieso.ca/Documents/Regional-Planning/GTA_West/2015-Northwest-GTA-IRR-Report.pdf

KWCG IRRP (April 28, 2015): ^{NEW}

<http://www.ieso.ca/Documents/Regional-Planning/KWCG/2015-KWCG-IRR-Report.pdf>

Metro Toronto – Central Downtown IRRP (April 28, 2015): ^{NEW}

http://www.ieso.ca/Documents/Regional-Planning/Metro_Toronto/2015-Central-Toronto-IRR-Report.pdf

Northwest Ontario – North of Dryden Sub-Region IRRP (January 27, 2015): ^{NEW}

http://www.ieso.ca/Documents/Regional-Planning/Northwest_Ontario/North_of_Dryden/North-Dryden-Report-2015-01-27.pdf

Windsor Essex IRRP (April 28, 2015): ^{NEW}

http://www.ieso.ca/Documents/Regional-Planning/Windsor_Essex/2015-Windsor-Essex-IRR-Report.pdf

APPENDIX H. PLANNING STATUS LETTERS

The TSC requires that s be issued by the transmitter as per Section 3C.2.2 item (h):

(h) within 45 days of receipt of a request to do so, provide a letter to a licensed distributor or a licensed transmitter confirming the status of regional planning for a region, including any Regional Infrastructure Plan that is being developed for the region that includes the distributor's licensed service area or within which the requesting transmitter's transmission system is located, suitable for the purpose of supporting an application proposed to be filed with the Board by the distributor or requesting transmitter.

In compliance with this requirement, Hydro One has provided Planning Status Letters to the following LDCs:

- Cambridge North Dumfries Hydro Inc.
- Chapleau Public Utilities Corp.
- EnWin Utilities Inc.
- Fort Frances Power Corp.
- Grimsby Power Inc.
- Guelph Hydro Electric Systems Inc.
- Haldimand County Hydro Inc.
- Halton Hills Hydro Inc.
- Hearst Power Distribution Company Limited
- Hydro One Brampton Networks Inc.
- Hydro One Distribution
- Milton Hydro Distribution Inc.
- Niagara-on-the-Lake Hydro Inc.
- North Bay Hydro Distribution Limited
- Oakville Hydro Electricity Distribution Inc.
- Oshawa PUC Networks Inc.
- Ottawa River Power Corporation
- Toronto Hydro Electric System Limited
- Veridian Connections Inc.
- Waterloo North Hydro Inc.
- Wellington North Power Inc.
- Woodstock Hydro Services Inc.

APPENDIX I. IESO HAND-OFF LETTERS LINKS

Burlington to Nanticoke – Brant Sub-Region (February 6, 2014):

<http://www.hydroone.com/RegionalPlanning/Burlington/Documents/OPA%20Letter%20-%20Burlington%20Nanticoke%20-%20Brant.pdf>

Greater Ottawa – Ottawa Sub-Region (June 27, 2014):

<http://www.hydroone.com/RegionalPlanning/Ottawa/Documents/Letter%20to%20H1%20RE%20Ottawa.pdf>

GTA North – York Sub-Region (June 14, 2013):

<http://www.hydroone.com/RegionalPlanning/GTANorth/Documents/OPA%20Letter%20to%20Hydro%20One%20%20Regarding%20%20York%20Subregion.pdf>

KWCG Region (May 29, 2013):

<http://www.hydroone.com/RegionalPlanning/KWCG/Documents/OPA%20Letter%20to%20Hydro%20One%20%20Regarding%20KWCG.pdf>

Metro Toronto – Central Downtown Sub-Region (December 27, 2013):

<http://www.hydroone.com/RegionalPlanning/Toronto/Documents/OPA%20Letter%20to%20Hydro%20One%20Regarding%20Central%20Toronto%20Subregion.pdf>