



**System Impact Study Report
Report GIP-IR540-SIS-R0**

**Generator Interconnection Request #540
14.1 MW Wind Generating Facility
Hants County, NS**

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Transmission Planning
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Executive Summary

This report presents the results of a System Impact Study (SIS) for a proposed increase of 14.1 MW to the existing 102V-Ellerhouse wind generating facility interconnected to the NSPI transmission system. The existing generating facility is rated at 16.45 MW and is interconnected to the 69kV substation 17V-St. Croix via line L-5060.

The study analysed the impact to the NSPI power grid of the proposed development. System studies, including short circuit, power factor, voltage flicker, steady state, stability, Bulk Power System analysis, under-frequency operation, low voltage ride through and loss factor were performed. NSPI and NPCC planning criteria were applied.

The voltage flicker P_{st} for continuous operation under this configuration is within NSPI's required limit. IR#540 provides adequate reactive power to meet the Generator Interconnection Procedure (GIP) requirement. The increase in short circuit levels due to the addition of IR#540 are within the capability of the associated breakers. There are no concerns with regard to increased short circuits levels.

As long as the western valley transmission system is operated within historical limits, the addition of IR#540 does not adversely impact the thermal capacity of the NSPI transmission system. No issues were identified in the steady-state analysis that were attributable to IR#540.

IR#540 was not found to cause issues with the stability of the interconnected system. IR#540 is not classified as part of the Bulk Power System, was found to comply with the Low Voltage Ride Through requirements, and remained on-line though simulated under frequency islanding events. IR#540 is not classified as part of the Bulk Electric System.

It is therefore concluded that the incorporation of the proposed addition of 14.1 MW into the NSPI transmission system at the specified location has no negative impacts on the reliability of the NSPI power grid provided the recommendations given in this report are implemented.

The study does not identify any issues with the interconnection of IR#540 as a Network Resource Integration Service (NRIS) project for the in-service date requested. Hence, network upgrades are not required.