

Scoping Assessment Outcome Report

Region: GTA East

Start Date: September 9, 2014

End Date:

December 15, 2014

1. Introduction

This Scoping Assessment Outcome Report is part of the Ontario Energy Board's ("OEB" or "Board") Regional Planning process. The Board endorsed the Planning Process Working Group's Report to the Board in May 2013 and formalized the process timelines through changes to the Transmission System Code and Distribution System Code in August 2013.

The purpose of the Scoping Assessment is to determine the type of planning approach that can best address the potential needs identified in the Needs Screening Report that require further regional coordination.

The Needs Screening is the first stage in the regional planning process and is initiated by the lead transmitter, Hydro One Networks Inc. ("Hydro One") in this case. The Needs Screening Report¹ for GTA East, issued on August 11, 2014, concluded that some needs in the Region may require regional coordination, and these needs should be reviewed further under the OPA-led Scoping Assessment process.²

The Scoping Assessment process further reviews the potential needs in the Region with the relevant Local Distribution Companies ("LDCs"), the transmitter and the IESO ("Regional Participants" or "Study Team"). This review includes information on potential wires and non-wires alternatives, to determine whether the OPA-led integrated regional resource plan ("IRRP") or the transmitter-led Regional Infrastructure Plan ("RIP") should be undertaken to address the needs. If localized wires-based solutions do not require further coordinated regional planning, the Scoping Assessment may also recommend that local planning between the transmitter and affected LDCs be undertaken to address certain needs.

This Draft Scoping Assessment Outcome Report:

- Defines any Sub-Regions within the GTA East Region ("Region") which have needs that may require regional coordination;
- Determines the appropriate regional planning approach and scope for each Sub-Region with identified needs that require regional coordination;
- Establishes a draft terms of reference in the case where an IRRP is the recommended approach for the Sub-Region(s); and
- Establishes a Working Group for any Sub-Region(s) recommended for an IRRP.

2. Team

The Scoping Assessment was carried out by the Regional Participants that were involved in the Needs Screening process, as follows:

- Ontario Power Authority ("OPA")
- Independent Electricity System Operator ("IESO")
- Hydro One Networks Inc. ("Hydro One Transmission")

¹ The Needs Screening Report for the GTA East Region can be found at:

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

² On January 1, 2015, the Ontario Power Authority ("OPA") merged with the Independent Electricity System Operator ("IESO") to create a new organization that will combine the OPA and IESO mandates. The new organization is called the Independent Electricity System Operator.

- Veridian Connections Inc. (“Veridian”)
- Whitby Hydro Electric Corporation. (“Whitby Hydro”)
- Hydro One Networks Inc. (“Hydro One Distribution”)
- Oshawa PUC Networks Inc. (“Oshawa PUC”)

3. Categories of Needs, Analysis and Results

The Needs Screening included a station capacity assessment over a 10-year study period for the 230 kV transmission facilities in the Region using the station summer peak demand forecast provided by the Study Team. Gross load forecast information was provided by the LDCs and a net load forecast was produced using the Conservation and Demand Management (“CDM”) and Distributed Generation (“DG”) forecast provided by the OPA.

The Needs Screening recommended that the Scoping Assessment process be undertaken for the area served by Cherrywood TS and Whitby TS; and that no further regional coordination is required for the area served by Thornton TS and Wilson TS.

Thus the GTA East Region can be divided into two Sub-Regions for the Scoping Assessment:

- **Pickering-Ajax-Whitby** which includes the area served by Cherrywood TS and Whitby TS and the 230 kV lines connecting transmission facilities in the area (includes most of the City of Pickering, Town of Ajax, and part of the Town of Whitby, and part of the Townships of Uxbridge and Scugog), and
- **Oshawa-Clarington** which includes the area served by Thornton TS and Wilson TS and the 230 kV lines connecting the transmission facilities (includes the City of Oshawa, part of the Municipality of Clarington and part of the Township of Scugog).

Based on the approximate service areas supplied by these stations, the area boundaries are as shown in Figure 1.

Figure 1: GTA East Region and Approximate Sub-Region Boundaries



Note: Some Whitby Hydro load is supplied by Thornton TS in Oshawa.

Source: OPA

The needs identified in the Pickering-Ajax-Whitby Sub-Region of the GTA East Region are subject to this Scoping Assessment process to determine the appropriate regional planning process going forward.

The needs identified in the Oshawa-Clarington Sub-Region will be addressed by Hydro One Networks and the relevant LDCs.

The needs to be addressed as part of this Scoping Assessment are as follows:

- station capacity at Cherrywood TS T7/T8 (230/44 kV),
- station capacity at Whitby TS T1/T2 (230/27.6 kV), and
- load restoration for the loss of two elements (230 kV circuits).

Available station capacity and feeder capacity utilization in the GTA East region was also recommended for review as part of further assessing the needs identified in the Needs Screening Report. The need for a new transformer station in Central Pickering to supply the planned Seaton community will also be reviewed.

Regional Overview

Descriptions of each need identified in the Needs Screening Report are described as follows. The time horizon considered in the Needs Screening was from 2014 to 2023 (10 years).

230 kV Connection Facilities

A. Needs Reviewed in the Scoping Assessment

The following station capacity needs were identified in the Needs Screening as requiring further review in the Scoping Assessment.

Cherrywood TS (230/44 kV transformers T7/T8) is forecast to slightly exceed its normal supply capacity based on the gross demand forecast starting in 2014 to 2023. However, the station capacity is expected to be adequate to meet the demand over the study period when considering the net demand forecast which includes the planned Provincial CDM targets for the area. The years 2014 and 2015 may have slight overloads until the planned CDM initiatives offset the expected load. It is noted that the step-down transformers at Cherrywood TS that supply the local demand in the GTA East Region are within the scope of this assessment. The bulk transmission and 500/230 kV autotransformer facilities also located at Cherrywood TS are not within the scope of this regional planning study (bulk system planning is conducted under a separate process).

Whitby TS (230/27.6 kV transformers T1/T2) is forecast to exceed its normal supply capacity based on the gross demand forecast from 2018 onwards. However, the station capacity is expected to be adequate to meet the net demand in 2018, until growth in the new Seaton community exceeds the station capacity. In the absence of a new station in the area to supply the new community load, the station capacity could be exceeded even after accounting for the effect of the planned CDM targets.

A new greenfield community named “Seaton” is planned to be developed in Central Pickering, within Veridian’s service territory, just north of the Cherrywood TS. Veridian has planned to supply this new

community load at 27.6 kV. Veridian has forecasted the gross demand for this new community to be approximately 5 MW starting in 2018 and increasing up to 75 MW by 2023. The existing stations in the area are not able to supply the entire projected new load. Hydro One and Veridian assessed the station capacity requirements and plans for a proposed new 230/27.6 kV station called “Seaton TS” prior to the new regional planning process. Further assessment will be undertaken as part of the regional planning process.

B. Needs Not Reviewed in the Scoping Assessment

The following station capacity needs were identified in the Needs Screening as not requiring further review under the Scoping Assessment or not requiring further action at this time.

Whitby TS (230/44 kV transformers T1/T2 and transformers T3/T4) is not forecast to exceed its normal supply capacity during the study period. Therefore, no further action is required at this time. It should be noted however that available capacity at this station would be considered as part of a solution to meeting needs at other stations in the Region forecasted to exceed their normal supply capacity during the study period.

Wilson TS DESN 1 (230/44 kV transformers T1/T2) is forecast to exceed its normal supply capacity in 2014 and 2017 through to 2023 under the gross demand forecast, and from 2018 to 2023 under the net demand forecast. It was agreed by the Regional Participants that transformation capacity relief is needed and further assessment is required through local planning between the transmitter and impacted LDCs.

Wilson TS DESN 2 (230/44 kV transformers T3/T4) is forecast to exceed its normal supply capacity from 2014 to 2023 under both gross and net demand forecasts. In the past, overloading at Wilson TS DESN 2 under certain conditions was significant enough that emergency rotating load shedding was required. It was agreed that relief is needed as soon as possible and that this need could be most efficiently assessed through local planning between the transmitter and the impacted LDCs.

Thornton TS (230/44 kV transformers T3/T4) is forecast to exceed its normal supply capacity based on the gross and net demand forecast from 2015 to 2023. Hydro One is scheduled to replace the two transformers at Thornton TS in 2015 as they are approaching their end-of-life. This will also eliminate the existing transformer gassing issue, but will not address the capacity needs at the station. It was agreed that transformation capacity relief is needed and that this need could be most efficiently assessed through local planning directly between the transmitter and the impacted LDCs.

Finally, with respect to the 230 kV connection facilities in the GTA East Region, the Needs Screening Report recommended that available station capacity and feeder capacity utilization be reviewed in the next stage of the regional planning process.

System Reliability, Operation and Restoration

No significant system reliability and operating issues were identified for this Region in the Needs Screening Report. Based on the gross coincident demand forecast, no load interruption would result from the loss of one element. The maximum load interrupted by configuration due to the loss of two elements is below the load loss limit of 600 MW throughout the 10-year study period reviewed in the Needs Screening Report.

For the loss of two elements (2 x 230 kV transmission circuits), the load interrupted by configuration may exceed 150 MW and 250 MW. The double circuit contingency to be addressed is the loss of circuits M29C and B23C, affecting supply to Whitby TS (T3/T4) and Wilson TS (post Clarington TS configuration) and the loss of H26C and H24C affecting supply to Whitby TS (T1/T2), Thornton TS, and some large transmission connected industrial customers in the Region.

The Study Team agreed that load restoration for the loss of M29C+B23C and H24C+H26C would be further assessed in the next stage of the regional planning process.

Based on information provided by Hydro One, the Thornton TS transformers (T3/T4) are scheduled for end-of-life replacement in 2015. No other significant sustainment plans are scheduled within the Region in the near-term.

Findings of the Scoping Assessment

The Regional Participants reviewed the GTA East regional needs and discussed next steps at a meeting on September 9, 2014. It was concluded in the meeting that in addition to wire-solutions, CDM and embedded generation solutions could address some of the needs that have been identified for the scoping assessment. It was proposed that the next step of the regional planning process of this Region would be an IRRP.

Based on a review of the findings of the Needs Screening, the Study Team determined that non-wires alternatives should be a consideration in overall planning of supply to the new Seaton community in Central Pickering. A review of potential energy management opportunities completed as part of the Master Environmental Servicing Plan for the Seaton community indicates that energy plans could have an impact on the ultimate size of a new TS to supply the area.³ New distributed generation at Cherrywood TS T7/T8, however, is currently restricted due to short circuit capacity constraints. The timing of the need for capacity relief at Whitby TS T1/T2 (27.6 kV supply), based on the findings of the Needs Screening, will depend on the forecasted load growth at the station, the timing of the new Seaton community load, and achievement of the CDM targets in the medium to long term. Therefore, non-wires alternatives assessed through an IRRP could defer station needs in the Sub-Region. Furthermore, continued strong growth is expected in the Town of Whitby, and Whitby Hydro may run out of 44 kV capacity to supply the growth by about 2026. Planning to address these needs if done in an IRRP would consider a 20-year planning horizon.

The scope of an IRRP would include a review of load restoration needs in the Sub-Region, to determine if a wires or non-wires option, or combination of the two, could address the need.

³ The Seaton Development Energy Management Plan can be accessed at:
<http://www.pickering.ca/en/cityhall/resources/energymgmtplanjuly09.pdf>

4. Conclusion

This Scoping Assessment concludes that an IRRP be undertaken to further assess the capacity and restoration needs in the Pickering-Ajax-Whitby Sub-Region of the GTA East Region.

The draft Terms of Reference outlining the study area, objectives, scope, data requirements, Working Group, accountabilities and schedule for the IRRP is attached.