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Mr. Bing Young
Director, Transmission System Development
Hydro One Networks Inc.
483 Bay Street
Toronto, Ontario M5G 2P5

RE: Initiating Near Term Transmission Components of the Central Toronto Integrated Regional Resource Plan

Dear Bing:

The purpose of this letter is to:

- Hand off from the Ontario Power Authority (OPA) the lead responsibility for the planning process associated with specific near term transmission components of the Central Toronto Integrated Regional Resource Planning (IRRP) process to Hydro One.
- Request that Hydro One initiate the implementation of wire(s) solutions to develop and implement specific near term transmission components of the integrated plan to meet near and medium term reliability needs of the central and downtown Toronto area, for which conservation and local generation are not technically viable alternatives.

This is consistent with the regional planning process endorsed by the Ontario Energy Board (OEB) as part of its Renewed Regulatory Framework for Electricity.

The Central Toronto IRRP Working Group (Working Group), consisting of staff from the OPA, the Independent Electricity System Operator (IESO), Hydro One and Toronto Hydro, has been conducting an IRRP process for the central Toronto area including downtown. The IRRP process investigates conservation, local generation, as well as wire(s) options (transmission and distribution) to meet the needs of an area.

The Working Group has established that certain near term reliability needs, based on the Independent Electricity System Operator's "Ontario Resource and Transmission Assessment Criteria" (ORTAC), cannot be met through the application of conservation and local generation solutions.

More detailed study and development work is required before recommended solutions can be proposed and implemented for these near term needs. Development of transmission components of the plan is best accomplished by the lead transmitter, Hydro One, leading these efforts as part fo the Working Group, and guided by the information and requirements provided below and in Attachment 1, from the IRRP process.

Supporting Information for Central Toronto Near-Term Projects:

The objectives and scope of the near term transmission components of the plan are provided in Attachment 1.

To facilitate the transition to the development of wire(s) solutions, the OPA will provide Hydro One with the following information:

- Summary of the needs that have been established
- Relevant system base cases
- Demand forecasts
- Conservation and distributed generation forecasts
- Preliminary assessments of some options
- Other relevant information upon request from Hydro One

We look forward to information, results and deliverables as part of the Working Group activities, and to continuing to work with and supporting Hydro One on the further development and implementation of these projects.

Best Regards,



Joe Toneguzzo
Director, Transmission Integration
Power System Planning Division
Ontario Power Authority

Copied: Central Toronto IRRP Working Group

Attachment 1

It should be noted that the following needs and observations have been established with the understanding that the supply for Horner TS would be changed from circuits R2K and R15K to circuits R2K and R13K, by the second quarter of 2014, as advised by Hydro One.

1.A Needs Requiring Immediate Implementation of Solutions

The near term need described in this section is based on the Independent Electricity System Operator's ORTAC, and it has been determined for this specific need, that CDM, local generation, or other electricity system initiatives are not technically feasible solutions.

- The outage of any two of the three 230/115 kV autotransformers at either the east or west yard of Manby TS can result in the overload of the remaining autotransformer. This outage can be caused by the failure of any of the following Manby TS breakers: A1H4, H1H4, or H2H3. Solutions are required as soon as possible to address the resulting overload to fulfill the requirements specified in ORTAC.

Some options that have been investigated on a preliminary basis by the Working Group include the following:

1. A Special Protection Scheme that can be armed if prevailing system conditions (normal and emergency) would result in loadings exceeding equipment ratings following the contingencies.
2. Re-termination of existing facilities at Manby TS to reduce the impact of breaker failure contingencies at Manby TS.

1.B Discretionary Near Term Observations to Enhance Supply to Downtown

- Double circuit contingencies involving the lines C2L/C3L or C16L/C17L from Cherrywood TS to Leaside TS can result in the loss of two of the three 230/115 kV autotransformers on the same half of Leaside TS. At present, if the steam-turbine generator at the Portlands Energy Centre is unavailable, and consequently is derated to the output of a single combustion unit, coincident with either of these double circuit contingencies, then curtailment of load would be required to respect the Long Term Rating of the remaining autotransformer. In addition, the voltage stability limit, based on 95% of the critical load of Leaside supplied facilities, is determined to be 1420 MW for this particular condition. This limit is forecast to be exceeded as early as 2021 (under a load forecast scenario which considers no new CDM beyond 2014), if limitations at Manby prevent load transfers to relieve Leaside autotransformer loading.

Some options that have been investigated on a preliminary basis by the Working Group include the following:

1. Re-termination of the incoming 230 kV Cherrywood to Leaside circuits to ensure that a C2L/C3L or a C16L/C17L double contingency does not result in the removal of two autotransformers from the same half of the Leaside 115 kV yard.
2. Modification of operating instructions to include closing the Leaside 115 kV bus-tie breakers following the loss of any two Cherrywood to Leaside circuits and/or two Leaside autotransformers if the Portlands Energy Centre steam turbine generator is unavailable.

It should also be noted that by addressing breaker failure contingencies at Manby TS, additional load transfer from Leaside to Manby would be available and could substantially reduce load curtailment requirements in the Leaside sector for C2L/C3L and C16L/C17L contingencies. Therefore, considerations for load transfer should be quantified and included in the assessments.

- The outage of two of the three Leaside to Bridgman circuits may result in overloading of the remaining circuit, and unacceptable voltages at Bridgman TS. This outage can be caused by the failure of breaker L14L15 at Leaside TS.

The following options have been investigated on a preliminary basis by the Working Group and include the following, which are not necessarily mutually exclusive:

1. Special Protection Scheme that can be armed if prevailing system conditions would result in loading exceeding equipment ratings following the outage of two Leaside to Bridgman circuits.
2. Re-termination of L14W or L15W to ensure that no two circuits supplying Bridgman share a common breaker.

1.C Other Observations and Assessments from the IRRP Review for Consideration

In addition to the above near term needs, a number of other observations are identified for consideration to enhance the level of service and should be considered in developing the solutions to address the needs identified in 1.A. It should be noted that these observations do not represent criteria violations; however, consistent with ORTAC Section 7.4, the customer and transmitter can agree to a higher level of reliability “for technical, economic, safety, and environmental reasons.”

These observations are:

1. Supply to Duplex TS, Glengrove TS, and Leaside DESNs in the event of the loss of Leaside TS, including considering feasible load transfers, operating measures, and/or the use of temporary facilities.

2. Supply to Manby DESNs for the loss of Manby TS, including considering feasible load transfers, operating measures, and/or the use of temporary facilities.
3. Enhance the transfer capability from the Leaside sector to Manby sector, including considering the uprating of the limiting sections of 115 kV circuit H2JK and/or providing additional 115 kV circuits between John TS and Hearn station.
4. Enhance the load-meeting capability to respect the loss of two adjacent 115 kV circuits on the multi-circuit 115 kV tower lines in the Manby East and West sectors, which are not anticipated to be defined as Bulk Electric System (BES) facilities by the NERC Transmission Planning Standards, to provide an equivalent standard of reliability as compared to those applied to the Leaside sector (largely anticipated to be BES).
5. Enhance load restoration capability, to mitigate the impact of extreme contingency events, such as the complete loss of Manby TS or Leaside TS.

END of LETTER

