



Facilities Study Infrastructure Report

**Generator Interconnection Request #225
Establishing a 138 kV System Interconnection for a
59.8MW Wind Powered Generating Facility
Loganville Nova Scotia**

Prepared by:  Oct 11, 2011
Project Engineer Date

Approved by:  2011/10/11
Director Date
Project Implementation & Planning

Facilities Study Report

IR 225 – Loganville



EXECUTIVE SUMMARY

This project provides for the establishment of a 138kV system connection for a 59.8MW wind powered generation facility (IR 225) located at Loganville, NS.

The generating facility will be comprised of 26 Enercon E-82 E2 FT wind turbines; each turbine will be rated at 2.3MW. Each individual wind turbine voltage will be transformed to 34.5kV at the collector circuit; the voltage will be further transformed to 138kV in order to connect to the transmission system. A new 11.7km, 138kV spur line will be constructed from the generating facility to the Point-of-Interconnection (POI); the POI will be at a line tap on L6503. The POI substation will be located about 25km from the 1N-Onslow substation and will have a three-breaker-ring bus configuration. Appendix B shows the proposed system interconnection.

The new 138kV system connection will consist of a 138kV Three Breaker Ring switching substation connected between 1N-Onslow and 50N-Trenton. This connection will split L6503 into two lines, each terminating at the new NSPI switching substation. One node of the 138kV switching substation will connect to the wind farm substation via the new 138kV spur line. The wind farm substation will consist of one 138kV disconnect switch, one 138kV breaker, one 138kV to 34.5kV transformer, three 138kV relaying PT's, three 138kV relaying/metering CT's and two breakers feeding the 34.5kV collector circuit.

The POI will be the connection point of the new 11.7km Transmission Line to the 138kV three-breaker-ring bus.

The system connection will include modifications to the Protection and Control (P&C) circuitry at the 1N-Onslow and 50N-Trenton substations. These modifications will ensure the line protection schemes at the remote terminals are compatible with the protection schemes at the new 138kV substation. Inter-trip and block-close logic will also be included to ensure that the generating facility is not islanded with any portion of the NSPI system.

The system connection will also include upgrades of the 138kV breakers 1N-623 and 50N-607; and the 138kV switches 1N-623A, 1N-623B, 1N-623E, 50N-607A, 50N-607B, and 50N-607E. These upgrades will ensure that the aforementioned devices are capable of carrying the temporary overload during contingency operation.

The estimated cost of this project is \$11,787,522.

The estimated project duration is 10 months.