



**System Impact Study Report
Report GIP-IR219-SIS-R2**

**Generator Interconnection Request #219
63.15 MW Generating Facility
New Page, NS**

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Transmission Planning
Nova Scotia Power Inc.

Executive Summary

This System Impact Study (SIS) is for Interconnection Request #219 (IR219) for a proposed 63.15 MW steam driven generator to be connected to the 138 kV bus at 47C-NewPage in Cape Breton, Nova Scotia.

The service request is Energy Resource Interconnection Service (ERIS), meaning that the generation will be dispatched using transfer capacity available in the existing transmission system. The SIS is conducted with IR219 replacing Lingan generation when the constrained interfaces are at limits.

The Point-Of-Interconnection (POI) will be the 138 kV bus at 47C-NewPage substation. A new 138 kV breaker and associated switches will be added to the ring bus to make the new node for the connection of IR219.

The IC states that the existing generator unit 1 (Westinghouse unit) at 47C-NewPage is in the state of disrepair and is no longer in service. The SIS does not include this generator in the study.

Based on the information provided by the Interconnection Customer (IC), the SIS finds that the short circuit level increase provided by IR219 generator does not exceed the fault interrupting capabilities of existing circuit breakers in the system.

The generator provides adequate reactive power to meet the Generator Interconnection Procedure (GIP) requirement. The addition of IR219 generator does not alter the non-Bulk Power System (non-BPS) status of 47C-NewPage 138 kV substation.

Stability analysis shows IR219 generator remains on-line as required when the Nova Scotia system is islanded. IR219 generator meets the requirement of Low-Voltage-Ride-Through provided that the generator auxiliary equipment design is not susceptible to causing the generator to trip for faults on the transmission system.

IR219 generator is required to meet IEEE Standard 519 Total Harmonic Distortion and the under-frequency operation capability of the Northeast Power Coordinating Council, but there is not sufficient information provided to determine if the generator meets the requirements.

The system loss factor for IR219 generator is 10%. When generating at full output, IR219 generator will displace 67 MW of generation at Lingan plant.

Stability analysis shows that the system is stable and well damped for all the contingencies and base cases studied.

The SIS recommends seasonal values for special protection schemes associated with CBX. The details of this recommendation are in section 2.4.2 and section 4.0 of this report.

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The SIS recommends modification to the existing SPS # 139 “Strait Area Overload Protection System” SPS for L-6517 and L-6518 and the existing SPS # 168 “Strait Area Transformer Overload Protection” SPS for 3C-T71 transformer, to detect if the line overload during the contingencies is due to load or due to generation and to reject the load or generation accordingly. Since the same entity owns IR219 and the local generation at 1C-Point Tupper, the entity may have a preference which generation to be rejected or run back.

Any modification to an existing SPS is subject to and conditioned upon NPCC approval.

The non-binding cost estimate to connect IR219 to the system at 47C-NewPage has been estimated at \$1,019,374 in 2010 Canadian dollars. The Facility Study will determine the final cost estimate.

The 138 kV cables, the 138 kV to 13.8 kV transformer, and the low voltage equipment which form part of the Interconnection Customer’s Interconnection Facilities will be the responsibility of the IC. As well, the IC will provide control, communication, metering, and other items as required to NSPI’s SCADA system.

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