

# **IESO Expedited System Impact Assessment**

## **REPLACEMENT OF MID-SECTION OF H2JK BETWEEN ESPLANADE TS AND JOHN TS**

### **2013-EX685**

### **FINAL REPORT**

---

## **Executive Summary**

### **Conditional Approval for Connection**

Hydro One Networks Inc. (the “connection applicant”) is proposing to replace the mid-section of the 115 kV cable circuit H2JK between Esplanade TS and John TS.

This assessment concluded that the proposed changes are expected to have no material adverse impact on the reliability of the IESO-controlled grid. Therefore, the IESO recommends that a *Notification of Conditional Approval for Connection* be issued for the replacements of the mid-section of the H2JK cable circuit between Esplanade TS and John TS, subject to implementation of the requirements outlined in this report.

### **Requirements**

1. Hydro One is required to provide the entire set of parameters for the 115 kV cable circuit H2JK including impedance, admittance and thermal ratings during the Market Entry process. New line parameters must not result in a negative impact to the reliability of the IESO controlled grid.
2. The connection applicant must complete the IESO Facility Registration/Market Entry process for the project in a timely manner before the IESO final approval for connection is granted. The connection applicant 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.

# 1. Project Description

Hydro One is proposing to replace the mid-section of the existing 115 kV cable circuit H2JK between Esplanade TS and John TS. The existing cable (2500 Cu, 85°C) remains on either side of the subject area, where new cable is being installed (3000 Cu, 85°C).

The ratings for the replacement cable are based on the following conductor characteristics:

- Circuit Configuration: 115 kV high pressure liquid filled (pipe type)
- Phase conductor type: Copper, 4 segment, compact segmental
- Phase conductor size: 1521 mm<sup>2</sup>, 3000 kcmil
- Load Factor: 0.85
- Conductor temperature (normal): 85°C
- Conductor temperature (emergency): 100°C

<b>H2JK Conductor Replacement Mid-Section Cable Circuit between Esplanade TS and John TS</b>		
<b>Ratings</b>	<b>Existing Cable</b>	<b>Proposed Cable</b>
<b>Summer Continuous Rating</b> 115 kV, Conductor temperature = 85 °C	1220 A	1086 A
<b>Summer Emergency Rating (15-MIN STE)</b> 115 kV, Conductor temperature = 100 °C	4710 A (based on a pre-load of 900 A)	4826 A (based on a pre-load of 800 A)
<b>Winter Continuous Rating</b> 115 kV, Conductor temperature = 85 °C	1310 A	1168 A
<b>Winter Emergency Rating (15-MIN STE)</b> 115 kV, Conductor temperature = 100 °C	5390 A (based on a pre-load of 900 A)	4897 A (based on a pre-load of 900 A)

**Table 1: Comparison of H2JK Conductor Parameters between Esplanade TS and John TS**

# 2. Assessment

The information provided by Hydro One shows that the mid-section of the 115 kV cable circuit H2JK between Esplanade TS and John TS has lower continuous ratings and lower winter 15-MIN emergency ratings than the original conductors.

The result is a slight derating of the existing capacity for this line section. However, the transfer limits of the overall circuit are not impacted, since they remain limited by the Don Fleet Jct x Esplanade TS line section.