



# **Optional Interconnection Study Report**

**GIP-244-OPT-R1**

**System Interconnection Request #244**

**34.5 MW Wind Generating Facility**

**Cumberland County (30N)**

2011-07-27  
Control Centre Operations  
Nova Scotia Power Inc.

### Executive Summary

The Interconnection Customer (IC) signed an Optional Interconnection Study Agreement to study the connection of their proposed generating facility to the NSPI transmission system based on the assumption that OATT Studies TSR-100 and TSR-200 are excluded from the Queue. This report is the result of the Optional Study Agreement.

The IC submitted an Interconnection Request (IR#244) for Energy Resource Interconnection Service (ERIS) to NSPI for a proposed 34.5 MW wind generation facility interconnected to the NSPI transmission system. The Point of Interconnection (POI) requested by the customer is on the 138 kV bus at the 30N- Maccan substation via approximately 13 km of newly-constructed line from the wind farm located near Lower Cove. An alternative POI on the 69kV bus at the 30N-Maccan substation was also identified by the customer.

This generating facility will be added to the system in northern Nova Scotia (between Truro and New Brunswick) and will have an impact on the transfer capability between Nova Scotia and New Brunswick and on the special protection systems (SPS) that has been installed to facilitate those transfers. With the addition of IR#244 under the existing SPS arming level, loss of L-3025/L-8001 or L-3006 could cause L-6513 to be overloaded by up to 150% of its conductor thermal rating during periods when summer line ratings are in effect, provided that other generation in this area are generating at their full output. Therefore IR#244 has to be run back or tripped by installing a new SPS for loss of L-3025/L-8001 or L-3006; otherwise operating restrictions must be established to curtail this wind facility whenever NS is importing 50-100MW from NB during the periods when summer line ratings are in effect. The operating restrictions also depend on the real-time local load demands and other local generation facilities' output. Any new SPS scheme would have to be presented to NPCC and would require their approval. The details of the new SPS will be further assessed in the System Impact Study.

No concern regarding short-circuit or voltage flicker was found for this project on its own, provided that the project design meets NSPI requirements for low-voltage ride-through, reactive power range and voltage control system. Harmonics must meet the Total Harmonics Distortion provisions of IEEE 519.

The preliminary value for the unit loss factor is calculated to be -3.5% (system losses decreased by net 1.2 MW when IR #244 is operated at 34.5 MW).

The preliminary non-binding estimated cost of facilities required to interconnect IR#244 to the 30N-Maccan substation 138 kV bus is \$6.9 Million including a contingency of 10%. This estimate will be further refined in the System Impact Study and the Facility Study.

The assessment of the alternative POI at the 69kV bus at 30N-Maccan substation shows similar results as the 138 kV option except that the total system losses is higher for the 69 kV option.