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

Tel: (416) 345-5700
Fax: (416) 345-5870
Cell: (416) 258-9383
Susan.E.Frank@HydroOne.com

Susan Frank
Vice President and Chief Regulatory Officer
Regulatory Affairs

BY COURIER

November 1, 2014

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

Dear Ms. Walli:

EB-2011-0043 – 2014 Regional Planning Status Report of Hydro One Networks Inc.

Section 3C.3.3 of the Transmission System Code requires transmitters to submit an annual report to the Ontario Energy Board, on November 1st of each year, that identifies the status of regional planning for all regions.

Please find attached Hydro One Networks Inc.'s 2014 Regional Planning Process Annual Status Report, pursuant to the above noted Code section.

Sincerely,

ORIGINAL SIGNED BY SUSAN FRANK

Susan Frank

Regional Planning Process

Annual Status Report

November 1st, 2014

Executive Summary

The process for electric power system planning in the province of Ontario underwent a significant procedural change in 2013. A new Regional Planning (**"RP"**) process, which enables transparent, coordinated and cost-effective planning of regional transmission and distribution systems, was mandated by the Ontario Energy Board (**"Board"**) on August 26, 2013 through amendments to both the Transmission System Code (**"TSC"**) [2] and the Distribution System Code (**"DSC"**) [3]. This process is outlined in the Planning Process Working Group (**"PPWG"**) Report to the Board, titled "The Process for Regional Infrastructure Planning in Ontario" [1], dated March 13, 2013.

As part of the Code 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 RP for all regions. This is Hydro One Networks Inc.'s (**"Hydro One"**) first such report, and it describes the activities, accomplishments and developments, as well as lessons learned, during the first year of implementation of the RP.

The initial implementation phase of the RP ensured a good understanding of the process among stakeholders, and in particular among the Local Distribution Companies (**"LDC"**), to facilitate a smooth transition. Planning activities already underway prior to the introduction of the RP were appropriately mapped to the applicable phases of the RP for the respective regions and subregions through discussions with the Ontario Power Authority (**"OPA"**).

Hydro One and the OPA participated in the province-wide Renewed Regulatory Framework engagement sessions, led and facilitated by the Board, to discuss and present the RP to LDCs and other stakeholders. In addition, webinars were also arranged to present and discuss the rollout of the RP to a wider group of stakeholders.

For clarity, the term Needs Assessment (**"NA"**), as defined in Section 3C.1.1 of the TSC, refers to the same assessment that is referenced in the PPWG Report to the Board as Needs Screening. The NA is the first step of the RP. Prior to triggering an NA, Hydro One also arranged a teleconference and information session with the OPA, Independent Electricity System Operator (**"IESO"**) and all relevant LDCs in each of the regions, one to three weeks prior to launching an RP for the region.

The NA phase is now complete for all regions in Group 1, with subsequent planning activities now in various phases of the RP depending on the specific needs and recommendations outlined in the respective NA reports. The Scoping Assessment (**"SA"**) for one region and one subregion has also been completed and one new Integrated Regional Resource Planning (**"IRRP"**) was initiated as a result of SA in Group 1. At this time, no regions are formally in the Regional Infrastructure Planning (**"RIP"**) phase yet. However, planning and development work for transmission projects that are required to address urgent or near-term needs are proceeding. The results of this work will be included in the RIP report for the respective regions. In addition, RP is also underway for two regions and five subregions in Group 1 that were transitioned to the IRRP phase.

For the regions in Group 2, the NA has been initiated for four regions. For the regions in Group 3, the NA's are expected to begin in mid-2015.

Based on the activities undertaken over the past twelve (12) months, the RP is progressing well and is working as envisioned by the Board and the PPWG. The TSC and DSC mandated timelines for the regional planning activities have all been met. Hydro One has established a well-defined and structured process that is well understood and endorsed by the study team for each region (which includes representatives from the OPA, the IESO, Hydro One and relevant LDCs) to ensure that each study team member is fully engaged in the process. Finally, Hydro One conducted a survey after completion of the NAs for Group 1. The feedback from the LDCs was very positive.

A snapshot of the planning status for all regions and subregions is illustrated in Table 1. Further summary details of the planning activities for each region and subregions are provided in Table 2.

Table 1: Regional Planning Progress Status

Group	Region	Subregion	NA	SA	IRRP	RIP
1	Burlington to Nanticoke					
		Brant				
	Greater Ottawa	Ottawa				
		Outer Ottawa				
	GTA East					
	GTA North	York				
		Western				
	GTA West	Northwestern				
		Southern				
	KWGC					
	Metro Toronto	Central Downtown				
		Northern				
	Northwest Ontario					
	Windsor-Essex					
2	East Lake Superior					
	London Area					
	Peterborough to Kingston					
	South Georgian Bay/Muskoka					
	Sudbury Algoma					
3	Chatham/Lambton/Sarnia					
	Greater Bruce/Huron					
	Niagara					
	North of Moosonee					
	North/East of Sudbury					
	Renfrew					
	St. Lawrence					

Not Started | In Progress | Completed | Deemed Completed Prior to new RP | Not Required

Table 2: Summary of Regional Planning Activities

Group	Region	Activities in 2013/2014
1	Burlington to Nanticoke	NA and SA are complete. IRRP is underway and expected to be completed by the end of 2014.
	Greater Ottawa	There are two subregions in Greater Ottawa. • NA for the Outer Ottawa Subregion was completed in July, 2014. The needs identified as localized do not require regional coordination and will be addressed by the LDCs and Hydro One. • An IRRP for the Ottawa Subregion (City of Ottawa) is underway and expected to be completed in early 2015.
	GTA East	NA was completed in August, 2014. Needs identified as localized are being addressed by the LDCs and Hydro One. Only one subregion for the Pickering-Ajax-Whitby area needs to proceed to the SA which is underway.
	GTA North	There are two subregions in GTA North. • NA for the Western Subregion was completed in June, 2014. Capacity needs are identified as localized and are being addressed by the LDCs and Hydro One. SA is not required and the load restoration issue identified will be investigated as part of the IRRP for the GTA West Northwestern Subregion. No further regional coordination is required. • An IRRP for the York Subregion currently underway is expected to be completed in early 2015.
	GTA West	There are two subregions in GTA West. • NA for the Southern Subregion was completed in June, 2014. Needs identified as localized are being addressed by the LDCs and Hydro One. The SA concluded that the load restoration issues will be considered as part of the bulk system planning study currently being carried out in the Western portion of the GTA. No further regional coordination is required. • The Northwestern Subregion is in the IRRP phase and expected to be completed in mid-2015
	Kitchener-Waterloo Cambridge-Guelph	This region is currently in the IRRP phase which is expected to be completed in early 2015.
	Metro Toronto	There are two subregions in Metro Toronto. • NA for the Northern Subregion was completed in June, 2014. Needs identified as localized are being addressed by the LDCs and Hydro One. No further regional coordination is required. • The Central-Downtown Subregion is IRRP phase and expected to be completed by the end of 2014.
	Northwest Ontario	This region is currently in the SA and is expected to be completed by the end of 2014. See Section 4.8 for further discussion of the plans for this region.
	Windsor-Essex	This region is the IRRP phase and is expected to be completed by the end of 2014.
2	East Lake Superior	Great Lakes Power is the lead transmitter and has initiated an NA for this region.
	London Area	Information gathering for these regions started in Q4 2014 and the NA is expected to be completed by Q1 2015.
	Peterborough to Kingston	
	South Georgian Bay/Muskoka	
	Sudbury/Algoma	
3	Chatham/Lambton/Sarnia	RP for these regions is expected to start in mid-2015.
	Greater Bruce/Huron	
	Niagara	
	North of Moosonee	Five Nations Energy Inc. is the lead transmitter for this region.
	North/East of Sudbury	RP for these regions is expected to start in mid-2015.
	Renfrew	
	St. Lawrence	

Table of Contents

List of Figures and Tables

1 Introduction

1.1 Background and Context

In August, 2013 the Regional Planning (**"RP"**) process for the power system in the province of Ontario underwent a significant procedural change. The new process outlined in the Planning Process Working Group (**"PPWG"**) Report to the Board [1] and mandated by amendments in the Transmission System Code (**"TSC"**) [2] and the Distribution System Code (**"DSC"**) [3] (herein referred to collectively as the **"Codes"**) enables transparent, coordinated and cost-effective planning of regional transmission and distribution systems.

Submission of this annual report to the Ontario Energy Board (**"Board"**) is a requirement under Section 3C.3.3 of the TSC.

This report provides a description of the activities, accomplishments and developments, along with any lessons learned during the first year of implementation of the RP process.

1.2 Structure of the Report

The balance of this report is organized as follows:

- Chapter Two describes the major processes that comprise the RP effort;
- Chapter Three describes some of the key efforts undertaken to implement, communicate and transition to the new process;
- Chapter Four provides the status of the RP for each region;
- Chapter Five summarizes Hydro One Networks Inc.'s (**"Hydro One"**) observations on the RP process after the first year of implementation and provides an outlook of the activities to be conducted over the next year.

The report also includes several appendices that provide further details of the topics covered in the main sections of the report.

2 Regional Planning Process

To achieve the Board's objectives for the RP, the PPWG Report outlined a process establishing the roles and responsibilities of Local Distribution Companies (**"LDC"**), transmitters and the Ontario Power Authority (**"OPA"**). To manage the planning study work, the province was divided into 21 regions and prioritized by placing them into three groups. For each regional planning activity at the regional or subregional level, a study team is established with relevant representatives from the OPA, Independent Electricity System Operator (**"IESO"**), Hydro One, and LDCs. The planning regions are listed in Table 2-1 and shown geographically in Figure 2-1.

Table 2-1: Regional Grouping

Group 1	Group 2	Group 3
• Burlington to Nanticoke	• East Lake Superior	• Chatham/Lambton/Sarnia
• Greater Ottawa	• London Area	• Greater Bruce/Huron
• GTA East	• Peterborough to Kingston	• Niagara
• GTA North	• South Georgian Bay/Muskoka	• North of Moosonee
• GTA West	• Sudbury/Algoma	• North/East of Sudbury
• Kitchener-Waterloo Cambridge-Guelph (**"KWCG"**)		• Renfrew
• Metro Toronto		• St. Lawrence
• Northwest Ontario		
• Windsor-Essex		

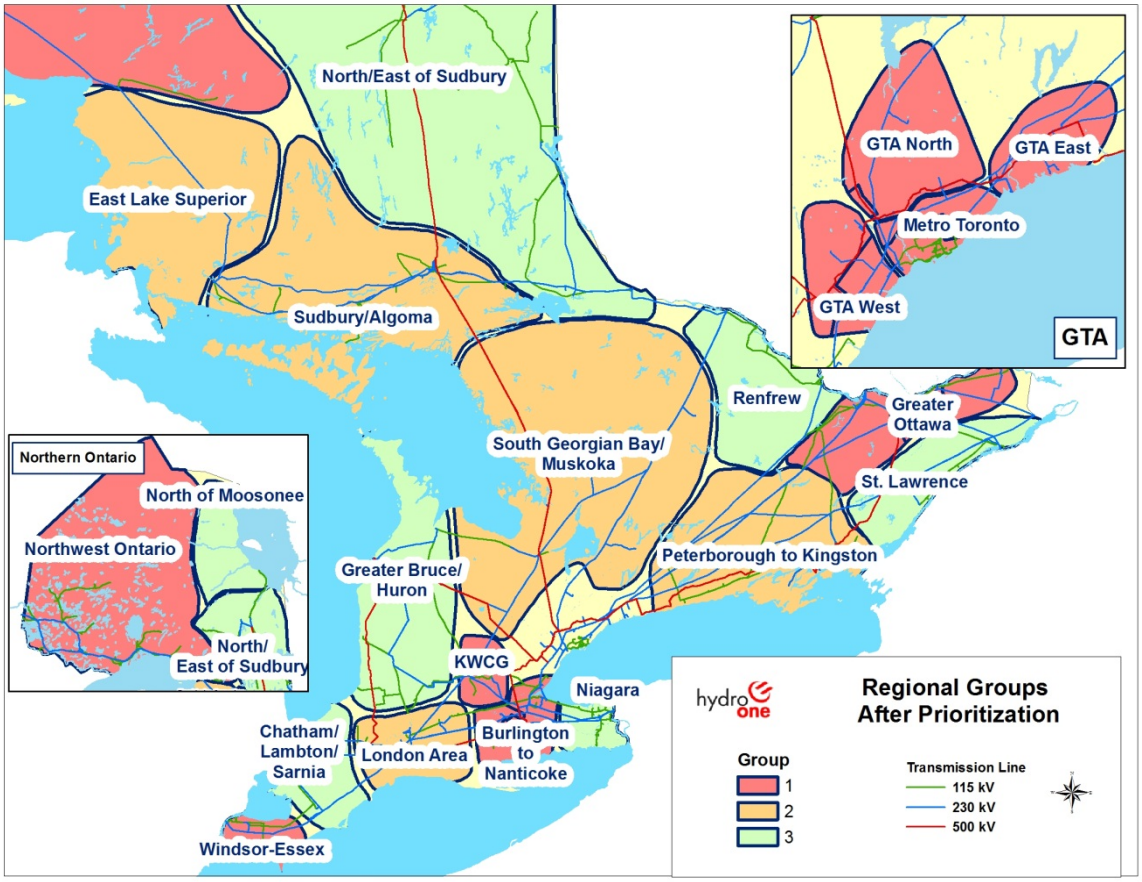


Figure 2-1: Regional Planning Zones

The diagram for this process in the PPWG report is reproduced in Figure 2-2. As illustrated, the overall RP process has four major phases, namely:

- Needs Assessment (**"NA"**),
- Scoping Assessment (**"SA"**),
- Integrated Regional Resource Planning (**"IRRP"**), and
- Regional Infrastructure Planning (**"RIP"**).

A brief summary of the above phases is provided in the following sections. Further details can be found in the PPWG Report.

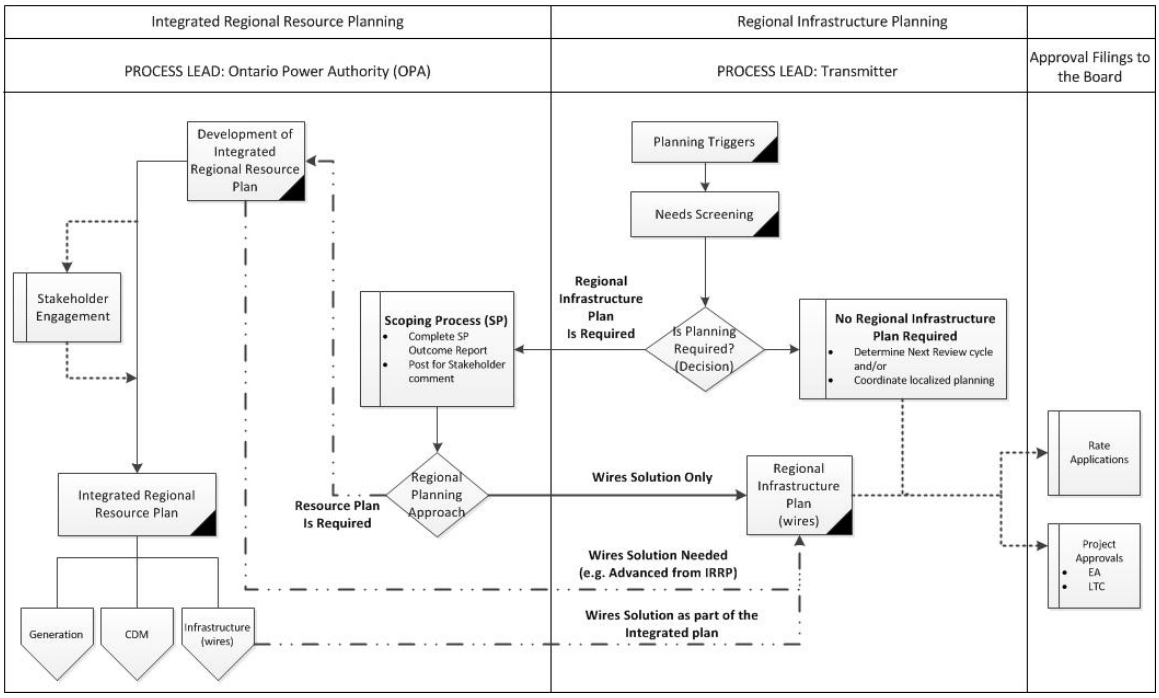


Figure 2-2: Regional Planning from the PPWG Report

2.1 Needs Assessment

NA (as referred in the Codes is interchangeable with “Need Screening” used in the PPWG report) and is the first step in the RP process. Details with respect to type of data and assessment methodology are provided in Appendix E. Based on the data and information collected from the stakeholders for the region, the outcome of the 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 or subregion 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 should be preferably addressed by wires only solution(s) to be developed by the transmitter and LDCs; or the region or subregion 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 and/or further coordinated regional planning is required.

2.2 Scoping Assessment

If the NA identifies needs that require a regional coordinated approach to planning, the SA, led by the OPA, is undertaken to determine the appropriate regional planning approach: either a RIP, for wires only solutions, or an IRRP, if non-wires solutions need to be assessed and integrated. This assessment includes a review of possible Conservation and Demand Management (**"CDM"**), Distributed Generation (**"DG"**), and other electricity initiatives vs. wire solution(s) to address the needs. The SA also provides stakeholders with an opportunity to comment on the preferred regional planning approach (i.e., either RIP or IRRP) and a preliminary Terms of Reference before these documents are finalized. Based on the discussions with the OPA, the SA may also determine that one or all of the identified needs are best addressed by a wires only solution and do not require further regional coordination, in which case they will be addressed directly between the LDCs and the transmitter.

The status of the regions undergoing an SA is described in Section 4. Links to SA by the OPA are provided on Appendix F.

2.3 Integrated Regional Resource Planning

The IRRP process is led by the OPA and the planning assessment considers a wide range of potential solutions to determine the optimal mix of resources to meet the needs of an area for the next 20 years, including consideration of CDM, DG, new technologies, and wires infrastructure. Links to IRRP processes underway at the OPA website are provided in Appendix F.

The status of the IRRP for the various regions is provided in Section 4.

2.4 Regional Infrastructure Planning Process

The RIP can be initiated at the completion of the OPA-led SA and/or the IRRP processes. At the time of this report, no RIP process has been formally initiated. However, several planning and development of wires-only solutions being led by Hydro One are currently underway, stemming either from a NA, planning activities that were already underway prior to the implementation of the RP, or as a result of handoff letters issued by the OPA while the IRRP is still in progress.

3 Implementation, Communication and Transition to the RP

Regional power system planning is not a new concept in Ontario and it has been in practice for decades by the former Ontario Hydro. In recent years, this activity was primarily conducted by the OPA. The RP now requires the transmitter to oversee the overall process and to lead the planning for the development of the wires options (i.e., transmission and, to some extent, the distribution). With the new process, one of the challenges is to ensure a good understanding of the RP among all stakeholders, and in particular with the LDCs, so that there is a smooth transition into the new process as mandated by the Codes and outlined in the PPWG report.

Planning activities that were already underway prior to the RP were appropriately placed into the relevant phase of the RP for each of the regions or subregions by each study team which includes the OPA and affected LDCs. Other transitional activities included:

- Hydro One and the OPA participated in the province-wide “roadshow” led and facilitated by the Board to discuss and present the RP to the LDCs and stakeholders and to answer any of their questions.
- Webinars for a wider range of stakeholders, including LDCs and transmitters, were also arranged to present and discuss the RP.

- Hydro One arranged a teleconference and information session with the OPA, IESO, and all relevant LDCs in each of the regions, one to three weeks prior to launching a RP for the region.

- LDCs have been made aware to request a planning status letter for their Cost of Service Rate Applications. A list of the LDCs that requested planning status letters is provided in Appendix C. Copies of these letters are available at the Hydro One RP website.

- Hydro One sent out letters, within 10 days of the new Code amendments coming into force, to advise the LDCs of the regions they belong to and to seek feedback on the priority grouping of the 21 regions for study. Based on the feedback, one adjustment was made to move the GTA East from Group 2 to Group 1.

4 Regional Planning Status

Planning is an ongoing activity in the management of a power system network. When the RP came into effect in August 2013, several regional planning efforts that were already underway had to be transitioned into the RP for efficiency and to minimize duplication of work. This section provides a brief summary of the transition activities and RP status of each of the regions.

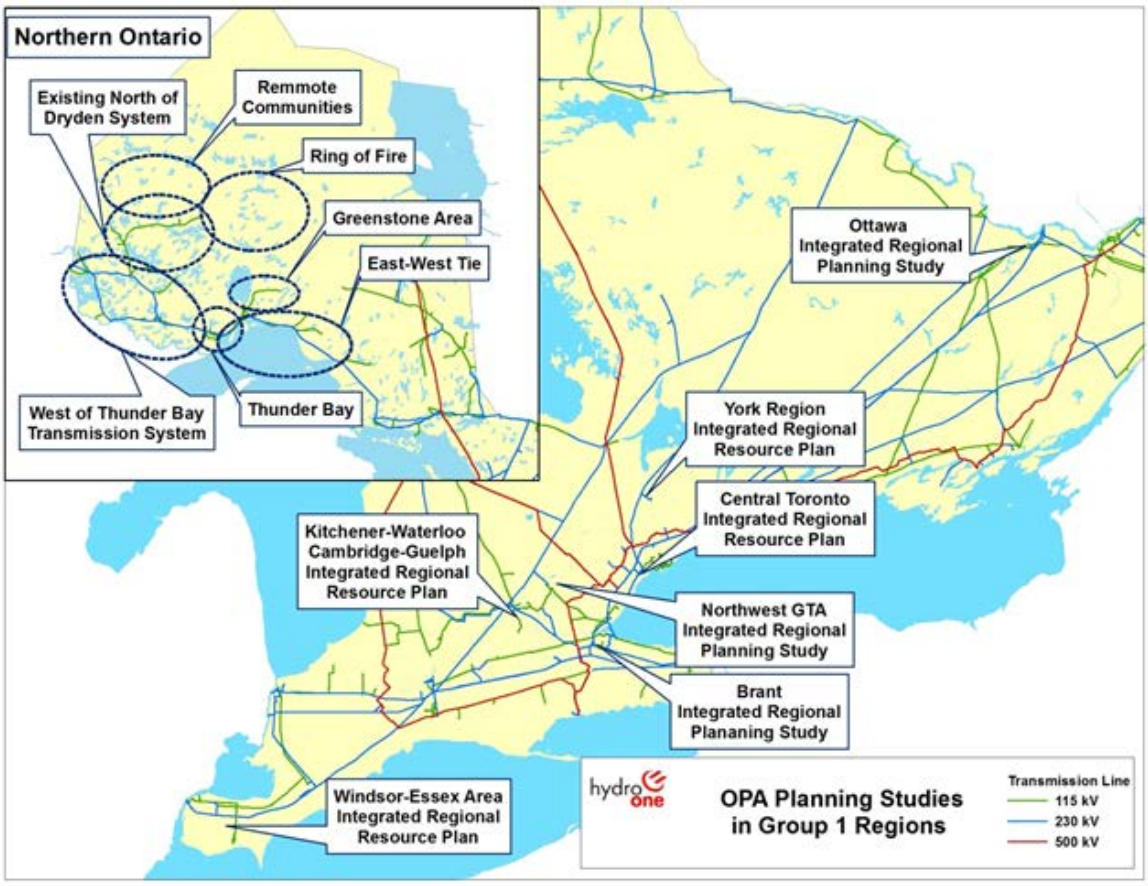


Figure 4-1: OPA Planning Studies in Group 1 Regions

4.1 Planning Activity in Transition

Figure 4-1 illustrates the transitional planning activities that were already undertaken prior to the RP coming into effect in late 2013. These planning activities were limited to the regions in Group 1 and were transitioned into the relevant phase of the RP. For those regions where earlier planning activities did not cover the entire region, separate subregions were identified. These subregions were then reviewed under the new process. The assessment of all subregions before and after the start of the RP will ultimately form a complete regional plan. For Group 1, there are subregions in every region with the exception of GTA East, KWCG, Northwest Ontario, and Windsor-Essex. The subregional breakdowns for the Group 1 regions are illustrated in Figure 4-2.

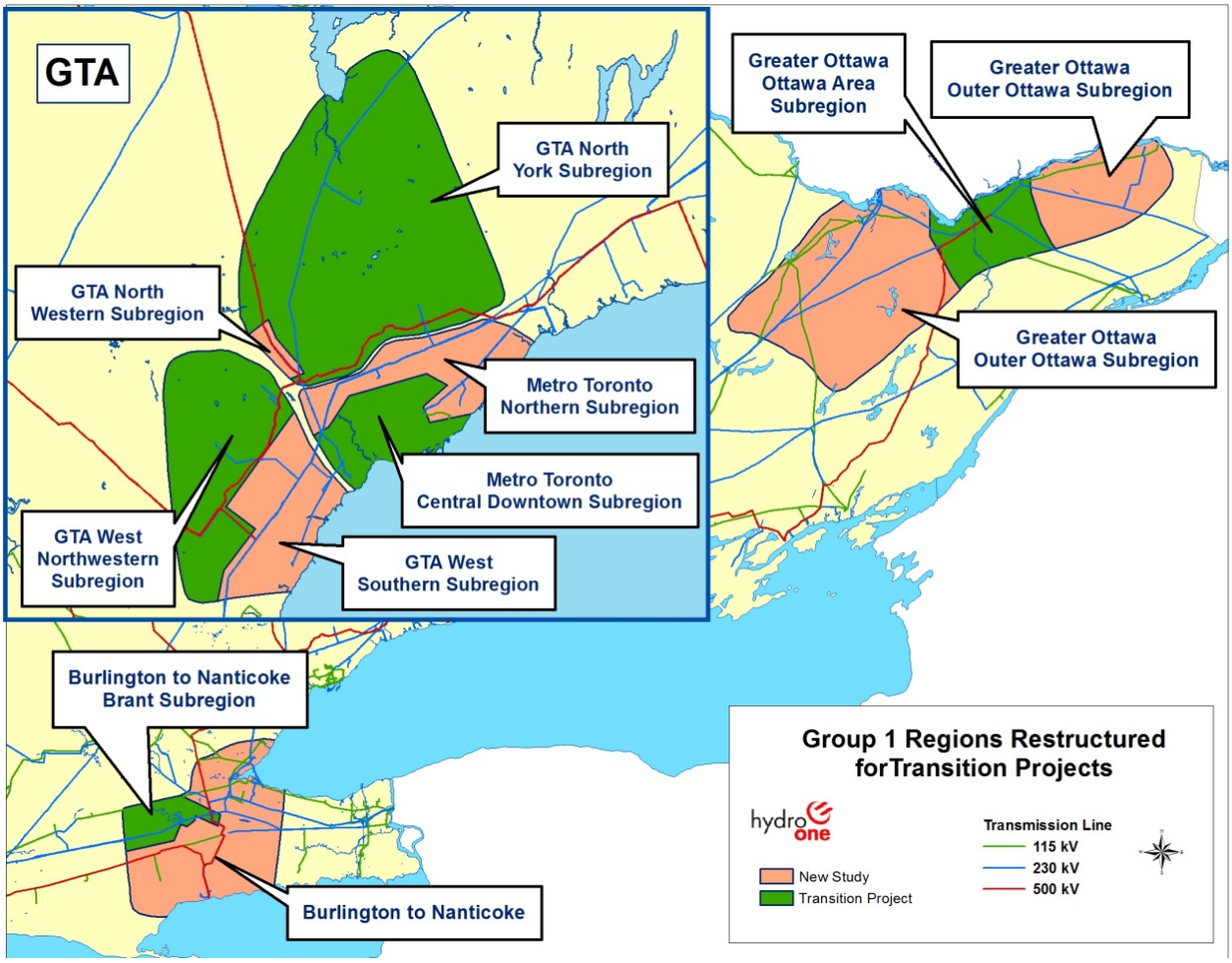


Figure 4-2: Group 1 Regions Restructured for Transition Projects

4.2 Burlington to Nanticoke Region

The NA phase for this region began on March 24, 2014 and the NA report (Appendix D) was completed on May 23, 2014. The planning activity for the Brant subregion was already underway prior to the RP process and the study team agreed that this subregion would be deemed to be in the IRRP phase.

The SA for the rest of the Region was completed on September 2014 and it was determined that an IRRP was required for one sub-area covering the Bronte area. The IRRP for the Bronte sub-area will assess the line connection and transformation capacity needs of the area. The SA identified other needs but the

study team felt these would be most appropriately addressed directly between the transmitter and affected LDC.

4.2.1 Brant Subregion

The planning activity for this subregion was already underway prior to the RP and the study team agreed that this subregion would be deemed to be in the IRRP phase. Hydro One along with the relevant LDCs and the IESO are participating in this process. In light of a recent new load forecast by LDCs that is significantly changed, assessment analysis and options are being updated. As a result, the timeline for the subregion's IRRP is being reviewed by the OPA. In the interim, the study team for this subregion has determined that a wires solution is essential in near-term to manage the 115 kV line connection capacity limitation and load reliability in the Brant subregion. As a result, the OPA has issued a handoff letter to Hydro One (Appendix G) to plan and begin implementation of a wires solution (reactive support) in consultation with the relevant LDCs. Hydro One worked with the LDCs to develop an implementation plan to install a capacitor bank at the LDC-owned station. It is expected that LDCs will complete the installation of the capacitor in 2015. With respect to the long term needs for this subregion, the Working Group is assessing CDM, DG, and wires options.

The IRRP report for this region is expected to be completed by the end of 2014.

4.3 Greater Ottawa Region

The Greater Ottawa region consists of two subregions: the Outer Ottawa Subregion and the Ottawa Subregion.

4.3.1 Outer Ottawa Subregion

The NA for this region began on May 26, 2014 and the NA report (Appendix D) was completed on July 25, 2014 and posted on Hydro One's RP website.

The study team determined that the needs identified for this subregion can be addressed directly by the transmitter and LDCs and further regional coordination is not required.

4.3.2 Ottawa Subregion

The planning activity for this subregion was already underway prior to the RP and was deemed by the study team to be in the IRRP phase. The IRRP study team has identified a set of recommended actions to meet near- and medium-term electricity capacity and reliability needs, including ongoing conservation efforts, connection of DG resources, as well as a number of station equipment and transmission line upgrades across the region. A handoff letter requesting the development of wire solutions was submitted by the OPA to Hydro One (Appendix G).

The IRRP report is scheduled for completion in early 2015.

4.4 GTA East Region

The NA for this region began on June 12, 2014 and the NA report (Appendix D) was completed on August 11, 2014 and posted on Hydro One's RP website. One sub-area covering the Pickering-Ajax-Whitby area was identified by the study team as needing to proceed to the SA phase. The SA phase for this sub-area is underway and is expected to be completed in November 2014. Other needs identified for the rest of the Region can be addressed directly by Hydro One and the relevant LDCs, and further regional coordination is not required.

4.5 GTA North Region

The GTA North region consists of two subregions: the York Subregion and the Western Subregion.

4.5.1 Western Subregion

The NA for this region began on April 27, 2014 and the NA report (Appendix D) was completed on June 27, 2014 and posted on Hydro One's RP website. Based on the findings of the NA, the study team determined that further coordinated regional planning is required to assess load restoration issues for the loss of two radial elements (230 kV circuits V43 and V44), and the OPA will coordinate the assessment of this need as part of GTA West Northern Subregion IRRP process currently underway. Other needs identified for the rest of the subregion will be addressed directly by Hydro One and the relevant LDCs, and further regional coordination is not required.

4.5.2 York Subregion

The planning activity for this subregion was already underway prior to the RP and the study team agreed that this subregion would be deemed to be in the IRRP phase. The study team identified preferred options and a set of recommended actions to meet near- and medium-term electricity supply capacity and reliability needs (e.g., ongoing conservation efforts, the implementation of the Holland TS, Parkway belt and Vaughan #4 MTS projects). In the situation where transmission is the preferred approach, the OPA issued a handoff letter to Hydro One (Appendix G) requesting the transmission options should be further developed. Hydro One is in the process of developing these transmission solutions for the York Subregion.

The IRRP report is also scheduled for completion in early 2015.

4.6 GTA West Region

The GTA West Region consists of two subregions: the Northwestern Subregion and the Southern Subregion.

4.6.1 Southern Subregion

The NA for this subregion began on May 30, 2014 and the NA report (Appendix D) was completed on June 1, 2014 and posted on Hydro One's RP website. The SA was completed on September 19, 2014.

Following the SA, the study team determined that needs identified can be classified under local needs to be addressed as part of local planning and needs that should be addressed as part of and bulk system planning. The local needs that are most appropriately met by wires solutions should be planned directly by Hydro One and the relevant LDCs. The needs that are bulk system in nature will be reviewed by the OPA and planned as part of its bulk system planning activity currently underway. No further coordinated planning is required for the subregion.

4.6.2 Northwestern Subregion

The IRRP for the GTA West, Northwestern Subregion is currently underway. A draft report is expected to be complete by the end of 2014. Following the release of this draft report, a stakeholder engagement process will be initiated in early 2015.

The final IRRP report is scheduled for completion in Q2 2015.

4.7 Metro Toronto Region

The Metro Toronto Region consists of two subregions: the Northern Subregion and Central-Downtown Subregion.

4.7.1 Northern Subregion

The NA for this region began on April 14, 2014 and the NA report (Appendix D) was completed on June 11, 2014 and posted on Hydro One's RP website.

The needs identified by the study team do not require further regional coordination and can be addressed directly by Hydro One and the relevant LDCs in the subregion.

4.7.2 Central-Downtown Subregion

The planning activity for this subregion was already underway prior to the RP process and was deemed to be in the IRRP phase by the study team. Of the near-term needs identified by the study team, a special protection scheme will be implemented to comply with reliability standards, along with new transformer stations/facilities in Toronto's west end to meet transformation capacity needs in the area. The OPA has issued a handoff letter to Hydro One (Appendix G), requesting that Hydro One further assess and develop transmission options to address the near-term transformation needs. A stakeholder engagement process was undertaken in September 2014 to inform stakeholders and the public of the needs identified, and to inform them about CDM, DG, and a need for transmission and distribution system enhancements in the subregion.

A draft IRRP report is scheduled for completion by the end of 2014.

4.8 Northwest Ontario Region

The Northwest is a large region with diverse needs and very different from other regions, because the needs are primarily driven by large transmission-connected industrial customers, as opposed to LDCs in the rest of the province. A number of planning activities led by the OPA for parts of this region were already underway prior to the RP coming into effect.

Hydro One, as a lead transmitter, initiated the NA process and discussed it with the study team representatives from Kenora Hydro Electric Corp., Fort Frances Power Corp., Atikokan Hydro Inc., Sioux Lookout Hydro Inc., Thunder Bay Hydro Corp., Chapleau Public Utilities Corp., Hydro One Distribution, the OPA, and the IESO. The study team determined that, consistent with the RP process, based on needs having already been identified as part of the OPA's planning activities for

the region, coordinated regional planning was required for the region. Accordingly, the study team agreed to move the process directly to the SA. As a result, the OPA initiated the SA on July 22, 2014 and it is expected to be completed by the end of 2014, within the combined mandated timelines for the NA and SA.

The planning for the North of Dryden Subregion was already underway prior to the RP and was transitioned to IRRP.

Since the posting of the draft North of Dryden Planning Report in 2013, the OPA has been conducting stakeholder and community engagement activities including: responding to written submissions, conducting a webinar (November 21, 2013), conducting municipal engagement from December 2013 to February 2014 (Pickle Lake, Greenstone, Red Lake, Sioux Lookout, Marathon, Dryden and Ignace) and aboriginal consultation (June 18-26, 2014). The OPA has also been delegated procedural aspects of the duty to consult and has been discharging this duty through regional sessions. The OPA has posted consultation material on its website.

4.9 KWCG Region

The planning activity for this region was already underway prior to the RP and the study team deemed it to be in the IRRP phase. The OPA has issued a handoff letter to Hydro One (Appendix G), requesting Hydro One to further develop transmission options and alternatives to address near- and medium-term needs in the region. Two transmission options were identified: the Guelph Area Transmission Reinforcement (**"GATR"**) project, and the second Preston auto-transformer project. The GATR Leave to Construct application filed by Hydro One has been approved by the Board. The development of these options and any resulting investments will ultimately become part of the RIP after an IRRP is complete.

A stakeholder engagement process was initiated by the OPA in July 2014 as part of their IRRP consultation process. The IRRP report is scheduled for completion in Q1 of 2015.

4.10 Windsor Essex

The OPA and Hydro One have been monitoring developments in the Windsor-Essex region since 2011. The planning activity for this subregion was deemed to be in the IRRP phase by the study team. The OPA recommended the Supply to Essex County Transmission Reinforcement ("**SECTR"**) project in conjunction with CDM and DG, as an integrated solution to address the supply in the Kingsville-Leamington area and to address the need for load restoration capability in the region. The study has identified the need for a new transformer station in Leamington, Leamington TS, to address near- and medium-term needs of the area. To facilitate this project, Hydro One submitted a Leave to Construct application to the Board in January 2014, for construction of 13 km of new 230 kV double-circuit line to supply the proposed Leamington TS.

The draft IRRP report is scheduled for completion by the end of 2014.

5 Activities Summary and Outlook

Based on the activities undertaken over the last twelve (12) months, Hydro One's perspective is that the RP is now actively underway and working as envisioned by the Board and PPWG. The RP's goal is for the development of timely and cost-effective electricity infrastructure through coordinated planning on a regional basis. Some of the key activities and observations are:

- Both Hydro One and the OPA have launched interlinked websites that provide a full and current picture of the RP for each region along with other related material (Appendix A).

- NA activities and the completion of NA reports for Group 1 were completed within the timelines mandated by the TSC and the subsequent

planning activity is now in different phases of the RP depending on the relevant needs and recommendations outlined in the NA reports. Since then, the SA for one region and one subregion has been completed and one new regional IRRP was also initiated. The SAs have all been completed within the TSC mandated timelines. At this time, no region is formally in the RIP phase yet. However, planning and development work for transmission projects that are required to address urgent or near-term needs are proceeding. The results of this work will be included in the RIP report for the respective regions. In addition, RP is also underway for two regions and five subregions that were transitioned to IRRP phase when the RP was launched.

NA has been initiated for four regions in Group 2. RP for Group 3 regions are expected to begin in mid-2015.

- The regional study teams expanded the type of information to be gathered as part of NA process. During the early stages, data reconciliation took little longer than anticipated, but as new defined processes and templates were introduced, the NA phase became streamlined and Code-mandated timelines have been met by each of the participants.

- Hydro One has issued thirteen (13) planning status letters to the LDCs (Appendix C) for their Cost of Service Rate Application.

- Hydro One conducted a survey of participating LDCs to obtain feedback, lessons learned and areas of improvement in the RP process. Survey results indicated that the process ensured adequate LDCs participation and that NA reports articulated the LDC requirements along with consensus of both the OPA and the IESO. Further details are found in Appendix B.

Hydro One's current projection is that regional planning activities for Group 1 regions will continue over the next six to twelve months to complete all the four phases of RP with the exception of the Northwest Ontario Region. It is expected

that RP for this region will be complete in 2016. For Group 2, with the exception of the East Lake Superior Region, Hydro One is the lead transmitter and has already commenced the NA process in October 2014. The expected completion of the RP for Group 2 is the end of 2016 to early 2017. Currently, there is no regional planning activity underway for regions in Group 3 and it is expected that the NA for this group will be initiated in Q3/Q4 2015. The RP for this final group is expected to be completed prior to August 26, 2017 as per Section 3C.4.4 of the TSC.

References

[1] Planning Process Working Group Report to the Board, "*The Process for Regional Infrastructure Planning in Ontario"*, March 13, 2013, revised May 17, 2013.

[2] Ontario Energy Board, "*Transmission System Code"*, Last Revised August 26, 2013 (Originally Issued on July 14, 2000).

[3] Ontario Energy Board, "*Distribution System Code"*, Last Revised August 26, 2014 (Originally Issued on July 14, 2000).

[4] Independent Electricity System Operator, "*Ontario Resource and Transmission Assessment Criteria*" (ORTAC), Issue 5.0, August 22, 2007.

Appendix

Appendix A

Regional Planning Website

A.1 Regional Planning Website

Consistent with the increasing transparency proposed in the PPWG report and subsequent TSC amendments, Hydro One developed a webpage in its website to serve as a public information access point in matters related to the RP.

The website address is www.hydroone.com/RegionalPlanning.

A.2 Purpose

The website is intended to inform the general public of the RP and will comply with Section 3C.2.2 items (d) and (f) of the TSC and reproduced below for convenience.

> *(d) within 10 days of completion of a needs assessment for a region, provide a report to the OPA, the IESO, and all licensed distributors and licensed transmitters within the region that reflects the results of the needs assessment, including the identity of the licensed distributors that will and will not need to be involved in further regional planning activities for the region, and post that report on its website;*

and

> *(f) where a scoping assessment identifies that a regional infrastructure planning process is required for a region, complete or update a Regional Infrastructure Plan for the region within six months of the date of receipt of the scoping assessment from the OPA, and post the Regional Infrastructure Plan on its website upon its completion;*

Figure A-1 shows the RP landing page. By clicking on the circle in the geographical region or the region name on a table below the map (not shown on the screen capture), the region specific information will be shown (Figure A-2).

A.3 Planning Region Description

The planning region description generally provides the municipal boundaries and the LDCs which supply the region. It also provides, if applicable, the breakdown of the region in terms of its subregions.

The geographical map for the region provides a simplified diagram of the power network with the main transformer stations in the region.

A.4 Regional Planning Status

The diagram illustrates the RP status of the region (or subregion) at a glance.

A.5 Relevant Documents

The NA and RIP reports mandated by the Board to be posted online are placed in this section of the webpage.

Also posted on this section are the OPA handoff letters and any other public documents which are directly relevant to RP process for the region.

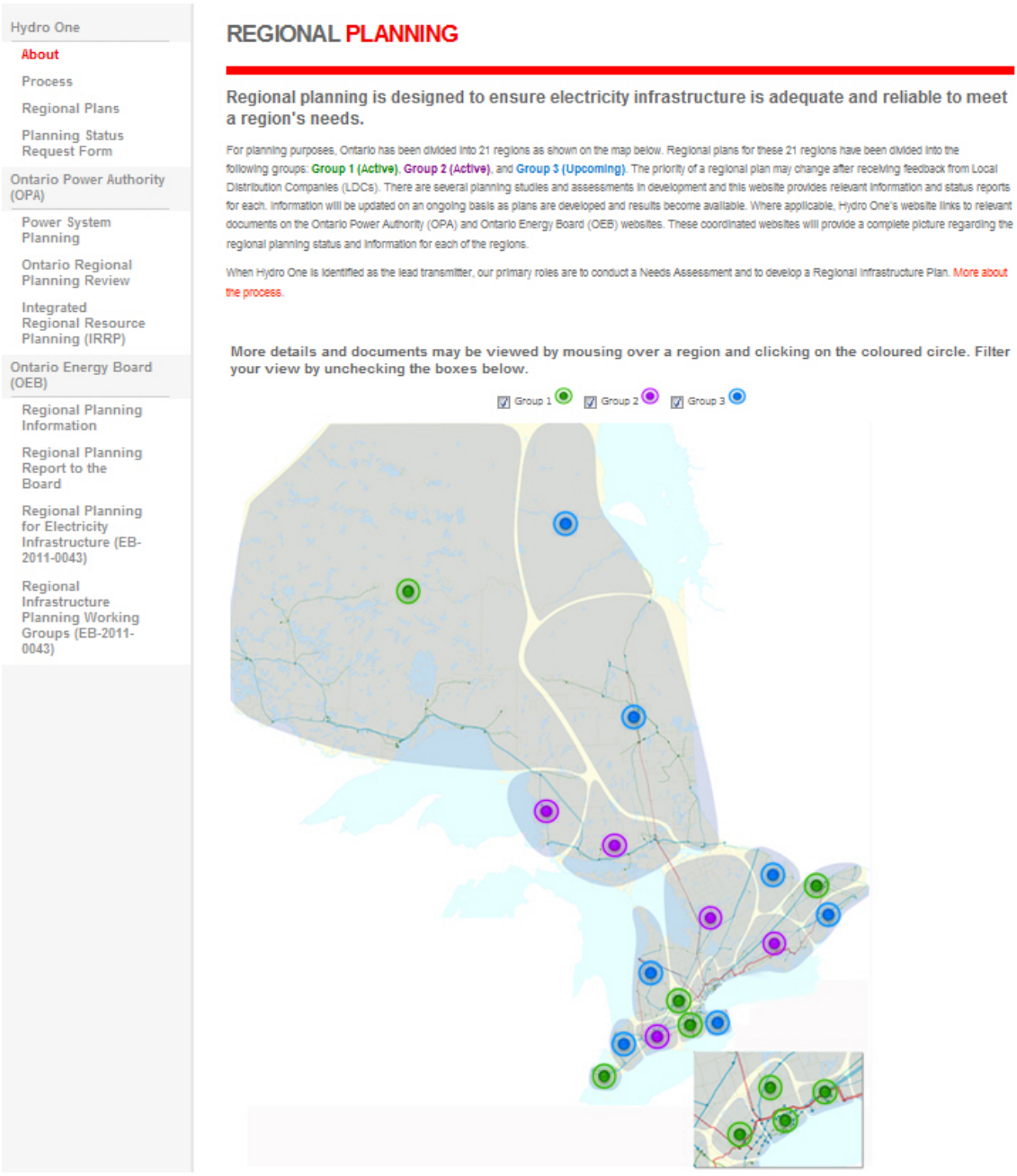


Figure A-1: Regional Planning Landing Page

Burlington to Nanticoke

Region Overview

Burlington to Nanticoke Region comprises the municipalities of Burlington, Hamilton, Oakville, Brantford, Brant County, Haldimand County, and Norfolk.

Region's Local Distribution Companies

Brant County Power Inc.	Horizon Utilities Corporation
Brantford Power Inc.	Hydro One Networks Inc.
Burlington Hydro Inc.	Norfolk Power Distribution Inc.
Haldimand County Hydro Inc.	Oakville Hydro Electricity Distribution Inc.

Brant Subregion

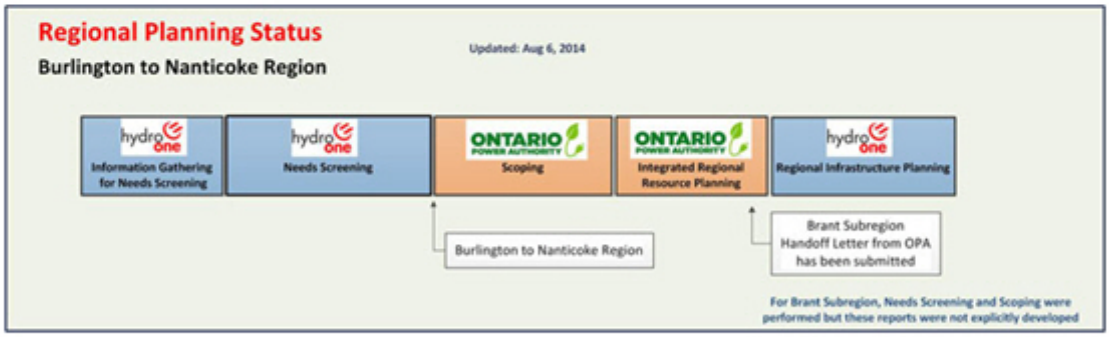
The area encompasses the County of Brant, City of Brantford and surrounding areas. This area has an estimated population of over 136,000 people, and the electricity demand mix is comprised of residential, commercial and industrial uses.

The electricity supply to this area is provided by three stepdown stations - Brant TS, Powerline MTS and Brantford TS. The coincident peak demand of the three stations in summer 2012 was approximately 250MW.

Current Status

The Needs Screening was completed on May 23, 2014 and the report is available on the **Relevant Documents** section below.

The Brant Subregion has an Integrated Regional Resource Plan (IRRP) under development. The OPA has issued a handoff letter to Hydro One requesting Hydro One, in consultation with relevant LDCs, to begin development of a wires solution to address near term needs in the Brant Area.



Click to enlarge (.JPG)

Relevant Documents

Name	Modified	File Size
Category : Needs Screening and Scoping Assessment (3)		
OPA_Letter_Burlington Nanticoke - Brant	April 16	136 KB
Scoping - Terms of Reference - Burl-Nant - Brant Subregion	April 17	10 KB
Needs Screening _Burlington to Nanticoke Region_May 23 2014 (FINAL)	June 6	351 KB

Figure A-2: Region Specific Information

Appendix B

LDC Survey

B.1 LDC Regional Planning Survey

Subsequent to the completion of the NA phase in Group 1, an effort was made to seek feedback from the LDCs. The purpose of this effort was to survey the LDCs which participated in the NA team and to identify if the report was successful in meeting the objectives laid out in the PPWG report, their participation to address their issues, and any lesson learned.

All LDCs which participated in the NA team were asked to rate their agreement (1-strongly disagree to 5-strongly agree) with the following statements:

- Your LDC was able to participate in the RP process as per the PPWG report and Code amendments.
- To date, your inputs were properly discussed and considered.
- Your LDC's needs were properly identified.
- To date, you were satisfied with the final reports.

The LDCs were also asked to identify and provide any changes or enhancements to the process.

B.2 Survey Results

The survey was conducted by sending out 28 survey forms to 17 LDCs. The reason for the number of forms being higher than the number of LDCs is due the participation of some LDCs in more than one regional NA team. Conceivably the same LDC could have had different experiences in different teams.

20 replies were received and the results were plotted on the graph in Figure B-1.

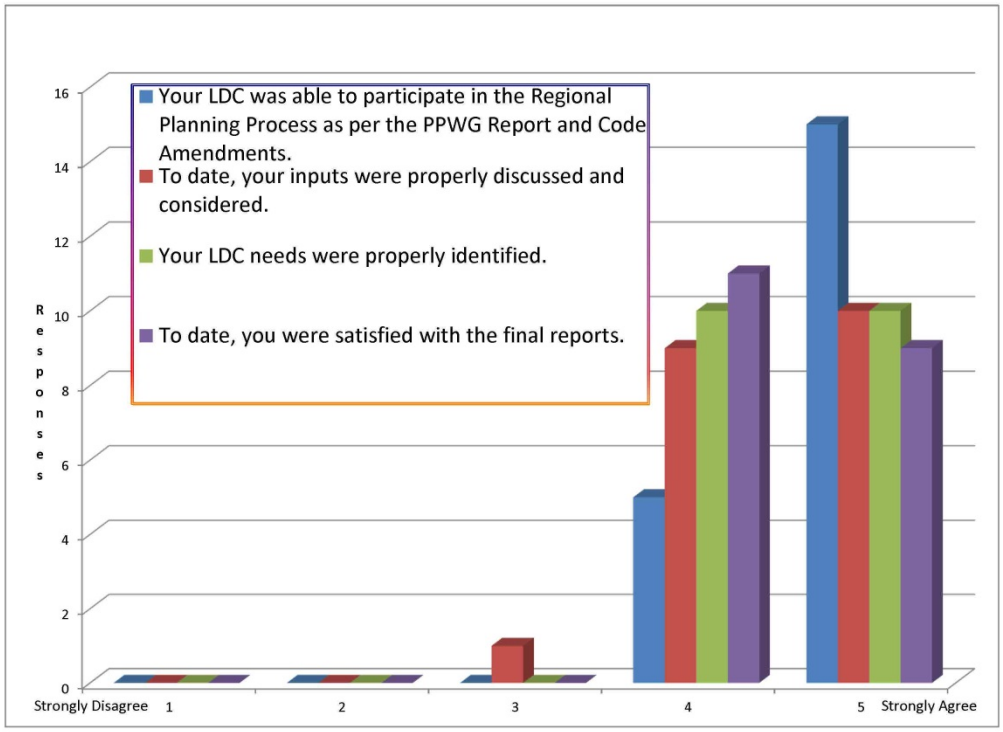


Figure B-1: Group 1 – LDCs Survey

As the graph illustrates, the responses suggests a consensus that, from the point of view of the LDCs, the objectives of the NA processes were met. LDCs acknowledged the transparency of the process and the opportunity to participate and be informed of the issues with neighboring LDCs.

A few of the survey responses regarding the process suggested better communication of the NA methodology and the sharing of LDC data in the region. These were followed up with the LDCs and relevant information was provided in an email from Hydro One acknowledging and/or clarifying the issue(s).

Appendix C

Transmitter Planning Status Letters

C.1 Planning Status Letters

The TSC requires that Planning Status Letters 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:

- Chapleau Public Utilities Corp.
- Cambridge North Dumfries Hydro Inc.
- EnWin Utilities Inc.
- Fort Frances Power Corp.
- Hearst Power Distribution Company Ltd.
- Hydro One Distribution Inc.
- Hydro One Brampton Networks Inc.
- Niagara on the Lake Hydro Inc.
- North Bay Hydro Distribution Limited
- Oshawa PUC Networks Inc.
- Oakville Hydro Electricity Distribution Inc.
- Veridian Connections Inc.
- Woodstock Hydro Services Inc.

Appendix D

Needs Assessment - Report Links

- **Burlington to Nanticoke**

http://www.hydroone.com/RegionalPlanning/Burlington/Documents/Needs%20Screening%20_Burlington%20to%20Nanticoke%20Region_May%2023%202014%20(FINAL).pdf

- **GTA West – Southern Subregion**

http://www.hydroone.com/RegionalPlanning/GTAWest/Documents/Needs%20Screening%20Report%20GTA%20West%20Southern%20Subregion.pdf

- **Metro Toronto – Northern Subregion**

http://www.hydroone.com/RegionalPlanning/Toronto/Documents/Needs%20Screening%20Report%20Metro%20Toronto%20Northern%20Subregion%20June%2011%202014%20(FINAL).pdf

- **GTA North – Western Subregion**

http://www.hydroone.com/RegionalPlanning/GTANorth/Documents/Needs%20Screening%20Report%20GTA%20North%20-%20Western%20Subregion%20June%2027%202014.pdf

- **Greater Ottawa – Outer Ottawa Subregion**

http://www.hydroone.com/RegionalPlanning/Ottawa/Documents/Needs%20Screening%20Report_Outer%20Ottawa%20SubRegion_%20July%2028%202014%20(FINAL).pdf

- **GTA East**

http://www.hydroone.com/RegionalPlanning/GTA_East/Documents/Needs%20Screening%20Report_GTA%20East%20Region_August%2011%202014%20(Final).pdf

Appendix E

Needs Assessment Data and Methodology

NA has two distinct phases, namely:

- Data Collection, and
- Study.

E.1 Data Collection Phase

This phase collects the initial data and information for the RP 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 E-1.

Table E-1: 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, OPA, IESO)	0
Face to Face Meeting	Discuss any data issues and provide preview of NA Process.	45
Data Collection Completed	Data stored for further processing	60

The bulk of the activities in this process take place between the kickoff email (trigger for Data Collection) and the face-to-face meeting around the 45th day of the 60-day process. 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 and the Codes 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.

E.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 RP 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.

E.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.

E.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 the RP consistent with the ORTAC. 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.

E.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.

E.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 process are identified in Table E-2. 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 E-2: Needs Assessment Study Phase

Key Activity	Description	Timeline from kickoff (days)
Kickoff Email	Inform study team participants of beginning of the NA process	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 RP 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 subregion 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 OPA 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.

E.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 subregional 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 subregion. 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.

E.3-1 Capacity Needs

The gross demand forecast is used to develop a worst case scenario to first identify regional or subregional 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.

E.3-1 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 F

OPA Scoping Assessment and IRRP Links

Table F-1: Links to OPA Scoping and IRRP References

Group	Region	Scoping	IRRP
1	Burlington to Nanticoke	http://powerauthority.on.ca/power-planning/regional-planning/burlington-nanticoke/burlington-nanticoke-scoping-assessment	
	Burlington to Nanticoke Brant Subregion		http://powerauthority.on.ca/power-planning/regional-planning/burlington-nanticoke/brant
	Greater Ottawa, Ottawa Subregion		http://powerauthority.on.ca/power-planning/regional-planning/greater-ottawa/ottawa
	GTA East	http://www.powerauthority.on.ca/power-planning/regional-planning/gta-east	
	GTA North, York Subregion		http://powerauthority.on.ca/power-planning/regional-planning/gta-north/york
	GTA West Northwestern Subregion		http://powerauthority.on.ca/power-planning/regional-planning/gta-west/nwgta
	GTA West Southern Subregion	http://www.powerauthority.on.ca/power-planning/regional-planning/gta-west/southern-sub-region	
	Kitchener-Waterloo Cambridge-Guelph		http://powerauthority.on.ca/power-planning/regional-planning/kwcg
	Metro Toronto, Central Downtown Subregion		http://powerauthority.on.ca/power-planning/regional-planning/toronto/central-downtown
	Northwest Ontario		http://powerauthority.on.ca/power-planning/regional-planning/northwest-ontario
	Windsor-Essex		http://powerauthority.on.ca/power-planning/regional-planning/windsor-essex

Appendix G

Handoff Letters from OPA to Hydro One

Table G-1: Links to Handoff Letters from OPA to Hydro One

Region	Links
Burlington to Nanticoke Brant Subregion	http://www.hydroone.com/RegionalPlanning/Burlington/Documents/OPA_Letter_Burlington%20Nanticoke%20-%20Brant.pdf
Greater Ottawa, Ottawa Subregion	http://www.hydroone.com/RegionalPlanning/Ottawa/Documents/Letter%20to%20H1%20RE%20Ottawa.pdf
GTA North, York Subregion	http://www.hydroone.com/RegionalPlanning/GTANorth/Documents/OPA%20Letter%20to%20Hydro%20One%20%20Regarding%20%20York%20Subregion.pdf
Kitchener-Waterloo Cambridge-Guelph	http://www.hydroone.com/RegionalPlanning/KWCG/Documents/OPA%20Letter%20to%20Hydro%20One%20%20Regarding%20KWCG.pdf
Metro Toronto, Central Downtown Subregion	http://www.hydroone.com/RegionalPlanning/Toronto/Documents/OPA%20Letter%20to%20Hydro%20One%20Regarding%20Central%20Toronto%20Subregion.pdf