

August 13, 2010

Mr. Frank Risi
Sustainment Manager - Transmission Stations Planning
Hydro One Networks
483 Bay Street
Toronto, Ontario
M5G 2P5



Dear Mr. Risi:

***Replace failed breaker H1L15 at Manby TS
Notification of Conditional Approval of Connection Proposal
CAA ID Number: 2010-EX503***

Thank you for the information regarding the replacement of the failed circuit breaker H1L15 at Manby TS.

We have concluded that the proposed changes will not result in a material adverse impact on the reliability of the integrated power system.

The IESO is therefore pleased to grant **conditional approval** for the modifications detailed in the attached assessment report. Any material changes to your proposal may require re-assessment by the IESO in accordance with Market Manual 2.10, and may nullify your conditional approval.

Final approval to connect the equipment to the IESO-controlled grid will be granted upon successful completion of the IESO Market Entry process including, without limitation, satisfactory completion of the requirements set out in the System Impact Assessment report. During this process you will be expected to demonstrate that you have fulfilled the requirements and that the facilities you have installed are materially unchanged from the proposal assessed by the IESO. Please refer to the '**External Guidelines for Connection to the IESO**' attachment in your approval email for key steps in the Market Entry process. In order to initiate this process, please contact Market Entry at market.entry@ieso.ca as soon as possible prior to your energization date.

For further information, please contact the undersigned.

Yours truly,

Barbara Constantinescu
Manager – Market Facilitation
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cc: IESO Records

All information submitted in this process will be used by the IESO solely in support of its obligations under the *Electricity Act, 1998*, the *Ontario Energy Board Act, 1998*, the *Market Rules* and associated policies, standards and procedures and in accordance with its licence. All information submitted will be assigned the appropriate confidentiality level upon receipt.

**Final Report - Expedited System Impact Assessment
Hydro One Networks**

1.0 GENERAL DESCRIPTION & PROPOSED MODIFICATIONS

Hydro One proposes to replace a failed circuit breaker H1L15 at Manby TS. The scheduled in-service date is August 15, 2010.

2.0 TECHNICAL SPECIFICATIONS

Specifications for the original and replacement breaker are shown in the table below.

Manby TS		
	Existing H1L15	Replacement H1L15
Configuration	three phase	three phase
Nominal kV	253	250
Maximum kV	260	to be advised
Interrupting Medium	Oil	SF6
Continuous Current Rating (A)	3000	3000
Short Circuit Symmetrical Duty (kA)	70	63

3.0 REQUIREMENTS

The proponent must notify the IESO as soon as it becomes aware of any changes to the assumptions made in the connection assessment. The IESO will determine whether these changes require a re-assessment.

Maximum Voltage

Appendix 4.1, reference 2 of the Market Rules states that under normal conditions voltages are maintained within the range of 220 kV to 250 kV. Thus, the IESO requires that the 230 kV equipment in Ontario must have a maximum continuous voltage rating of at least 250 kV.

Fault interrupting devices must be able to interrupt fault current at the maximum continuous voltage of 250 kV.

Fault Levels

The Transmission System Code (TSC), Appendix 2 establishes maximum fault levels for the transmission system. For the 230 kV system the maximum 3 phase symmetrical fault level is 63 kA and the single line to ground (SLG) symmetrical fault level is 80 kA (usually limited to 63 kA).

The TSC requires that new equipment be designed to sustain the fault levels in the area where the equipment is installed.

The TSC requires that new equipment be designed to sustain the fault levels in the area where the equipment is installed. If any future system enhancement results in an increased fault level higher than the equipment’s capability, the connection applicant is required to replace the equipment at their own expense with higher rated equipment capable of sustaining the increased fault level, up to the TSC’s maximum fault level for the 230 kV system.

IESO Monitoring Requirements

In accordance with the telemetry requirements for transmitters (see Appendices 4.16, 4.20 and 4.21 of the Market Rules) the connection applicant must install equipment at this project with specific performance standards to provide telemetry data to the IESO. The data is to consist of certain equipment status and operating quantities which will be identified during the IESO Market Entry Process. For this proposed project, the IESO will continue to require the status associated with the replacement breaker.

Protection Requirements

Protection systems must be designed to satisfy all the requirements of the Transmission System Code as specified in Schedules E, F and G of Appendix 1 and any additional requirements identified by the transmitter. New protection systems must be coordinated with existing protection systems.

Facilities designated as essential to power system reliability must be protected by two redundant protection systems according to section 8.2.1a of the TSC. These redundant protection systems must satisfy all requirements of the TSC but in particular they may not use common components, common battery banks or common secondary CT or PT windings.

Manby TS is designated as essential to power system reliability and therefore the above protection requirements apply.

Protective relaying must be set to ensure that transmission equipment remains in-service for voltages between 94% of the minimum continuous and 105% of the maximum continuous values in the Market Rules, Appendix 4.1.

The Applicant is required to have adequate provision in the design of protections and controls at the facility to allow for future installation of Special Protection Scheme (SPS) equipment.

Please send documentation for protection changes triggered by new or modified primary equipment (i.e. new or replacement relays) to connection.assessments@ieso.ca. For protection changes that are not associated with new or modified equipment (i.e. protection setting changes) please send documentation to protection.settings@ieso.ca.

Facility Registration/Market Entry Requirements

The connection applicant must complete the IESO Facility Registration/Market Entry process in a timely manner before IESO final approval for connection is granted.

As part of the IESO Facility Registration/Market Entry process, the connection applicant must provide evidence to the IESO confirming that the equipment installed meets the Market Rules requirements and matches or exceeds the performance predicted in this assessment.

Provided that the TSC requirements are satisfied, the IESO does not have additional requirements.

4.0 ASSESSMENT & CONCLUSIONS

The new breaker has a lower fault capability than the failed breaker but is still within the 63 kA limit established by the TSC. For the current and near-term planned system configuration with known projects coming into service, this reduced fault capability of 63 kA is adequate. However, if in the future this particular breaker is found to be limiting, Hydro One may be required to replace it with a breaker that is rated at 70 kA, similar to most of the other breakers in this station.

This expedited System Impact Assessment concludes that the breaker replacement is not expected to have a material adverse impact on the IESO-controlled grid.