March 26, 2009
Final Draft Report
Expedited System Impact Assessment
Hydro One Networks Inc.

1.0 GENERAL DESCRIPTION & PROPOSED MODIFICATIONS

Hydro One previously received approval via CAA ID# 2004-EX196 to replace breakers at Nanticoke TS that were considered to be at the end of their useful life.

A number of disconnect switches are also being replaced. This assessment addresses those switches.

2.0 TECHNICAL SPECIFICATIONS

The technical specifications of the replacement disconnect switches are given below.

Nanticoke TS						
Identifier	**Continuous Voltage Rating (Nominal)**		**Continuous Current Rating**		**Short Circuit Current Rating**	
	Existing Equipment	Replacement Equipment	Existing Equipment	Replacement Equipment	Existing Equipment	Replacement Equipment
59-N1M	230 kV	Details are not currently available and will be provided prior to equipment being put in service	3000 A	Details are not currently available and will be provided prior to equipment being put in service	Details not known	Details are not currently available and will be provided prior to equipment being put in service
59-N22J	230 kV		2000 A			
K1L1-1	230 kV		3000 A			
L1L22-1	230 kV		3000 A			
L1L22-22	230 kV		3000 A			
P1L22-22	230 kV		3000 A			

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.

Appendix 4.1, reference 2 states that equipment on the 230 kV grid may be exposed to voltages as high as 250 kV. In addition, some recognized contingencies (e.g. load shedding, open line end) can cause a temporary voltage increase above the maximum continuous voltage of 250 kV. For these conditions, connection equipment may be exposed to voltages above the maximum continuous voltage of 250 kV for the short period of time that it takes the IESO to direct operations to restore a normal voltage profile, and to prepare for the next contingency. This re-preparation period will be as short as possible, but it will not take longer than 30 minutes. Therefore, the IESO requires that 230 kV connection equipment in southern Ontario:

- must have a maximum continuous voltage rating of at least 250 kV; and
- must remain in service and not automatically trip for voltages up to 5% above the maximum continuous voltage or 262.5 kV, for up to 30 minutes, to allow the system to be re-dispatched to return voltages to their normal range.

The Transmission System Code (TSC) indicates that the transmission system has to be designed to sustain short circuit currents of 63 kA for the 230 kV system.

The Market Rules (Chapter 4 section 7.4) require that each transmitter shall provide the IESO on a continual basis with on-line monitored status as specified in Appendix 4.16. Hydro One will be required to continue to meet the IESO's on-line monitoring requirements for these disconnect switches.

Hydro One must provide the maximum voltage ratings, the continuous current ratings and the short circuit capability ratings for the replacement disconnect switches prior to receiving approval to connect from the IESO.

4.0 ASSESSMENT & CONCLUSIONS

The choice of installing disconnect switches whose short circuit capability is lower than the TSC requirements is a risk assumed completely by Hydro One who must ensure that the short circuit current seen by these disconnect switches does not exceed the short time rating of the new equipment. Should future system changes result in fault currents greater than the installed switch ratings, Hydro One will be required to change these disconnect switches at their expense.

Short circuit ratings and maximum voltage ratings are not available for the disconnect switches that are being refurbished. These ratings must be provided by Hydro One prior to receiving final approval to connect from the IESO.

It can be concluded that these replacements will have no material adverse impact on the integrated power system subject to the requirements outlined in this assessment.