

June 28, 2006

Mr. John Fetzer

Hydro Ottawa  
1970 Merivale Road  
Nepean Ontario  
K2G 6Y9

Dear Mr. Fetzer,

***Notification of Conditional Approval of Connection Proposal  
Nepean Epworth MTS 58T2 Transformer Replacement  
CAA ID Number: 2006-EX280***

Thank you for the detailed information regarding the replacement of the three phase transformer 58T2 at Nepean Epworth MTS with a new three phase transformer. The existing disconnect switch 58T2-L and fuses 58T2L-X will also be replaced with a load breaking circuit switcher 58T2-52-L1.

From the information provided, our review concludes that the proposed changes will not result in a material impact on the reliability of the IESO-controlled grid. 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 will be granted upon successful completion of the IESO Facility Registration 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 the modification is in line with the proposal assessed by the IESO. Please contact [market.entry@ieso.ca](mailto:market.entry@ieso.ca) if you have not received a Facility Registration Summary package within the next 10 days.

For further information, please contact the undersigned.

Yours truly

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cc: IESO Records

**Hydro Ottawa Networks acknowledges receipt of the System Impact Assessment Report setting out the IESO requirements for final approval, and commits to fulfill these requirements, and all other applicable Market Rules, before receiving final approval to connect to the IESO-controlled grid.**

**Dated:** \_\_\_\_\_

**Per:** \_\_\_\_\_

**Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**ASSESSMENT SUMMARY**

Hydro Ottawa Networks Inc.

**1.0 GENERAL DESCRIPTION**

Transformer 58T2 at Nepean Epworth MTS is scheduled to be replaced with an in-service date of January 2007. The existing disconnect switch 58T2-L and fuses 58T2L-X will be replaced with a load breaking circuit switcher. The existing configuration is shown in Figure 1.

**2.0 PROPOSED MODIFICATION**

2.1 A comparison of the technical specifications between the existing and replacement transformers is given below. Original 58T2 data was taken from your email for use in this assessment.

Nepean Epworth MTS (NF40T2/T3)	Existing 58T1	Existing 58T2 to be removed	Replacement 58T2
<b>Configuration</b>	three phase	three phase	three phase
<b>Transformation (kV)</b>	112.75 / 8.32 / 4.8	110 / 8.32 / 4.8	115 / 8.32 / 4.8
<b>Winding Configuration</b>	HV delta / LV grounded wye	HV delta / LV grounded wye	HV delta / LV grounded wye
<b>Thermal Rating</b>	8.4 MVA ONAN 11.2 MVA ONAF 14.0 MVA ONAF	6.0 MVA ONS 10.0 MVA ONP 11.2 MVA ONP	8.4 MVA ONAN 11.2 MVA ONAF 14 MVA ONAF
<b>Continuous Thermal Rating (summer 30°C)</b>	Unknown	Unknown	Not tested yet
<b>15 Minute Thermal Rating (summer 30°C)</b>	Unknown	Unknown	Not tested yet
<b>10 Day Thermal Rating (summer 30°C)</b>	Unknown	Unknown	Not tested yet
<b>Positive Sequence Impedance (H-X)</b>	R= 55kW total at 8.4 MVA Z = 11.2% on 8.4 MVA base	R = 49 kW total at 6 MVA Z = 8.4% on 6.0 MVA base	R = 55 kW total at 8.4MVA (guaranteed by mfr) Z = 11% min on 8.4 MVA base (specified)
<b>Impedance to Ground</b>	Solidly grounded	solidly grounded	solidly grounded
<b>On-load tap-changer</b>	LV ± 10%, 32 steps	LV ± 10%, 32 steps	LV ± 10%, 32 steps
<b>Off-load tap-changer</b>	none	HV +7.5% -2.5% 5 steps	none
<b>In service off-load tap position</b>	None	Not available	Not available
<b>Manufacturer</b>	Siemens (Rewind)	General Electric	Northern Transformer
<b>Serial #</b>	EN58752	284977	

## Nepean Epworth MTS 58T2 Transformer Replacement (CAA ID Number: 2006-EX280)

2.2 A comparison of the technical specifications between the existing disconnect switch and fuses and the replacement load breaking circuit switcher is given below.

Nepean Epworth MTS (NF40T2/T3)	Existing 58T2-L Disconnect switch assumed identical to 58T1-L	Existing 58T2-LX Fuses assumed identical to 58T1-LX	Replacement 58T2-52-L1 Load breaking disconnect switch
<b>Configuration</b>	three phase	Three phase	three phase
<b>Nominal</b>	115 kV	115 kV	115 kV
<b>Maximum Design BIL</b>			138 kV (specified)
<b>Continuous Current</b>	600 A		600 A (specified)
<b>Momentary Current</b>			64 kA (specified)
<b>Rated Short Time Withstand Current</b>			40 kA for 1 sec (specified)
<b>Load Interrupting Current</b>			20 kA (specified)
<b>Switching Duty</b>	Non-load break, disconnect only		Load breaking circuit switcher. No reclose.
<b>Manufacturer</b>	EPD	S & C	
<b>Type</b>		80EA, SMD-2C, TCC 153-1	

### 3.0 ASSESSMENT

The information provided by Hydro Ottawa shows that the technical characteristics of the replacement transformer are similar to the existing transformer. The new unit has similar positive sequence impedance and a higher thermal rating.

The old transformer 58T2 had both an on-load tap-changer on the LV side and an off-load tap-changer on the HV side. The new transformer 58T2 will have an on-load tap-changer identical to the existing 58T1. The end result will be a smaller voltage range than provided by the old transformer's on-load tap-changer, however, the voltage range will be identical to the existing transformer 58T1.

The new load breaking circuit switcher (**58T2-52-L1**) appears to be rated higher than the existing disconnect switch and fuses being removed. Hydro Ottawa must ensure that the short circuit current seen by this switcher does not exceed 64 kA for the current system configurations.

This replacement represents a like-for-like exchange and improvement of existing equipment and will have no material adverse effect on the IESO-controlled grid.

### 4.0 CONCLUSIONS AND REQUIREMENTS

It can be concluded that the replacement transformer and circuit switcher will not result in a material adverse effect on the reliability of the IESO-controlled grid subject to the following conclusions and requirements:

- § The impedance of the replacement transformer is similar to the existing transformer;
- § The thermal rating of the replacement transformer is higher than that of the existing transformer;
- § The replacement transformer is equipped with on-load tap-changer positions identical to the on-load tap-changer on the old transformer but has no off-load tap-changer positions;
- § The new transformers will be required to be able to operate continuously at a system voltage of 127 kV, as required by the Market Rules;
- § The rating of the new circuit switcher meets the Market Rules requirements for maximum continuous voltage and the Transmission System Code requirements for maximum momentary current.

## **Nepean Epworth MTS 58T2 Transformer Replacement (CAA ID Number: 2006-EX280)**

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.

Hydro Ottawa is required to meet the transmitter's requirements with respect to protection systems for the new transformer and coordination with the existing protection systems, as outlined in the Transmission System Code.

The Market rules (Chapter 4 section 7.5) require that distributors shall provide the IESO on a continual basis with on-line monitored status and quantities as specified in Appendix 4.17. For this proposed project, the IESO will continue to require the manual status associated with the new circuit switcher (58T2-52-L1) and all quantities currently being monitored by the IESO.

### ***5.0 NOTIFICATION OF APPROVAL***

This expedited System Impact Assessment concludes that the installation of a replacement transformer 58T2 and the new circuit switcher (58T2-52-L1) is not expected to have a material adverse effect on the IESO-controlled grid. It is therefore recommended that a Notification of Approval of the Connection Proposal be issued, subject to the requirements detailed above.