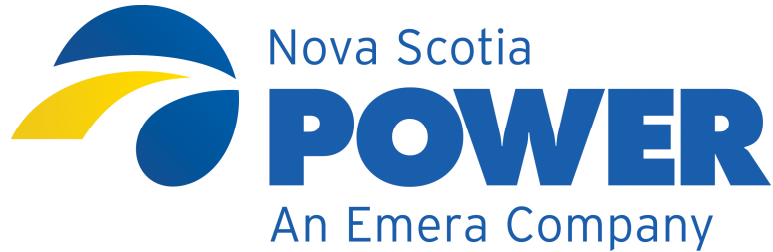


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# Facilities Study Report

IR 379 – South Canoe Wind Farm (SCWF)

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## Facilities Study Report IR-379 78 MW South Canoe Lake

Prepared by  
Tom Flewwelling, P.Eng.

March 6, 2014

Transmission Project Implementation  
**Nova Scotia Power Inc.**

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# Facilities Study Report

IR 379 – South Canoe Wind Farm (SCWF)

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## EXECUTIVE SUMMARY

This project provides for the establishment of a 138 kV system connection for a 78 MW wind generation facility (IR-379) owned by Oxford Frozen Foods Ltd. located at South Canoe Lake, in Lunenburg County, Nova Scotia.

The 78 MW generating facility will be comprised of twenty-six (26) Acciona AW3000 wind turbines, each nominally rated at 3.0 MW. Each individual wind turbine will be connected to a 34.5 kV collector system via a step-up padmount transformer. The collector circuit system will be further transformed to the 138 kV level at 110W South Canoe Lake substation in order to connect to the transmission system.

This Facilities Study assumes that IR-372 (a 24 MW wind facility owned by Minas Basin Pulp & Power Company Ltd.), has already been established and that a new 17 km, 138 kV transmission line L-6053 has already been constructed from the generation interconnection substation 110W to the switching interconnection substation 101V MacDonald Pond. This study also assumes that the 101V substation has been established and consists of a Three-Breaker-Ring (TBR) configuration.

IR-372 and IR-379 will share a common 138 kV bus on the high side of their respective power transformers within NSPI's 110W South Canoe Lake substation. This additional generation interconnection facility (GIF) will have the same designation as IR-372 (i.e. 110W South Canoe Lake), and will consist of an addition 138 kV / 34.5 kV, 50 / 67 / 83 MVA power transformer and associated HV and LV equipment. IR-379 and IR-372 will have limited capability to transfer generation between them in a contingency situation, via low side transfer buses 110W-B40 and 110W-B43.

There may be subsequent protective relay setting changes required at the existing 101V TBR substation to accommodate IR-379.

The total estimated cost to construct the new 138 kV line L-6053 from 101V MacDonald Pond to 110W South Canoe Lake substations is **\$5,831,001**. This total cost for L-6053 was allocated equally between IR-372 and IR-372 each amounting to **\$2,915,500**. The overall cost estimate for establishing the common generation interconnection substation site at South Canoe Lake (110W) for these two (2) wind facilities (IR-372 and IR-379) is **\$7,760,891**. The estimated percentage of this total cost of 110W South Canoe Lake for the 78 MW (IR-379) portion is approximately 62.6% or **\$4,854,816**. Supporting cost estimates are provided in Appendix C.

The IC's target in-service date is December 2014.