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On Demand.  
Station A, Box 4474  
Toronto, ON  
M5W 4E5

February 9, 2011

Mr. Andrew Henry, P. Eng.  
Division Manager, Regional Water Supply  
Lake Huron primary Water Supply System  
c/o City of London Regional Water Supply Division  
235 North Centre Rd., Suite 200  
London, ON  
N5X 4E7

Dear Mr. Henry

***Replace Circuit Switcher at Lake Huron Water Treatment Plant  
Notification of Conditional Approval of Connection Proposal  
CAA ID Number: 2010-EX488***

Thank you for the information regarding the replacement of one of the main circuit switchers at the Lake Huron Water Treatment Plant.

We have concluded that the proposed change 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 modification 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 facility 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 facility you have installed is 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](mailto: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  
Telephone: (905) 855-6406  
Fax: (905) 855-6372  
E-mail: [barbara.constantinescu@ieso.ca](mailto:barbara.constantinescu@ieso.ca)  
cc: IESO Records

**Final Report - Expedited System Impact Assessment**

**Lake Huron Primary Water Supply System, c/o City of London Regional Water Supply System**

**1.0 GENERAL DESCRIPTION & PROPOSED MODIFICATIONS**

The incoming circuit switcher T1L7S at the Lake Huron Water Treatment Plant is being replaced due to end of life.

The Lake Huron Water Treatment Plant is connected to the 115 kV line L7S. This work is scheduled to be completed by May 2011.

**2.0 TECHNICAL SPECIFICATIONS**

The technical specifications of the replacement circuit switcher is given below.

<b>New Circuit Switcher at the Lake Huron Water Treatment Plant</b>	
<b>Nomenclature</b>	T1L7S
<b>Configuration</b>	3 phase
<b>Maximum Rated Voltage</b>	127 kV
<b>Continuous Current Rating</b>	1200 A
<b>Short Circuit Symmetrical Duty Rating</b>	20 kA

**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 Requirements**

Appendix 4.1, reference 2 of the Market Rules states that under normal conditions voltages in southern Ontario are maintained within the range of 113 kV to 127 kV. Thus, the IESO requires that the 115 kV equipment in southern Ontario must have a maximum continuous voltage rating of at least 127 kV.

Fault interrupting devices must be able to interrupt fault current at the maximum continuous voltage of 127 kV.

**Fault Level Requirements**

The Transmission System Code (TSC), Appendix 2 establishes maximum fault levels for the transmission system. For the 115 kV system the maximum 3 phase symmetrical fault level is 50 kA and the single line to ground (SLG) symmetrical fault level is 50 kA.

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 115 kV system.

**Circuit Switcher Requirements**

The TSC states in section 10.5.5 that "when circuit switchers are used, the interrupter and disconnect switch shall operate independently. Protection systems that trip the interrupter shall simultaneously initiate opening of the disconnect switch."

The TSC also states in section 10.5.6 that "the direct current voltage supplied to the interrupter and disconnect switch shall be fed from separately fused and monitored direct current supplies: that is, by two direct current cables to the control cabinet."

**Protection Requirements**

New protection systems must be coordinated with existing protection systems and must be designed to satisfy the requirements of the Transmission System Code (TSC).

Send documentation for protection changes triggered by new or modified primary equipment (i.e. new or replacement relays) to [connection.assessments@ieso.ca](mailto:connection.assessments@ieso.ca).

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

**4.0 ASSESSMENT & CONCLUSIONS**

The short circuit level at Seaforth TS is 13.0 kA (single phase symmetrical) with known projects coming into service and therefore this breaker fault capability of 20 kA is acceptable.

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