IESO Expedited System Impact Assessment
A4L - REPLACE 115 KV SWITCHES
2017-EX930
FINAL REPORT

Executive Summary

Project Description

Hydro One Networks Inc. (the "connection applicant" and "transmitter") is proposing the following replacements on 115 kV circuit A4L (the "project"):

- Replace the existing 115 kV opener switch A4L-1 with new 115 kV structure-mounted disconnect switch at A. P. Nipigon Junction (Jct.);
- Replace the existing 115 kV opener switch A4L-3 with new 115 kV structure-mounted disconnect switch at Jellicoe DS # 3 Jct..

The project work is scheduled to be completed by the end of 2018.

Conditional Approval for Connection

This assessment concluded that the project is expected to have no material adverse impact on the reliability of the integrated power system. Therefore, it is recommended that the IESO issue a *Notification of Conditional Approval* for the project, subject to implementation of the requirements outlined in this report.

IESO Requirements for Connection

The connection applicant shall satisfy all applicable requirements specified in the Market Rules and the Transmission System Code (TSC). The following requirements highlight some of the general requirements that are applicable to the project.

1. The connection applicant shall notify the IESO at connection.assessments@ieso.ca as soon as it becomes aware of any changes to the data they supplied for this assessment. The IESO will determine whether these changes require a re-assessment.
2. The connection applicant shall initiate and complete the IESO Market Registration process in a timely manner, at least eight months before energization to the IESO-controlled grid and prior to the commencement of any project related outages, in order to obtain IESO final approval to connect.

   If the submitted data differs materially from the data used in this assessment, the IESO may decide that further analysis of the project is needed.
3. The connection applicant shall ensure that the connection equipment is designed to be fully operational in all reasonably foreseeable ambient temperature conditions. The connection equipment must also be designed so that the adverse effects of its failure on the IESO-controlled grid are mitigated.
4. The connection applicant shall ensure that the project's new equipment meets the voltage requirements specified in section 4.2 and section 4.3 of the Ontario Resource and Transmission Assessment Criteria (ORTAC) for the 115 kV system.
5. The TSC requires the new equipment to be designed to withstand the fault levels in the area where the equipment is installed. Thus, the connection applicant shall ensure that the project is designed to withstand the fault levels in the area. If any future system changes result in an increased fault level higher than the equipment's capability, the connection applicant is required to replace the existing

equipment with higher rated equipment capable of withstanding the increased fault level, up to maximum fault level specified in the TSC. Appendix 2 of the TSC establishes the maximum fault levels for the transmission system. For the 115 kV system, the maximum 3 phase symmetrical fault level is 50 kA.

1.0 Project Description and Proposed Modifications

Hydro One Networks Inc. (the "connection applicant" and "transmitter") is proposing the following replacements on 115 kV circuit A4L (the "project"):

- Replace the existing 115 kV opener switch A4L-1 by new 115 kV structure-mounted disconnect switch at A. P. Nipigon Junction (Jct.);
- Replace the existing 115 kV opener switch A4L-3 by new 115 kV structure-mounted disconnect switch at Jellicoe DS # 3 Jct..

The project work is scheduled to be completed by the end of 2018.

2.0 Data Verification

Table 1 shows the specifications of the new 115 kV switches A4L-1 and A4L-3.

Table 1: Specifications of new 115 kV switches A4L-1and A4L-3

	New Disconnect Switches
Maximum Continuous Rated Voltage	132 kV
Continuous Current Rating	600 A
Short-circuit symmetrical rating	15 kA

The proposed equipment ratings are acceptable to the IESO as shown in section 3 of this report.

3.0 Assessment

The specifications provided by the connection applicant shows that the technical characteristics of the new disconnect switches A4L-1and A4L-3 satisfy the market rules and TSC requirements:

- The proposed maximum continuous rated voltage of the new 115 kV disconnect switches A4L-1and A4L-3 is 132 kV for a 115 kV system, which meets the requirements of sections 4.2 and 4.3 of the ORTAC.
- The short circuit symmetrical ratings of the new disconnect switches is adequate when compared to the symmetrical short circuit level of about 4.4 kA, 2.4 kA and 1.8 kA at A. P. Nipigon Junction Jct., Namewaminikan Jct. and Jellicoe DS # 3 Jct. respectively. This was identified in the latest short circuit study conducted by the transmitter on behalf of the IESO. If any future system changes result in an increased fault level higher than the equipment's capability, the connection applicant will be required to replace the existing equipment with higher rated equipment capable of withstanding the increased fault level as specified in general requirement #5.

4.0 Conclusion

This expedited System Impact Assessment concludes that the project is not expected to have a material adverse impact on the integrated power system provided that all requirements in this report are met.