

**McLean's Mountain Wind Limited Partnership  
Exhibit A**

**IN THE MATTER OF** the *Ontario Energy Board Act, 1998*,  
S. O. 1998, c.15, Schedule B;

**AND IN THE MATTER OF** an application by McLean's  
Mountain Wind Farm L.P. for an Order granting leave to  
construct transmission facilities to connect the McLean's  
Mountain Wind Farm to the Ontario Grid.

**APPLICATION FOR LEAVE TO CONSTRUCT**

**AND NOTICE UNDER SECTION 81 OF THE *ONTARIO ENERGY BOARD ACT, 1998***

**FILED: NOVEMBER 22, 2011**

**Applicant**

McLean's Mountain Wind Limited  
Partnership  
30 St. Clair Ave. West, Suite 1700  
Toronto, Ontario M4V 3A1

**Mr. Gordon Potts**

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**APPLICATION FOR LEAVE TO CONSTRUCT**

1. McLean's Mountain Wind Limited Partnership (the "Applicant") is a limited partnership constituted under the laws of the Province of Ontario. The Applicant's general partner is McLean's Mountain Wind GP Inc. ("McLean's GP"), is equally owned by Northland Power Inc. ("NPI") and Mnidoo Mnising Power Limited Partnership ("MMP"). NPI and MMP are also the limited partners of the Applicant.
2. NPI is an Ontario corporation with its head office in the city of Toronto. Founded in 1987, NPI is an experienced developer, owner and operator of renewable power generation in Canada and abroad. NPI activities include developing, constructing, managing, financing and owning renewable energy facilities.
3. MMP's general partner is Mnidoo Mnising Power General Partner Inc. MMP has six (6) First Nations as limited partners, namely, Aundeck Omni Kaning First Nation, M'chigeeng First Nation, Sheguiandah First Nation, Sheshegwaning First Nation, Whitefish River First Nation, and Zhiibaahaasing First Nation. MMP was formed to lead renewable energy projects on Manitoulin Island in order to protect First Nations' rights, heritage and to ensure the future for First Nations' youth.
4. On April 12, 2010 the Applicant received two contracts from the Ontario Power Authority ("OPA") for the purchase of electricity generated by wind turbines through the Ontario Feed-in-Tariff ("FIT") program (enabled by the *Green Energy and Green Economy Act*) with contract capacities of 50 MW and 10 MW. The FIT contracts are for the McLean's Mountain Wind Farm project ("MMWF Project"), a wind farm located south of the community of Little Current, in the Municipality of Northeastern Manitoulin and the Islands ("NEMI"), geographic Township of Howland, and the geographic Township of Bidwell in the District of Manitoulin, Ontario. The MMWF Project falls within the traditional lands of the Anishnabee of Mnidoo Mnising. It should be noted that MMWF Project is not within the jurisdiction of a Conservation Authority.
5. This Application is in respect of the transmission facilities associated with the MMWF Project.
6. The Applicant proposes to construct the following transmission facilities to connect the MMWF Project to the Independent Electricity System Operator ("IESO") controlled-grid ("Transmission Facilities"):
  - (a) **Step-up Transformers and Collection System.** A small "step-up" transformer will be located in the base of each turbine to transform the electricity from 690 V to 34.5 kV for transmission through the collection system. The collection system will be composed of a combination of underground and overhead feeder lines all connecting to a substation.

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- (b) **Transformer / Substation.** A three phase transformer will be required to increase the voltage of the collector system from 34.5 kV to 115 kV, the voltage required to allow connection with the IESO-controlled grid.
- (c) **High Voltage Overhead Transmission Line.** From the substation step-up transformer, a 115 kV single-circuit overhead transmission line will be constructed to connect the MMWF Project to the existing Hydro One Networks Inc. ("HONI") transmission circuit S2B ("S2B"), located on Goat Island between Manitoulin TS and Espanola JCT. This first segment of the transmission line will be above ground, after which there will be the need to cross the North Channel to Goat Island with a submarine cable. Once on Goat Island, the cable will run underground to the connection/switching station
- (d) **Overhead to Underground Transition Station.** The overhead transmission line will transition to a buried cable approximately 200 metres from the edge of the North Channel.
- (e) **Buried and Submarine Cable.** The buried section of the transmission line will run to the edge of the North Channel, where it will then emerge from the water on the north shore and continue underground to the connection/switching station adjacent to the HONI transmission line.
- (f) **Connection/Switching Station.** A connection/switching station will be required at the point of connection with the provincial HONI transmission system on Goat Island. A circuit breaker and disconnect switches (to allow the safe flow of electricity from the MMWF Project), revenue metering, telecommunication and protection equipment will be installed in the connection/switching station.

The above-noted Transmission Facilities, and the location of each component of the Transmission Facilities are more particularly described in Exhibit C and D of this Application.

- 7. Subject to the receipt of the necessary permits and approvals, site work for the MMWF Project is expected to begin in Winter of 2012 and last for 12-15 months. The MMWF Project and Transmission Facilities' commercial in-service date is expected to be December 2012. A detailed breakdown of the proposed construction schedule can be found in the Applicant's Renewable Energy Approval Application Submission, Construction Plan Report, as further discussed in Exhibit F of this Application.
- 8. The MMWF Transmission Line is largely contained within municipal road rights-of-way ("RoW"), with some private property being crossed. The maximum width of the RoW is expected to be 8-10 metres depending on the distance of poles and conductor swing. It will be necessary to cross the North Channel to Goat Island with a submarine cable. The cable will lie on the bed of the channel but will be trenched in at both shorelines. Once on Goat Island, the cable will run underground to connect to S2B. In order to construct the

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Transmission Line, the Applicant (through NPI) currently holds land lease "options" for the private properties where project components are to be located. The form of land lease agreements with the owners of the private lands and a legal description of the land parcels is provided in Exhibit G.

9. The Applicant is fairly advanced in the process by which the MMWF Project will be connected to the IESO-controlled grid. On October 27, 2010 the IESO issued a "System Impact Assessment Report (Final Report)" ("SIA") indicating that the proposed connection of the MMWF to the IESO-controlled grid, via the proposed Transmission Line, was acceptable. A copy of the SIA is provided in Exhibit I, Tab 1, Schedule 3. Hydro One Networks Inc. ("HONI") completed a Customer Impact Assessment ("CIA") in October 2010. An updated and joint System Impact Assessment ("SIA Addendum") and Customer Impact Assessment ("CIA Addendum") application was requested by the Applicant in January 2011. The SIA Addendum and CIA Addendum were required in order to reflect a decision by the Applicant to change the type of turbines used at the MMWF Project. In March 2011, the IESO and HONI released SIA Addendum and CIA Addendum. Based on these reports, the IESO has granted the Applicant conditional approval to connect to the provincial transmission grid. A copy of the SIA Addendum, CIA Addendum, and Notice of Conditional Approval are provided in Exhibit I, Tab 1, Schedules 5-7, respectively.
10. An Environmental Study Report ("ESR") was completed by Dillon Consulting Limited ("Dillon") and released in July 2009 for a thirty day public review, as part of the former Environmental Assessment process dictated by provincial and federal environmental regulatory requirements. The overall conclusion of the ESR was that MMWF Project and Transmission Line can be constructed, operated and decommissioned without any significant impacts to the environment, including the natural and social environment.
11. Pursuant to the *Green Energy Act, 2009* (the "GEA"), and based on the fact that the MMWF Project is being developed under the FIT program, the MMWF Project requires approval under Ontario Regulation 359/09 – Renewable Energy Approval ("REA"). The REA approval process replaces approvals formerly required under the *Environmental Assessment Act, Planning Act, and Environmental Protection Act*. Under the REA Regulations, MMWF is a "Class 4" wind facility.
12. As part of its REA Application, The Applicant has prepared a series of reports all of which have been written in accordance with Ontario Regulation 359/09, the Ontario Ministry of Natural Resources' (MNR) Approval and Permitting Requirements Document for Renewable Energy Projects (September 2009) and the Ministry of Energy and Infrastructure's draft Technical Bulletins (March 2010). Reports will be posted on the MMWF website and are being submitted to the Ministry of Environment (MOE) as required under the REA process. The reports are also being made available for public viewing via NEMI. The reports available for public review and comment include:
  - Project Description Report;

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- Construction Plan Report;
- Design and Operations Report;
- Noise Study Report;
- Natural Heritage Assessment Reports (Records Review, Site Investigation, Evaluation of Significance, and Environmental Impact Statement (EIS));
- Water Bodies Assessment Summary Report;
- Archaeological Assessment Reports (Stage 1 and 2);
- Cultural Heritage Self-Assessment Report;
- Decommissioning Report;
- Consultation Report;
- Property Line Setback Report;
- Wind Turbine Specifications Report;
- Environmental Management and Protection Plan (EMPP);
- Post-Construction Monitoring Plan; and
- other supporting documents.

The Applicant issued the Final REA Application Submission in September, 2011. The REA Application will be posted on the Applicant's website once it is available on the Ministry of Energy's EBR. The Applicant will advise the Board of the exact location once posted.

13. The Applicant has been involved in various forms of consultation in regard to the MMWF Project since its initiation in 2004. Consultations include: public notifications, consultation with government agencies, consultation with key interest groups, meetings with the local municipal council, consultation with Aboriginal communities and organizations, which, include First Nations and Métis communities and organizations, media releases, and the holding of Public Information Centres (PICs). Further consultations and communications are planned through the proposed construction, operations, and decommissioning phase of the MMWF Project. Details of these consultation efforts are included in Exhibit H of this Application.

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14. There are significant net benefits of the MMWF Project including the generation of clean renewable energy for Ontario, increased economic activity for the region, and employment opportunities for the local communities, particularly during the construction phase of the MMWF Project and Transmission Facilities. During the operational phase, the MMWF Project will also provide annual economic benefits through municipal taxes paid to NEMI, and a continuing need for services from the local economy.
15. Accordingly, pursuant to the *Ontario Energy Board Act, 1998*, the Applicant hereby applies to the Ontario Energy Board (“OEB” or “Board”) for:
- (a) leave to construct the Proposed Facilities pursuant to section 92 and subsection 96(1) of the *OEB Act*; and
  - (b) approval of the forms of option, lease and easement agreements in place to allow for project to be constructed pursuant to section 97 of the *OEB Act*.
16. The following are the names of the Applicant’s authorized representatives for the purpose of serving documents on the Applicant in this proceeding:

Mr. Gordon Potts	McLean’s Mountain Wind Limited Partnership
Address for service:	30 St. Clair Ave. West, Suite 1700 Toronto, Ontario M4V 3A1
Telephone:	647.288.1223
Facsimile:	416.926.6266
E-mail:	<a href="mailto:gpotts@northlandpower.ca">gpotts@northlandpower.ca</a>



**Ontario Energy Board**  
**Preliminary Filing Requirements**  
**For a Notice of Proposal under Sections 80 and 81**  
**Of the *Ontario Energy Board Act*, 1998**

**INSTRUCTIONS:**

This form applies to all applicants who are providing a Notice of Proposal to the Ontario Energy Board (the "Board") under sections 80 and 81 of the *Ontario Energy Board Act*, 1998 (the "Act"), including parties who are also, as part of the same transaction or project, applying for other orders of the Board such as orders under sections 86 and 92 of the Act.

The Board has established this form under section 13 of the Act. Please note that the Board may require information that is additional or supplementary to the information filed in this form and that the filing of the form does not preclude the applicant from filing additional or supplementary information.

**PART I: GENERAL MINIMUM FILING REQUIREMENTS**

All applicants must complete and file the information requested in Part I.

**1.1 Identification of the Parties**

**1.1.1 Applicant**

Name of Applicant McLean's Mountain Wind Limited Partnership	File No: (Board Use Only)	
Address of Head Office 30 St. Clair Ave. West, Suite 1700 Toronto, ON M4V 3A1	Telephone Number 416 962 6262	
	Facsimile Number 416 962 6266	
	E-mail Address <a href="mailto:Gpotts@northlandpower.ca">Gpotts@northlandpower.ca</a>	
Name of Individual to Contact  Gordon Potts Director, Business Development	Telephone Number 647 288 1223	
	Facsimile Number 416 962 6266	
	E-mail Address <a href="mailto:Gpotts@northlandpower.ca">Gpotts@northlandpower.ca</a>	

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**1.1.2 Other Parties to the Transaction or Project**

*If more than one attach list*

Name of Other Party	Board Use Only	
Mnidoo Mnising Power Limited Partnership		
Address of Head Office  C/O United Chiefs & Councils of Mnidoo Mnissing P.O. Box 275, M'Chigeeng, Ontario, P0P 1G0	Telephone Number	
	Facsimile Number	
	E-mail Address	
Name of Individual to Contact  Art Jacko	Telephone Number (705) 377-5307	
	Facsimile Number (705) 377-5309	
	E-mail Address ajacko@uccm.ca	

Name of Other Party	Board Use Only	
Northland Power Inc.		
Address of Head Office 30 St. Clair Ave. West, Suite 1700 Toronto, ON M4V 3A1	Telephone Number 416 962 6262	
	Facsimile Number 416 962 6266	
	E-mail Address <a href="mailto:Gpotts@northlandpower.ca">Gpotts@northlandpower.ca</a>	
Name of Individual to Contact  Gordon Potts Director, Business Development	Telephone Number 647 288 1223	
	Facsimile Number 416 962 6266	
	E-mail Address <a href="mailto:Gpotts@northlandpower.ca">Gpotts@northlandpower.ca</a>	

**1.2 Relationship between Parties to the Transaction or Project**

<b>1.2.1</b>	Attach a list of the officers, directors and shareholders of each of the parties to the proposed transaction or project.												
	<p>McLean's Mountain Wind Limited Partnership (the "Applicant") has one general partner: McLean's Mountain Wind GP Inc. ("McLean's GP"). The Applicant's limited partners are Northland Power Inc. and Mnidoo Mnising Power Limited Partnership.</p> <p>The following is a list of directors and officers of McLean's GP, the general partner of the Applicant:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;"><u>DIRECTORS</u></th> <th style="text-align: center;"><u>OFFICERS</u></th> </tr> </thead> <tbody> <tr> <td>John W. Brace</td> <td>John W. Brace, President and Chief Executive Officer</td> </tr> <tr> <td>Salvatore (Sam) Mantenuto</td> <td>Salvatore (Sam) Mantenuto, Chief Operating Officer and Chief Development Officer</td> </tr> <tr> <td>Paul J. Bradley</td> <td>Paul J. Bradley, Chief Financial Officer</td> </tr> <tr> <td></td> <td>Anthony (Tony) F. Anderson, Chief Investment Officer</td> </tr> <tr> <td></td> <td>Michael D. Shadbolt, Secretary, Vice-President and General Counsel</td> </tr> </tbody> </table>	<u>DIRECTORS</u>	<u>OFFICERS</u>	John W. Brace	John W. Brace, President and Chief Executive Officer	Salvatore (Sam) Mantenuto	Salvatore (Sam) Mantenuto, Chief Operating Officer and Chief Development Officer	Paul J. Bradley	Paul J. Bradley, Chief Financial Officer		Anthony (Tony) F. Anderson, Chief Investment Officer		Michael D. Shadbolt, Secretary, Vice-President and General Counsel
<u>DIRECTORS</u>	<u>OFFICERS</u>												
John W. Brace	John W. Brace, President and Chief Executive Officer												
Salvatore (Sam) Mantenuto	Salvatore (Sam) Mantenuto, Chief Operating Officer and Chief Development Officer												
Paul J. Bradley	Paul J. Bradley, Chief Financial Officer												
	Anthony (Tony) F. Anderson, Chief Investment Officer												
	Michael D. Shadbolt, Secretary, Vice-President and General Counsel												
<b>1.2.2</b>	Attach a corporate chart describing the relationship between each of the parties to the proposed transaction or project and each of their respective affiliates.												
	Please refer to attachment 1.2.2 to this application.												

**1.3 Description of the Businesses of Each of the Parties**

<b>1.3.1</b>	Attach a description of the business of each of the parties to the proposed transaction or project, including each of their affiliates licenced under the OEB Act to operate in Ontario for the generation, transmission, distribution, wholesaling or retailing of electricity or providing goods and services to companies licenced under the OEB Act in Ontario ("Electricity Sector Affiliates").
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	<p>The Applicant will be the licensed owner and operator of a 60 MW wind farm known as McLean’s Mountain Wind Farm (“MMWF”), which will be located south of the community of Little Current, in the Municipality of Northeastern Manitoulin and the Islands (“NEMI”), geographic Township of Howland, and the geographic Township of Bidwell in the District of Manitoulin, Ontario. The MMWF Project falls within the traditional lands of the Anishnabee of Mnidoo Mnising. The MMWF will be connected to the IESO-controlled grid via the ~10 km, 115 kV MMWF transmission line and associated substation and switching station.</p> <p>The Applicant is affiliated with NPI, an experienced developer, owner and operator of renewable power generation in Canada and abroad. NPI has an OEB Generation Licence (EG-2003-0103) authorizing ownership and operation of the Kirkland Lake Generating Station and Cochrane Power Corporation Generating Station.</p> <p>The Applicant has Electricity Sector Affiliates licenced under the OEB Act, as follows:</p> <ul style="list-style-type: none"> <li>• Cochrane Power Corporation has an OEB Generation Licence (EG-2003-0100) authorizing ownership and operation of a 35.8 MW combined cycle power co-generation station located in Cochrane, Ontario;</li> <li>• Kirkland Lake Power Corp. has an OEB Generation Licence (EG-2003-0101) authorizing ownership and operation of a 102 MW combined cycle power co-generation facility located in Kirkland Lake, Ontario;</li> <li>• Iroquois Falls Power Corp. has an OEB Generation Licence (EG-2003-0144) authorizing ownership and operation of a 30 MW hydroelectric generating station located on the Abitibi River in Teefy Township;</li> <li>• Thorold CoGen L.P., by its general partner Thorold CoGen Management Inc., has OEB Generation Licence (EG-2007-0101 and EG-2007-0102) authorizing ownership and operation of a 305 MW natural gas-fired industrial co-generation facility located in Thorold, Ontario; and</li> <li>• Kingston Cogen Limited Partnership has an OEB Generation Licence (EG-2003-0137) authorizing ownership and operation of a 110 MW cogeneration plan located in Kingston, Ontario.</li> </ul>	
<p><b>1.3.2</b></p>	<p>Attach a description of the geographic territory served by each of the parties to the proposed transaction or project, including each of their Electricity Sector Affiliates, if applicable, and the geographic location of all existing generation facilities.</p>	
	<p>The MMWF Project is located entirely in the Municipality of Northeastern Manitoulin and the Islands; geographic Township of Howland and the geographic</p>	

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	<p>Township of Bidwell, in the District of Manitoulin and falls within the traditional lands of the Anishnabee of Mnidoo Mnising. The MMWF Project location is approximately 5 kilometres from the Town of Little Current. The selection of the MMWF Project location was based primarily on the wind resource, access to the local electrical transmission system, environmental constraints and local landowner support.</p> <p>Please refer to Section 1.3.1 for geographic location of Electricity Sector Affiliates' generation facilities.</p>	
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<b>1.3.3</b>	Attach a breakdown of the annual sales (in C\$, and in MWh) as of the most recent fiscal year end of the existing generation output among the IESO Administered Markets (“IAM”), bilateral contracts, and local distribution companies.
	<ul style="list-style-type: none"> <li>• Cochrane Power Corporation OEB Generation Licence (EG-2003-0100). <ul style="list-style-type: none"> <li>• Generation 315,873 MWh</li> <li>• Revenue \$34,961,000</li> </ul> </li> <li>• Kirkland Lake Power Corp. has an OEB Generation Licence (EG-2003-0101). <ul style="list-style-type: none"> <li>• Generation 806,179 MWh</li> <li>• Revenue \$92,864,000</li> </ul> </li> <li>• Iroquois Falls Power Corp. has an OEB Generation Licence (EG-2003-0144). <ul style="list-style-type: none"> <li>• Generation 315,873 MWh</li> <li>• Revenue \$34,961,000</li> </ul> </li> <li>• Thorold CoGen L.P., by its general partner Thorold CoGen Management Inc., has OEB Generation Licence (EG-2007-0101 and EG-2007-0102). <ul style="list-style-type: none"> <li>• Generation 582,441 MWh</li> <li>• Revenue \$75,041,000</li> </ul> </li> <li>• Kingston Cogen Limited Partnership has an OEB Generation Licence (EG-2003-0137). <ul style="list-style-type: none"> <li>• Generation 792,326 MWh</li> <li>• Revenue \$90,888,000</li> </ul> </li> </ul>
<b>1.3.4</b>	Attach a list identifying all relevant Board licences and approvals held by the parties to the proposed transaction or project and each of their Electricity Sector Affiliates, and any applications currently before the Board, or forthcoming. Please include all Board file numbers.
	Please refer to Section 1.3.1 of this application.

**1.4 Current Competitive Characteristics of the Market**

<b>1.4.1</b>	Describe the generation capacity (in MW), within the Province of Ontario, of the parties to the proposed transaction or project, including each of their respective Electricity Sector Affiliates, prior to the completion of the proposed transaction or project.
	<p>The Applicant currently has no generation capacity within the Province of Ontario.</p> <p>The Applicant's Electricity Sector Affiliates have the following generation capacity within the Province of Ontario:</p> <ul style="list-style-type: none"> <li>• Cochrane Power Corporation: 35.8 MW;</li> <li>• Kirkland Lake Power Corp.: 102 MW;</li> <li>• Iroquois Falls Power Corp.: 30 MW;</li> <li>• Thorold CoGen L.P.: 305 MW, and</li> <li>• Kingston Cogen Limited Partnership: 110 MW.</li> </ul>
<b>1.4.2</b>	Describe the generation market share based on actual MWh production as a percent of the Annual Primary Demand, within the Province of Ontario, of the parties to the proposed transaction or project, including each of their respective Electricity Sector Affiliates, prior to completion of the proposed transaction or project.
	<p>Prior to construction and operation of MMWF, the Applicant will have zero percent market share in the Province of Ontario.</p> <p>According to IESO data, the total 2010 electricity demand in Ontario in was 142 TWh. The MMWF Project is forecasted to produce 157,000 MWh per year. Accordingly, the total estimated production for MMWF will be approximately 0.1% of total Ontario demand.</p> <p>The Applicant's Electricity Sector Affiliates will have the following share based on actual MWh production as a percent of the 142 TWh 2010 consumption:</p> <ul style="list-style-type: none"> <li>• Cochrane Power Corporation: 315,873 MWh, 0.22 %;</li> <li>• Kirkland Lake Power Corp. 806,179 MWh, 0.57 %;</li> <li>• Iroquois Falls Power Corp. 729,835 MWh, 0.51% %;</li> <li>• Thorold CoGen L.P. 582,441 MWh, 0.41%; and</li> </ul>

	<ul style="list-style-type: none"> <li>• Kingston Cogen Limited Partnership: 792,326 MWh, 0.56 %.</li> </ul>	
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**1.5 Description of the Proposed Transaction or Project and Impact on Competition - General**

<b>1.5.1</b>	<p>Attach a detailed description of the proposed transaction or project, including geographic locations of proposed new transmission or distribution systems, or new generation facilities.</p>	
	<p><u>MMWF Transmission Facilities - Description</u></p> <p>MMWF will be wholly owned by the Applicant. The proposed Transmission Facilities related to MMWF, and the subject of this Application, are as follows:</p> <ol style="list-style-type: none"> <li>1. MMWF Feeder and Collector Bus comprising of transformers stepping-up turbine output voltages from 600 kV to 34.5 kV and 34.5 kV electrical power lines running between the turbines and routed to the MMWF Substation;</li> <li>2. MMWF Substation that will step up the voltage from 34.5 kV to 115 kV with a three-phase, 60 Hz, 66 MVA transformer;</li> <li>3. MMWF 115 kV single-circuit transmission line, comprising approximately 1 km submarine and buried cable and 9 km overhead line, connecting the MMWF Project to HONI-owned circuit S2B, located on Goat Island between Manitoulin TS and Espanola JCT;</li> <li>4. MMWF overhead to underground transition station which takes the 115 kV from overhead to underground for the crossing of the North Channel and connection on Goat Island; and</li> <li>5. MMWF Connection/Switching Station. The connection/switching station would be enclosed in a fenced area. A circuit breaker and disconnect switches (to allow the safe flow of electricity from the project), revenue metering, telecommunication and protection equipment will be installed in the connection/switching station.</li> </ol> <p><u>MMWF Transmission Facilities - Location</u></p> <ol style="list-style-type: none"> <li>1. Transformer/Sub-Station. Located on Lot 13, Con 5, Howland Township</li> <li>2. High Voltage Transmission Line</li> </ol> <p>The high voltage overhead transmission line runs 3.3 km north east from the transformer/sub-station across lots 13, 12, 11 and 10 on Concession 5 and lots 10,</p>	

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	<p>9, 8, 7, 6 and 5 on Concession 6, Howland Township which have been leased by the Applicant. At the intersection of McLean's Mountain Road and Morphet's Side Rd the line then runs west down the Morphet's Side Rd. allowance for 1.7 km to the intersection of Morphet's Side Rd. and an unopened road allowance which is aligned with Boozeneck Rd. to the north west. The line then runs 2.2 km north west to Harbour View Rd. From here the line runs 2.2 km east on the road allowance of Harbour View Rd until it reaches the transition station on part of lot 21, Concession 12 Howland Township.</p> <p>From the transition station the transmission line runs underground north east along the Harbour View Rd. allowance until it reaches the shore allowance. It is proposed that 115 kV electrical transmission cables will cross the North Channel at the eastern end of Manitoulin Island in a north-south orientation.</p> <p>The marine cables crossing portion of the MMWF Project extends between the north and south shores of the channel. The armored cables are to be laid on the bottom of the channel. The cable will be placed underground at both shoreline locations. Conventional open cut trenching methods will be used for the near-shore and bank sections of the proposed channel crossing, the marine transmission cables will be buried in an excavated marine trench to provide the necessary protection and security with a minimum cover of 865 mm (34") over the top of the cables after backfilling.</p> <p>Once on Goat Island, the cable would remain underground to the point of interconnect with the provincial grid. The cable would be installed through conventional trenching construction methods. The property which the alignment passes through is owned by Canadian Pacific Railway, from which NPI is currently negotiating an easement to pass through this property.</p> <p>3. Connection/Switching Station</p> <p>The connection/switching station is located on Goat Island adjacent Hydro One Circuit S2B which runs parallel to Hwy 6. The point of interconnection of the MMWF is at the north end of the connection/switching station at the following coordinates: 45.98327°, -81.903813°</p> <p>Attachment 1.5.1 to this application contains a detailed map showing the geographic locations of the proposed new transmission system.</p>	
<p><b>1.5.2</b></p>	<p>Describe the generation capacity (in MW), within the Province of Ontario, of the parties to the proposed transaction or project, including each of their respective Electricity Sector Affiliates, after the completion of the proposed transaction or project.</p>	

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	The Applicant will own generation capacity of 60 MW following the completion of the MMWF Project. Upon completion, the Applicant's Electricity Sector Affiliates will have the same generation capacity (in MW) as described in Section 1.4.1.	
<b>1.5.3</b>	Describe the generation market share based on anticipated MWh production as a percentage of the Annual Primary Demand, within the Province of Ontario, of the parties to the proposed transaction or project, including each of their respective Electricity Sector Affiliates, after the completion of the proposed transaction or project.	
	Please refer to s.1.4.2 of this application.	
<b>1.5.4</b>	Attach a short description of the impact, if any, of the proposed transaction or project on competition. If there will be no impact on competition, please state the reasons. Cite specifically the impacts of the proposal on customer choice regarding generation, energy wholesalers, and energy retailers.	
	<p>Section 96(2) of the <i>Ontario Energy Board Act, 1998</i> ("OEB Act") provides the test used by the Board when considering whether the construction of an electricity transmission line is in the public interest. Under this "public interest test" the Board must consider if the proposed transmission line is in the interests of consumers with respect to prices and the reliability and quality of electricity service; and where applicable, and in a manner consistent with the policies of the Government of Ontario, the promotion of the use of renewable energy sources.</p> <p>The Ontario Power Authority ("OPA") utilized a competitive process for awarding the two Feed-in Tariff ("FIT") contracts relating to the MMWF Project. The MMWF Project itself will have little to no impact on competition within the Province of Ontario, as the Applicant is subject to the terms of the FIT contracts with respect to pricing and contract capacity. Furthermore, the MMWF Transmission Line is to be a dedicated line to connect the MMWF Project to the IESO-controlled grid, and the Applicant will therefore not be rate-regulated and the financial risk of constructing the Transmission Line and Transmission Facilities lies with the Applicant. The construction of the MMWF Transmission Line will result in the promotion of the use of renewable energy sources, namely, through the connection of the MMWF to the provincial electricity grid.</p>	
<b>1.5.5</b>	Provide confirmation that the proposed transaction or project will have no impact on open access to the transmission or distribution system of the parties or their affiliates. If open access will be affected explain how and why.	
	The Applicant is not a licensed transmitter and is not subject to the open access provisions of the <i>Electricity Act, 1998</i> , nor will it be subject to transmitter licensing or open access requirements following the completion of the MMWF Transmission Line. The Applicant will be transmitting electricity for the purpose of conveying it	

	into the IESO-controlled grid.	
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**1.6 Other Information**

<b>1.6.1</b>	Attach confirmation that the parties to the proposed transaction or project are in compliance with all licence and code requirements, and will continue to be in compliance after completion of the proposed transaction or project.	
	The Applicant will be applying for a Generation License prior to the commencement of generation for sale, and intends to comply with the requirements of its license. The Applicant’s Electricity Sector Affiliates are long-standing license holders.	

**PART II: SECTION 80 OF THE ACT—TRANSMITTERS AND DISTRIBUTORS  
ACQUIRING AN INTEREST IN GENERATORS OR CONSTRUCTING A  
GENERATION FACILITY**

All applicants filing a Notice of Proposal under section 80 of the Act must complete and file the information requested in Part II.

**2.1 Effect on Competition**

<b>2.1.2</b>	Describe whether the proposed generation output will be primarily offered into the IAM, sold via bilateral contracts, or for own use.	
<b>2.1.3</b>	Provide a description of the generation including fuel source, technology used, maximum capacity output, typical number of hours of operation in a year, and peaking versus base-load character.	
<b>2.1.4</b>	Provide details on whether the generation facility is expected to sign a “must run” contract with the IESO.	
<b>2.1.5</b>	Provide details of whether the generation facility is expected to serve a “load pocket”, or is likely to be “constrained on” due to transmission constraints.	

**2.2 System Reliability**

Section 2.2 must be completed by applicants who are claiming that the proposed transaction or project is required for system reliability under section 82(2)(b) of the Act.

<b>2.2.1</b>	Provide reasons why the proposal is required to maintain the reliability of the	
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	transmission or distribution system. Provide supporting studies.	
<b>2.2.2</b>	Discuss the effect of the proposal on the adequacy (ability of supply to meet demand) of supply in the relevant control area or distribution region, citing effects on capacity plus reserve levels in comparison to load forecasts.	
<b>2.2.3</b>	Discuss the effect of the proposal on the security (ability of supply to respond to system contingencies) of supply.	
<b>2.2.4</b>	Provide a copy of the IESO Preliminary System Impact Assessment Report, if completed, and the IESO Final System Impact Assessment Report, if completed. If the IESO is not conducting a System Impact Assessment Report, please explain.	

**PART III: SECTION 81 OF THE ACT—GENERATORS ACQUIRING AN INTEREST IN OR CONSTRUCTING A TRANSMISSION OR DISTRIBUTION SYSTEM**

All applicants filing a Notice of Proposal under section 81 of the Act must complete and file the information requested in Part III.

**3.1 Effect on Competition**

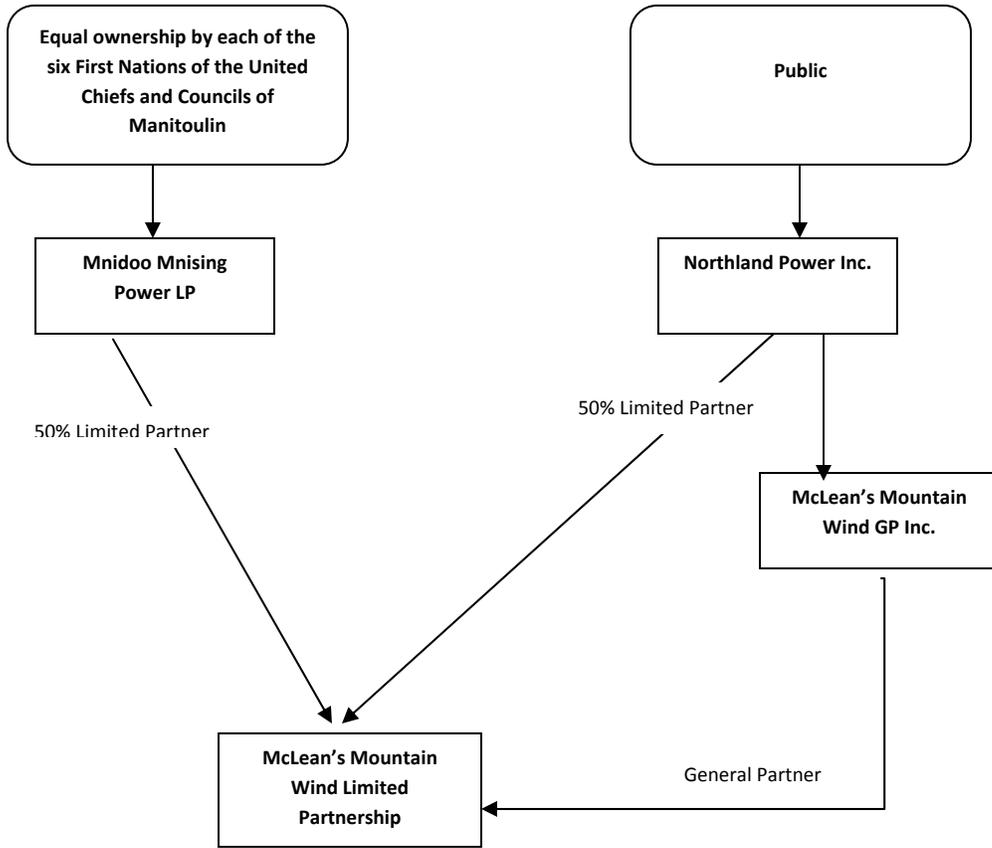
<b>3.1.1</b>	Provide a description of the transmission or distribution system being acquired or constructed.	
	<p>The Applicant proposes to construct, own and operate the following distribution and transmission facilities:</p> <ol style="list-style-type: none"> <li>1. MMWF Feeder and Collector Bus comprising of transformers stepping-up turbine output voltages from 600 kV to 34.5 kV and 34.5 kV electrical power lines running between the turbines and routed to the MMWF Substation;</li> <li>2. MMWF Substation that will step up the voltage from 34.5 kV to 115 kV with a three-phase, 60 Hz, 66 MVA transformer;</li> <li>3. MMWF 115 kV single-circuit Transmission Line, comprising approximately 1 km submarine and buried cable and 9 km overhead line, connecting the MMWF Project to HONI-owned circuit S2B, located on Goat Island between Manitoulin TS and Espanola JCT;</li> <li>4. MMWF overhead to underground transition station which takes the 115 kV from overhead to underground for the crossing of the North Channel and connection on Goat Island; and</li> </ol>	

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	<b>5.</b> MMWF Connection/Switching Station. The connection/switching station would be enclosed in a fenced area. A circuit breaker and disconnect switches (to allow the safe flow of electricity from the project), revenue metering, telecommunication and protection equipment will be installed in the connection/switching station.	
<b>3.1.2</b>	Provide details on whether the generation facilities owned by the acquiring company are or will be directly connected to the transmission or distribution system being acquired or constructed.	
	Both the MMWF generation facility and related Transmission Facilities will be owned by the Applicant and will be connected to one another. The proposed MMWF Transmission Line will be a dedicated line to connect MMWF to the IESO-controlled grid.	
<b>3.1.3</b>	Provide details of whether the generation facility is expected to serve a “load pocket”, or is likely to be “constrained on” due to transmission constraints.	
	The MMWF is not expected to serve a “load pocket” and will not be “constrained on” due to transmission constraints.	
<b>3.1.4</b>	Provide details on whether the generation facilities are expected to sign a “must run” contract with the IESO.	
	The MMWF Project will comprise of 24, 2.5 MW wind turbines that will run intermittently according to prevailing wind conditions, with a maximum peak total capacity of 60 MW. The MMWF Project will be operated pursuant to its FIT Contract with the OPA. It is not a “must run” facility.	

**McLean's Mountain Wind Limited Partnership**  
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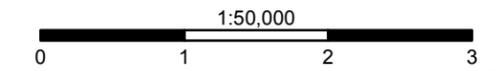
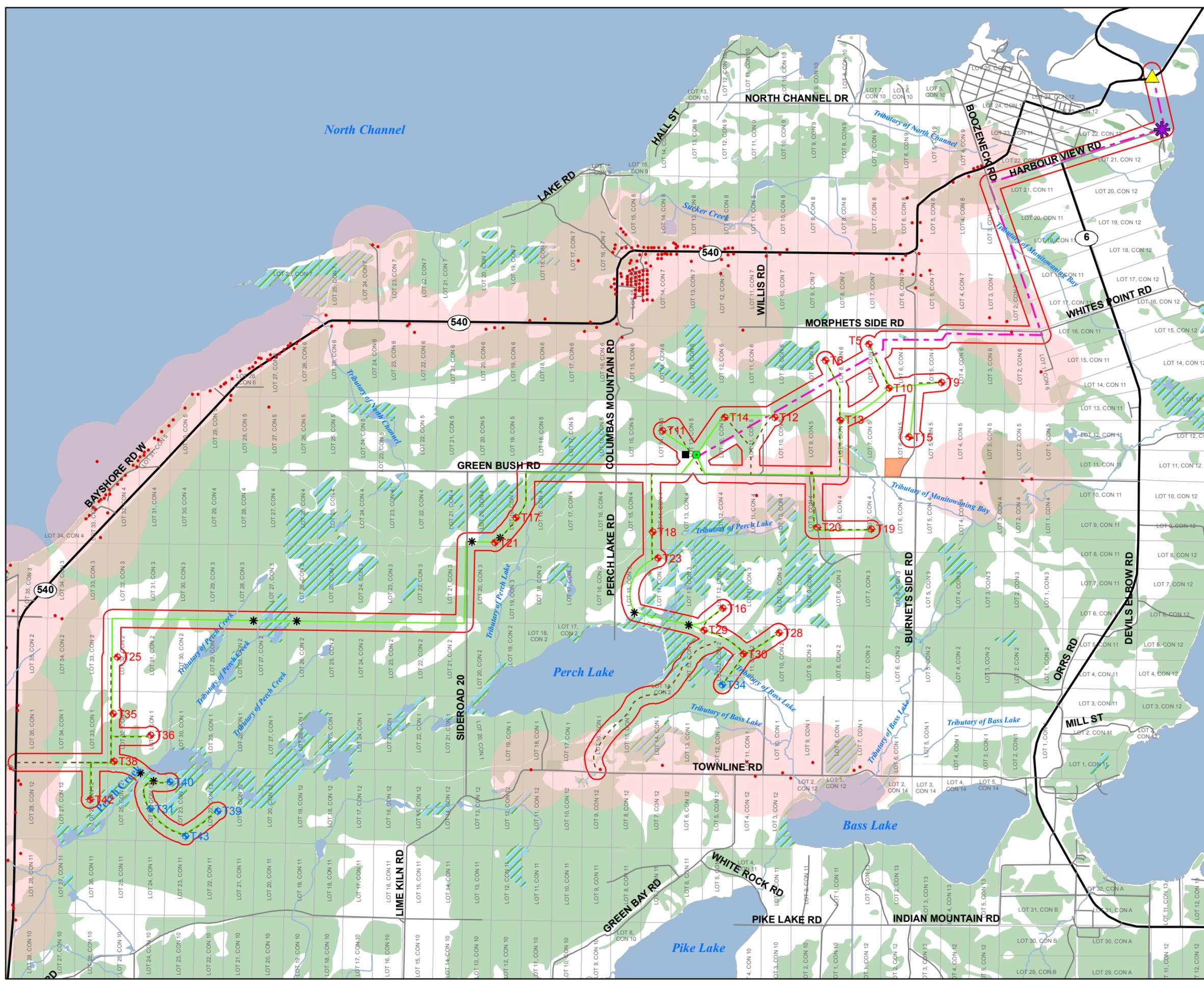
**ATTACHMENT 1.2.2 – CORPORATE CHART**



**ATTACHMENT 1.5.1 – MAP OF TRANSMISSION FACILITIES AND PROPOSED**  
**ROUTE FOR TRANSMISSION LINE**

## McLean's Mountain Wind Farm Figure A-2: Project Components Site Plan

- Legend**
- Noise Receptor
  - Local Roads
  - Highway
  - - - 120 m Project Component Setback
  - Lots/Concessions
  - Water Body
  - Watercourse
  - Woodland
  - ▨ Unevaluated Wetland
  - 550m Noise Receptor Setback
- Project Components**
- 24 Wind Turbine Locations
  - Five Extra Permitted Sites
  - Substation
  - Overhead to Underground Transition Station (Location is 20 m East of the Coast along Harbour View Road)
  - Connection/Switching Station
  - Operations Building
  - Horizontal Directional Drilling Access/Exit Pit
  - - - Access Road
  - Feeder Lines
  - Transmission Line
  - Construction Staging Area



**PROJECT SUMMARY – MMWF PROJECT**

The Applicant is proposing to construct and operate a wind farm (the “MMWF Project”) on approximately 8,200 hectares of land located south of the community of Little Current, in the Municipality of Northeastern Manitoulin and the Islands (NEMI); geographic Township of Howland and the geographic Township of Bidwell in the District of Manitoulin, Ontario.

The MMWF Project includes twenty-four (24) GE 2.5 MW wind turbine generators with a total installed nameplate capacity of 60 MW. The turbine towers will be 98.3 metres in height and the blade diameter will be 103 metres across. The nacelle, located at the top of each turbine tower, houses the generator, inverter, gearbox, bearings, couplings, rotor and auxiliary equipment. The nacelle is constructed of fiberglass, lined with sound insulating foam, and has lighting and ventilation to allow work to be conducted inside. The turbine blades are mounted on a hub and shaft that are connected to the nacelle. Each turbine tower consists of several stacked segments which are mounted on a concrete foundation.

The following table provides a description of the GE 2.5 xl wind turbine that will be used for the Project.

<b>Table 1: Turbine Description – General Electric 2.5xl</b>	
<i>Operating Data</i>	<i>Specification</i>
<b>General</b>	
Rated capacity (kW)	2500
Cut-in wind speed (m/s)	3.5
Cut-out wind speed	25
Number of rotor blades	3
Rotor diameter (m)	103
Swept Area (m <sup>2</sup> )	8328
Rotational Speed (rpm)	5-14 (variable)
<b>Tower</b>	
Hub height above grade (m)	98.3
Tip height (m)	193.8

## **PROJECT SUMMARY – TRANSMISSION FACILITIES**

The Applicant proposes to construct the following Transmission Facilities to connect the MMWF Project to the Independent Electricity System Operator (“IESO”) controlled grid.

### **Step-up Transformers & Collection System**

A small “step-up” transformer will be located in the base of each turbine to transform the electricity from 690 V to 34.5 kV for transmission through the collection system. The collection system will be composed of a combination of underground and overhead lines all connecting to the substation. The feeder lines will be buried and generally follow the turbine access roads, although in some cases, to reduce the distance of the lines, the lines may divert from the roads. Overhead lines will only be used for small lengths to avoid environmentally sensitive features. It is expected that the above ground sections of the overhead lines will be supported by single poles although in some cases, double poles may be required (due to soil conditions, angles in the line, etc.). Some lines will be installed using directional drilling. For the layout of the access lines, please refer to the mapping in **Exhibit D, Tab 2, Schedule 2**.

### **Transformer/Substation**

A three phase transformer will be required to increase the voltage of the collector system from 34.5 kV to 115 kV, the voltage required to allow connection with the Hydro One (“HONI”) transmission system. While the final design of the substation is to be confirmed, it will consist of an open-air design facility with one transformer unit. The substation will be surrounded by a security fence and will have security lighting. The substation will require an area of 50 metres by 80 metres of land (see **Exhibit D, Tab 2, Schedule 2** for mapping of the proposed location).

A concrete containment system will be installed to capture any oil leaks from the transformer. The containment system will be sized such that it will contain all of the oil in the transformer should there be a complete failure of the unit (which would be a rare and unexpected event). Water in the containment system will be visually inspected for any evidence of oil (as oil would float to the top). If oil is present, a tank truck will be brought to the site to pump the water/oil mix into it the truck. The water/oil mix will then be disposed of off-site at a licensed facility. If no oil is detected in the water, the water will be pumped into an adjacent swale and then allowed to infiltrate into the ground. Given the small size of the containment system, the volume of water collected would be very small.

The substation will be designed as an unattended facility, but will be monitored remotely twenty four (24) hours a day, seven (7) days a week. Monitoring cameras will be installed to monitor for intruders and safety purposes. Qualified station operators will be available daily at the site for maintenance and operational duties. As required by the Ontario Energy Board’s (“OEB” or the “Board”) Transmission System Code, the substation and line relay protection systems will be backed up by HONI’s relay protection system.

### **High Voltage Overhead Transmission Line**

From the substation step-up transformer, a 115 kV single-circuit overhead transmission line will be constructed to connect the MMWF Project to the existing HONI transmission system circuit S2B located on Goat Island. The transmission line is mostly contained within municipal road rights-of-way to minimize its impact on private property; however, some private property will be crossed. The Applicant, through its affiliate Northland Power Inc., has acquired easements through the affected parcels of private land.

The tower structures of the transmission line will be composed of single poles. The poles will be spaced approximately 125 metres apart and installed to a typical depth of approximately 2.5 metres. The line will be routed to minimize its length, minimize interference on private land and avoid sensitive environmental features. Approximately 9.4 km of the transmission line will be above ground. Some minor variations to the alignment are possible dependant on public input and engineering considerations. The line will be designed and built to Canadian Standard C-22 ("CSA").

### **Overhead to Underground Transition Station**

The overhead transmission line will transition to a buried cable on Harbourview Road approximately 200 metres from the edge of the North Channel. The transition station will be secured in a fenced area of approximately 180 square metres.

### **Buried and Submarine Cable**

The buried section of the transmission line will continue down the road allowance on Harbourview Road and then across the shore road allowance to the edge of the North Channel.

The buried cable will emerge from the shore below the water and from there will be laid on the bottom of the North Channel for the approximately 360 metres crossing to Goat Island. On Goat Island the cable will emerge from the water on the north shore of the channel in the same manner in which it entered the water and will continue for approximately 340 metres underground to the connection/switching station adjacent to the HONI transmission line at Hwy 6. The entrance and exit of the cable to/from the channel will be secured with concrete structures below the water level to hold the cable in line with the direction of the crossing. The cable on the bottom of channel will be anchored with concrete blocks specially designed to secure it in place.

### **Connection/Switching Station**

A connection/switching station will be required at the point of connection with the provincial HONI transmission system on Goat Island. The connection/switching station will be secured in a fenced area of approximately 1000 square metres. A circuit breaker and disconnect switches (to allow the safe flow of electricity from the MMWF Project), revenue metering, telecommunication and protection equipment will be installed in the connection/switching station. The connection/switching station operation will be monitored on a twenty four (24) hour,

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seven (7) days a week basis in order to ensure the safe operation of the MMWF Project and the Transmission Facilities.

**PROJECT SUMMARY – RATIONALE**

The Applicant will be the licenced owner and operator of a 60 MW wind farm, the MMWF Project, which will be located south of the community of Little Current, in NEMI, geographic Township of Howland, and the geographic Township of Bidwell in the District of Manitoulin, Ontario. The proposed Transmission Facilities are necessary to connect the MMWF Project to the IESO-controlled grid via HONI circuit S2B, located on Goat Island between Manitoulin TS and Espanola JCT. The proposed Transmission Line will be a designated line to connect the MMWF Project to the IESO-controlled grid.

Section 96(2) of the *Ontario Energy Board Act, 1998* (“OEB Act”) provides the test used by the Board when considering whether the construction of an electricity transmission line is in the public interest. Under this “public interest test” the Board must consider if the proposed transmission line is in the interests of consumers with respect to prices and the reliability and quality of electricity service; and where applicable, and in a manner consistent with the policies of the Government of Ontario, the promotion of the use of renewable energy sources.

The MMWF Project will have little to no impact on competition within the Province of Ontario, as the Applicant is subject to two Ontario Power Authority (“OPA”) Feed-in Tariff (“FIT”) contracts for contract capacities of 50 MW and 10 MW. As mentioned above, the MMWF Transmission Line is to be a dedicated line to connect the MMWF Project to the IESO-controlled grid. The Applicant will therefore not be licensed as a transmitter or rate-regulated and the financial risk of constructing the Transmission Line and Transmission Facilities lie with the Applicant. The construction of the MMWF Transmission Line will result in the promotion of the use of renewable energy sources, namely, through the connection of the MMWF Project to the provincial electricity grid.

**McLean's Mountain Wind Limited Partnership**  
**Exhibit C**  
**Tab 4**  
**Schedule 1**

**PROJECT SUMMARY – PROJECT SCHEDULE**

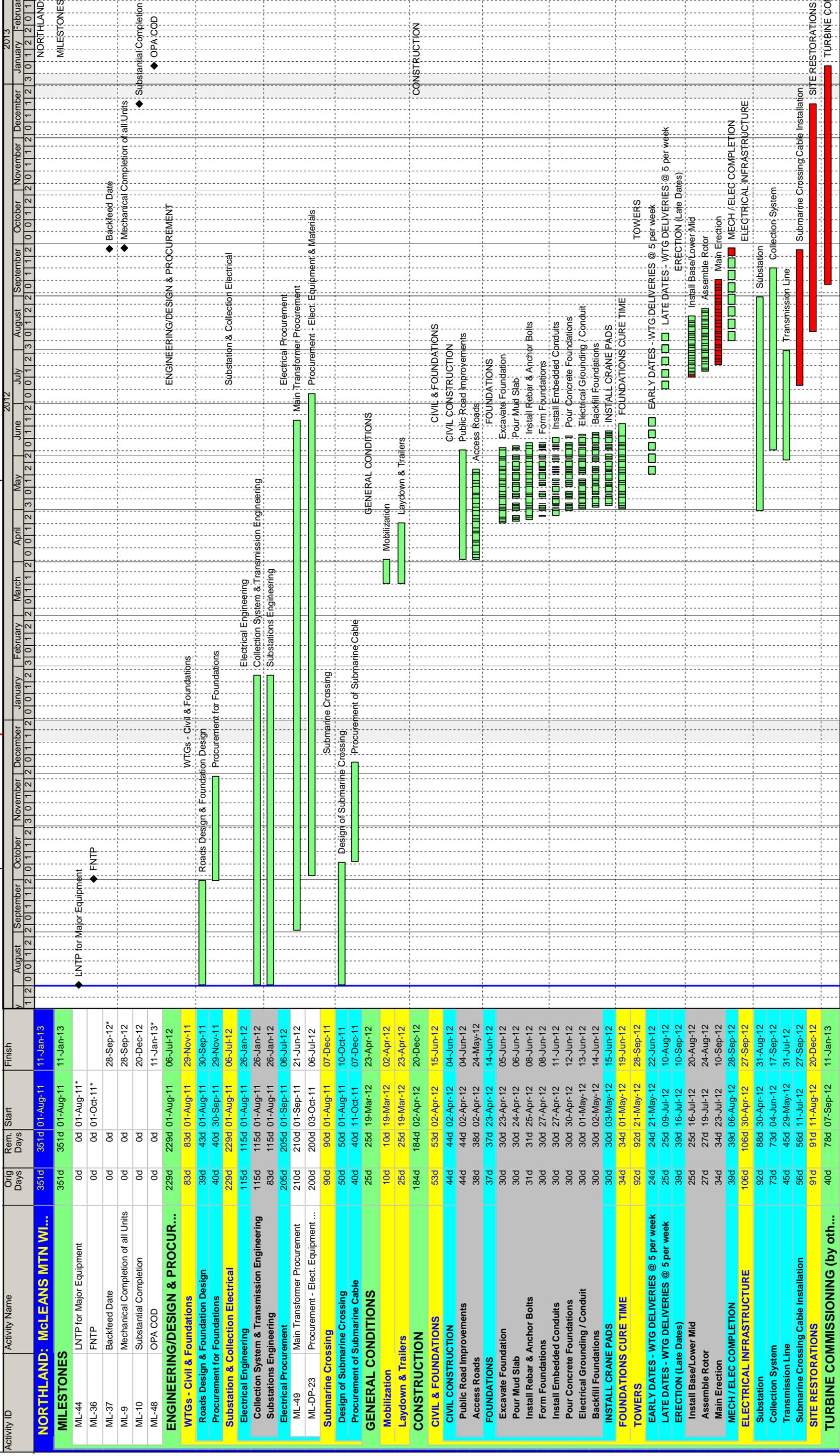
Subject to the receipt of the necessary permits and approvals (as listed in Exhibit K to this Application), site work for the MMWF Project is expected to begin in Winter 2011 and last for twelve to fifteen months. The MMWF Project and Transmission Facilities' commercial in-service date is expected to be December 2012.

A detailed Gantt Chart for the MMWF including the transmission line can be found in **Exhibit C, Tab 4, Schedule 2**.

**McLean's Mountain Wind Limited Partnership**  
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**Tab 4**  
**Schedule 2**

**PROJECT SUMMARY – PROJECT GANTT CHART**

Update - 22-Jul-11



**PROJECT LOCATION – WIND FARM**

The MMWF Project is located entirely in the Municipality of Northeastern Manitoulin and the Islands; geographic Township of Howland and the geographic Township of Bidwell, in the District of Manitoulin and falls within the traditional lands of the Anishnabee of Mniidoo Mnising. The MMWF Project location is about 5 kilometers from the Town of Little Current. The selection of the MMWF Project location was based primarily on the wind resource, access to the local electrical transmission system, environmental constraints and local landowner support.

A map showing the MMWF Project location can be found at **Exhibit D, Tab 2, Schedule 2**.

## **PROJECT LOCATION – TRANSMISSION FACILITIES**

A map showing the location of the following Transmission Facilities is attached to this application as **Exhibit D, Tab 2, Schedule 2**.

### **Transformer/Substation**

The transformer/substation is located on Lot 13, Concession 5, Howland Township, near the centre of the MMWF Project. This location was selected to facilitate the routing and design of the 34.5 kV collection system which will transmit the electricity produced by the MMWF Project to the IESO-controlled grid.

### **High Voltage Overhead Transmission Line**

The high voltage overhead transmission line runs 3.3 km north east from the transformer/substation. This section of the transmission line will run across lots 13, 12, 11 and 10 on Concession 5 and lots 10, 9, 8, 7, 6 and 5 on Concession 6, Howland Township. These parcels of land have been leased by the Applicant.

At the intersection of McLean's Mountain Road and Morphet's Side Road, the overhead transmission line will run west along the Morphet's Side Road allowance for 1.7 km to the intersection of Morphet's Side Road and an unopened road allowance, which is aligned with Boozeneck Road to the north west. The transmission line will then run 2.2 km north west to Harbour View Road. From Harbour View Road, the transmission line runs 2.2 km east on the road allowance until it reaches the transition station on part of lot 21, Concession 12, Howland Township.

As illustrated above, the transmission line is primarily routed along municipal road allowances in order to minimize the impact of the transmission line on private lands.

### **Transition Station**

The transition station will be located on part of lot 21, concession 12, Howland Township. This location was selected to minimize the visual impact of the transmission line from the shore line.

### **Buried and Submarine Cable**

The Applicant met with Municipal officials in the early development stages of the MMWF Project to discuss the routing of the transmission line. During these meetings, it was made clear that the NEMI community would not accept the construction of an overhead transmission line to transmit electricity from the MMWF Project across the North Channel. Currently there are two (2) 44 kV circuits, operated by HONI, that cross over the North Channel with very large towers on either side. The negative visual impact from a second set of towers on the NEMI community was deemed to be unacceptable, since the community relies heavily on tourism. Accordingly, the Applicant agreed that the 115 kV electrical transmission cable will cross the North Channel at the north-eastern end of Manitoulin Island in a north-south orientation using buried and

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submarine cable. The total length of the buried or submarine cable, originating from the transition station on the south side and running along to the switch/connection station on Goat island, is approximately 900 metres.

The armored cable is to be laid on the bottom of the North Channel. The cable will be placed underground at both shoreline locations. Conventional open cut trenching methods will be used for the on-shore sections of the transmission line. The cable will then be buried in an excavated marine trench to provide the necessary protection and security with a minimum cover of 865 mm (34") over top of the cable after backfilling.

Once on Goat Island, the cable will remain underground up to the connection/switching station, which is located at the point of interconnection with the HONI grid. The cable will be installed through conventional trenching construction methods. The location of the connection/switching station and the buried cable on Goat Island have been selected to minimize the impact of the transmission line on future development plans for Goat Island.

It should be noted that the property which the alignment passes through is owned by Canadian Pacific Railway. The Applicant is currently in the process of negotiating an easement for this section of the transmission line route.

**Connection/Switching Station**

The connection/switching station location has been chosen in such a way to allow for the connection of the transmission line to HONI's 115 kV circuit S2B, while minimizing the impact on future development plans for Goat Island. The location also permits the Applicant to minimize the length of its transmission line in order to avoid crossing Hwy 6. The planned location of the connection/switching station adjacent to Hwy 6 achieves these objectives.

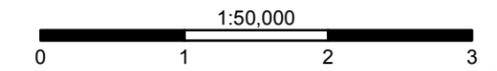
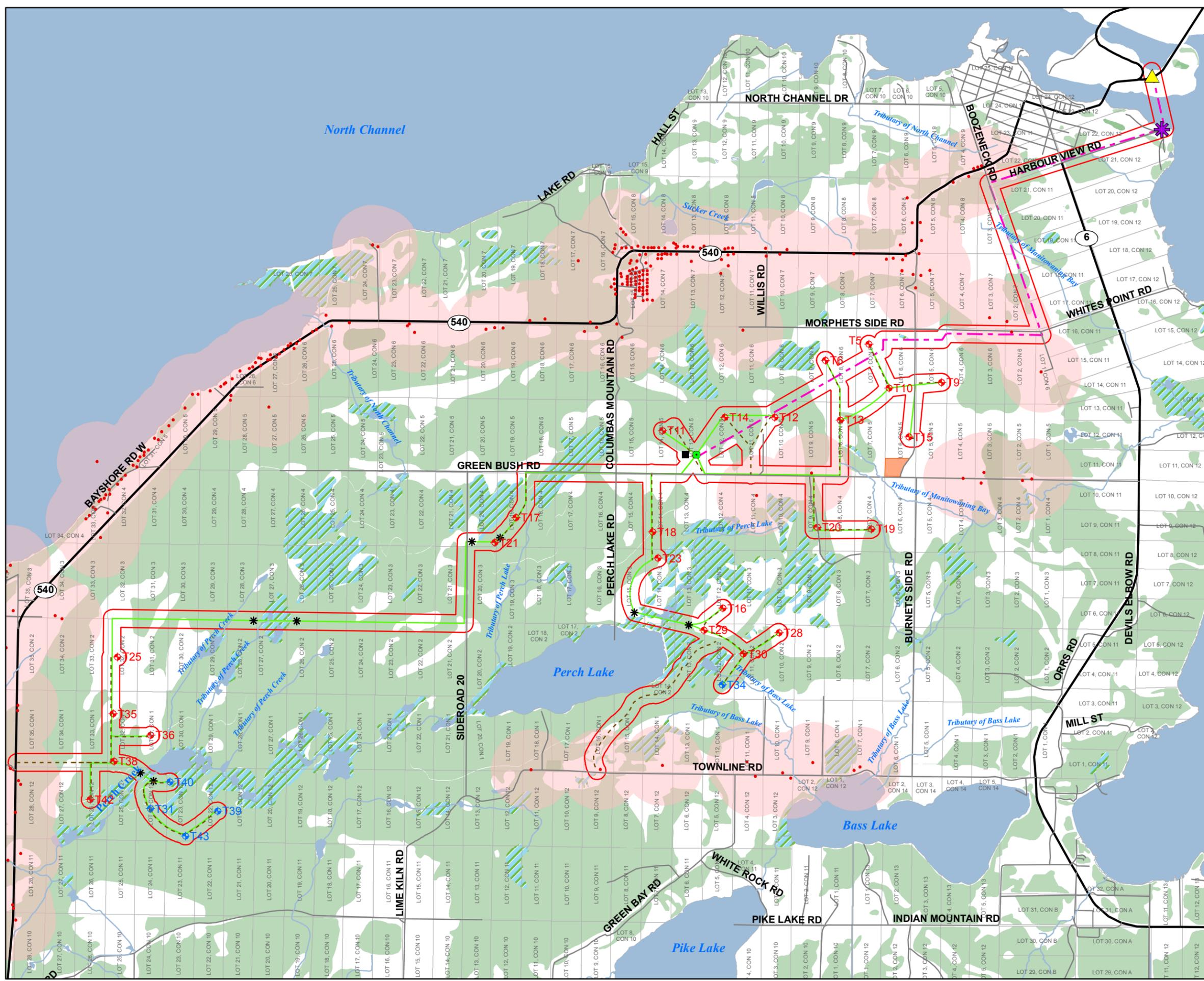
The point of interconnection of the MMWF is at the north end of the connection/switching station at the following coordinates: 45.98327°, -81.903813°.

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**PROJECT LOCATION – TRANSMISSION FACILITIES MAP**

## McLean's Mountain Wind Farm Figure A-2: Project Components Site Plan

- Legend**
- Noise Receptor
  - Local Roads
  - Highway
  - - - 120 m Project Component Setback
  - Lots/Concessions
  - Water Body
  - Watercourse
  - Woodland
  - ▨ Unevaluated Wetland
  - 550m Noise Receptor Setback
- Project Components**
- 24 Wind Turbine Locations
  - Five Extra Permitted Sites
  - Substation
  - Overhead to Underground Transition Station (Location is 20 m East of the Coast along Harbour View Road)
  - Connection/Switching Station
  - Operations Building
  - Horizontal Directional Drilling Access/Exit Pit
  - - - Access Road
  - Feeder Lines
  - Transmission Line
  - Construction Staging Area



**DESIGN SPECIFICATIONS AND OPERATIONAL DATA**

The MMWF Project Transmission Facilities will consist of the following:

- 115 kV switching substation, located at the point of MMWF Project connection to the HONI 115 kV transmission system;
- 115 kV submarine cable connecting the 115 kV switching substation to the submarine cable transition station;
- submarine cable transition station;
- 115 kV overhead transmission line connecting the submarine cable transition station and the 34.5/115 kV substation;
- 34.5/115 kV substation (collector system termination and main transformer);

A single-line diagram of the proposed electrical connection is attached as **Exhibit E, Tab 1, Schedule 2**. Electrical drawings illustrating the design, layout, isolation and protection systems for the proposed Transmission Facilities are attached to this application as **Exhibit E, Tab 1, Schedule 3**.

The 115 kV submarine cable circuit will consist of three (3) armoured, single-phase conductors, each equipped with a concentric neutral. Cable insulation will be rated to operate continuously at voltages of up to and including 132 kV, as per requirements detailed in the IESO System Impact Assessment for the MMWF Project. An external fiber optic cable for circuit electrical protection and SCADA will be attached to the outside of one of the phase conductors. The general plan and profile for the submarine cable and proposed route are attached as **Exhibit E, Tab 1, Schedule 4** to this application.

The submarine cable transition station will consist of a cable termination/overhead line tension structure, which will facilitate the cable-overhead line phase interconnections and house surge arresters and their connections to the circuit. Equipment will also be provided to link the Overhead Optical Ground Wire (OPGW) optical cables of the incoming overhead transmission line with submarine cable fiber optics.

The 115 kV overhead transmission line connecting the submarine cable transition station and the 34.5/115 kV substation will be a single-circuit, single pole design. Proposed pole height will be seventy (70) feet and the typical span between consecutive poles will be approximately one hundred thirty six (136) meters. Transmission line poles on straight runs will be single wood poles, self-supporting, buried in rock foundation whereas corner towers will be guyed wooden poles or steel monopoles.

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Overhead transmission line insulator class will be 138 kV and the line will be equipped with a single, OPGW for transmission line lightning protection and housing optical links for line protective relaying and SCADA.

Overhead transmission line design criteria and clearances will conform to CSA requirements.

Preliminary line design drawings (including typical right of way details) and stringing charts are found in **Exhibit E, Tab 1, Schedule 5**.

MMFW Project grounding will consist of the 115 kV switching substation, 115 kV transmission line towers, submarine cable transition station, 34.5/115 kV substation and wind turbine towers, all of which will be interconnected as a single composite grounding system. All grounding systems will be sized at minimum to carry the maximum available ground fault current for the longest expected duration, governed by the breaker fail clearing duration and industry-accepted safety margins.

Surge arresters will be installed on all phases at overhead line termination points in substations, transformer terminals and transitions between overhead line and high voltage insulated cables. All surge arrester ratings will be reviewed by the transmitter (i.e. HONI). Direct lightning strike shielding will be provided for all substations and will comply with IEEE and industry-accepted guidelines.

High voltage (115 kV) automatic isolation devices will be located at the 115 kV switching substation and 34.5/115 kV substation, and these devices will be equipped with "A" and "B" breaker failure protections, programmed into line protection relays. An independent, 115 kV motorized disconnect, complete with a grounding switch and interlock will be installed on the line side of each high voltage interrupter. 115 kV switching substation motorized disconnect switch will serve as the visual isolation device, at the point of MMWF Project connection to the HONI transmission system and will comply with the provisions of the Transmission System Code. In the preliminary specification, all high voltage breakers will be rated for currents of 63 kA momentary and a fault interrupting capability of no less than 50 kA. High voltage breaker typical opening time will be three (3) cycles. Such ratings exceed the requirements of the Transmission System Code.

Protection systems at the 115 kV switching substation and 34/115 kV substation will be supplied from two (2) local 125 VDC battery banks. Each direct current system will be capable of carrying all local 125 VDC loads for a minimum duration of eight (8) hours. A manual transfer scheme will be provided at each location to allow the transfer of all local DC loads to either "A" or "B" local bank in the event of single battery bank maintenance. All critical 125 VDC supplies will be continuously monitored and failures will be declared in SCADA.

"A" and "B" protection systems will be provided for all high voltage transmission lines, HONI tele-protections and the main transformer differential protections. High voltage relays in distinct protection groups will use separate current transformers and potential device windings. Protection relays in distinct protection groups will be sourced from different manufacturers.

**McLean's Mountain Wind Limited Partnership**  
**Exhibit E**  
**Tab 1**  
**Schedule 1**

The 115 kV HONI tele-protections will comply with all HONI specifications and technical requirements. HONI has indicated "A" and "B" 115 kV tele-protections will utilize duplicate, monitored Bell S4T4 circuits. The connection has been classified by HONI as being non-NPCC impactive and as such telecommunications circuit path diversity is not required.

115 kV overhead transmission line and submarine cable will be protected by "A" and "B" differential over fiber optic protections, each protection group utilizing two (2) distinct fiber optic channels. The main transformer will be protected by redundant "A" and "B" differential relays.

Equipment will be provided, for the transmittal of all required telemetry/SCADA quantities to HONI and the IESO. Real-time power quality monitoring (PQM) will be implemented at the point of HONI interconnection. All MMWF intelligent electronic devices, including digital protective relays and remote terminal units will be equipped with sequence of event recorders (SER). Digital protective relays will provide all necessary digital fault recording (DFR).

The functionality of all facility protection systems will be verified at the time of commissioning, six (6) months following the in-service date, and on a four (4) year maintenance cycle. Signal adequacy tests of the 115 kV HONI tele-protection communication channels will be conducted on a twelve (12) month maintenance interval, with channel performance testing taking place every twenty four (24) months.

Minor inspections of the main transformer will be completed on an annual basis and will include activities such as a visual inspection, cleaning of bushings, test operate of fans and tap changer on all taps as well as oil dissolved gas analysis test of the main tank and tap changer oil compartment. Major main transformer maintenance will be completed on a six (6) year cycle and will include, in addition to all annual maintenance items, power factor test of bushings and windings, testing of all transformer accessories, insulation resistance, tap ratio test as well as a verification of all annunciation points.

MMWF high voltage isolation devices (breakers and disconnect switches) will be inspected on an annual basis including visual inspection of all bushing, bases, structures, ground mats and accessories as well as functionality test of all mechanical box and tank heaters. Major breaker and disconnect switch maintenance will be completed on a six (6) year cycle and will include all annual maintenance items as well as timing tests, contact resistance measurements and bushing power factor tests of breakers. Major disconnect switch maintenance items will include lubrication, as well as contact resistance verification.

Overhead transmission line vegetation control will follow HONI and industry practices and will comply with all IESO requirements.

Infa-red scanning of all high voltage electrical connections, major electrical equipment as well as overhead lines and buswork will be completed on an annual basis.

**McLean's Mountain Wind Limited Partnership**  
**Exhibit E**  
**Tab 1**  
**Schedule 1**

Plant controls will be programmed to ensure that islanded operation of the plant and automatic re-closing of MMWF Project high voltage breakers, following major electrical fault internal or external to MMWF, is blocked at all times. Plant control systems, including supervision from digital protective relays in the breaker close control circuits, will ensure that live incoming line-dead bus conditions are present prior to and during MMWF plant control-assisted closing of all high voltage switching devices. Breaker close will be blocked for all other conditions.

Project preliminary design and design description were submitted to IESO and HONI for review and connection approval. The review includes verification of that the Applicant's design meets the requirements of the Transmission System Code and available capacity of the selected HONI transmission system and connection point. The connection of the MMWF Project to the HONI transmission system, as designed, was approved and the single line diagram was posted on the IESO/HONI websites.

**McLean's Mountain Wind Limited Partnership**  
**Exhibit E**  
**Tab 1**  
**Schedule 2**

**DESIGN SPECIFICATIONS AND OPERATIONAL DATA:**  
**SINGLE LINE DIAGRAM OF PROPOSED ELECTRICAL CONNECTION**

**CONFIDENTIAL**

**McLean's Mountain Wind Limited Partnership**  
**Exhibit E**  
**Tab 1**  
**Schedule 3**

**DESIGN SPECIFICATIONS AND OPERATIONAL DATA:**  
**ELECTRICAL DRAWINGS OF TRANSMISSION FACILITIES**

**CONFIDENTIAL**

**McLean's Mountain Wind Limited Partnership**  
**Exhibit E**  
**Tab 1**  
**Schedule 4**

**DESIGN SPECIFICATIONS AND OPERATIONAL DATA:**  
**SUBMARINE CABLE GENERAL PLAN AND PROFILE**

**CONFIDENTIAL**

**McLean's Mountain Wind Limited Partnership**  
**Exhibit E**  
**Tab 1**  
**Schedule 5**

**DESIGN SPECIFICATIONS AND OPERATIONAL DATA:**  
**OVERHEAD LINE DESIGN DRAWINGS AND STRINGING CHARTS**

**CONFIDENTIAL**

**McLean's Mountain Wind Limited Partnership**  
**Exhibit F**

**CONSTRUCTION AND IN-SERVICE SCHEDULE**

A summary of the proposed construction schedule for the proposed MMWF Project and related Transmission Facilities can be found in **Exhibit C, Tab 4, Schedule 1**, Project Summary – Project Schedule. A detailed Gantt Chart can be found in **Exhibit C, Tab 4, Schedule 2**.

The MMWF Project and Transmission Facilities are scheduled to be constructed beginning in the spring of 2012 to allow for a commercial operation date (“COD”) of December 15, 2012. Construction is planned to occur during the summer months beginning shortly after the half load season. Transportation on the local roads is not recommended prior to this time due to the risk of excessive damage to the roads as a result of the spring thaw.

The in water portion of the transmission line installation must occur during the summer months to minimize interference with spawning and migrating fish. If this timeframe is not met, the MMWF Project completion date will be delayed by a full year, and will jeopardize the economics of the MMWF Project.

The planned COD is December 15, 2012, and the contractual COD with the OPA is January 10, 2013.

The installation of the complete MMWF Project (including the Transmission Facilities) will be the responsibility of the Applicant's balance of plant (“BOP”) contractor, who has confirmed the availability of required trades to meet the schedule provided.

**LAND MATTERS**

The MMWF Transmission Line is largely contained within municipal road rights-of-way (“RoW”), with some private property being crossed. The maximum width of the RoW will be 8-10 metres depending on the distance of poles and conductor swing. The tower structures of the transmission line will be composed of single poles approximately 22 metres high and spaced about 125 metres apart and installed to a typical depth of approximately 2.5 metres. Approximately 9.4 km of the transmission line will be above ground. The Applicant (through NPI) currently holds land lease “options” for the private properties where project components are to be located.

It will be necessary to cross the North Channel to Goat Island with a submarine cable. Once on Goat Island, the cable will remain underground to the point of interconnection with the provincial grid.

The property which the alignment passes through is owned by Canadian Pacific Railway, for which the Applicant is currently negotiating an easement to pass through this property.

A table summarizing the lands required for the Transmission Facilities and the instrument granting the Applicant access to such lands can be found in **Exhibit G, Tab 1, Schedule 2**. The form of agreements in relation to the lands can be found in **Exhibit G, Tab 1, Schedule 3** of this Application.

The land required for the project was acquired through private meetings with individual land owners over the past 8 years. Some of the landowners were interested in selling outright their properties and in these instances the Applicant either purchased outright or entered into option to purchase agreements. For the balance of the private land required for the project the Applicant entered into option to lease agreements. Where municipal road right of ways are used for the project the Applicant entered into a road use agreement with the Township of North Eastern Manitoulin and the Islands.

Two (2) Public Information Centres (PIC's), as required by the REA process, were held and prior to that an additional three (3) PIC's were held. At each of these PIC's the Applicant presented slides describing the project and solicited comments. A few landowners on Morphet Sideroad expressed concern with the project. As a result of these meetings the Applicant elected to route the project, wherever possible, on the municipal road allowances to minimize interference with private land in the area.

With the exception of the lands on Goat Island required to get to and to allow for the connection/switching station no additional easements are required for the project. Negotiations with the owner of Goat Island are at an advanced stage and a resolution is expected by the end of December 2011.

**LAND MATTERS: TABLE OF LANDS REQUIRED FOR TRANSMISSION**  
**FACILITIES**

**CONFIDENTIAL**

**McLean's Mountain Wind Limited Partnership**  
**Exhibit G**  
**Tab 1**  
**Schedule 3**

**LAND MATTERS: FORM OF AGREEMENTS**

**OPTION TO LEASE**

MADE as of the [REDACTED] day of [REDACTED].

**BETWEEN:**



(hereinafter referred to as the "Lessor")

-and-

**Northland Power Inc.**  
30 St. Clair West  
Toronto, Ontario  
M4V 3A2

(hereinafter referred to as the "Lessee")

(Lessor and Lessee each a "Party" and collectively "Parties")

**RECITALS:**

- A. The Lessor is the owner of the lands described in Schedule "A" hereto (the "Lands");
- B. The Lessor and Lessee wish to record their agreement with respect to an option to lease of the Lands together with certain rights of access to the Lands during the term of this option to lease (the "Option");

NOW THEREFORE in consideration of the mutual covenants set out in this Agreement and other good and valuable consideration the Lessor and Lessee agree as follows

1. The Lessor hereby grants to the Lessee the right, to be exercised at any time prior to the expiry of this Option, to use the Lands to carry out all operations the Lessee deems necessary to assess the viability of the Lands for the installation and operation of a Wind Turbine Electrical Generating Facility that includes, but is not limited to, wind turbines, access roads and electrical infrastructure (the "Facility"), which electrical infrastructure includes but is not limited to, transformers, transmission lines and sub-stations. The operations the Lessee deems necessary to

assess the viability of the Lands for the installation and operation of the Facility include, but are not limited to, the inspection of the topography, the excavation of trial pits (at locations as the Lessee, in its reasonable discretion, shall determine provided that the Lessee shall site the trial pits in such positions as shall cause, so far as reasonably possible, the least inconvenience to the Lessor) and climate monitoring, including the site preparation for and the erection of temporary anemometer masts at locations as the Lessee, in its reasonable discretion, shall determine provided that the Lessee shall site the anemometer masts at locations as shall cause, so far as reasonably possible, the least inconvenience to the Lessor.

2. The Lessee shall have the right to exercise the Option at any time within 60 months of the date hereof, whereupon the Lessor shall grant a lease in favour of the Lessee, in the form annexed hereto and marked as Schedule "B", the term of which shall commence on the date of the exercise of the Option.
3. The exercise of the Option shall be sufficiently given if mailed by registered mail addressed to the Lessor. Any notice mailed as aforesaid shall be conclusively deemed to have been given on the next business day following the day on which such notice is mailed as aforesaid. Either the Lessor or the Lessee may at any time give notice in writing to the other of any change of address of the party giving such notice and from and after the giving of such notice the address therein specified shall be deemed to be the address of such party for the giving of any notice thereafter.
4. As compensation for the use and access of the Lands provided during the term of the Option, the Lessee shall pay to the Lessor; the sum of [REDACTED] payable on the [REDACTED] day of, [REDACTED].

The sum of [REDACTED] payable on the [REDACTED] day of [REDACTED]; and two consecutive years following on the anniversary of the signing date.

Such payments shall comprise the full amount due and owing for the nuisance and inconvenience, adverse effect and loss of use of the Lands during the term of the Option. The Lessor acknowledges that the Lessee may terminate the Option at any time upon delivery of a notice in writing to the Lessor in which event the Lessee shall no longer be obligated to make any further payments to the Lessee under the Option.

5. The Lessor represents and warrants that, except as otherwise provided in the lease attached hereto as Schedule "B", the Lessor has not and will not enter into any agreement or otherwise do anything that would restrict or inhibit the ability of the Lessee to use the Lands for the purposes contemplated by this Option to Lease. The Lessor further covenants to obtain from any existing lessee of the Lands a Postponement in the form attached hereto as Schedule "C".
6. The Lessor acknowledges and agrees that notice of the Option may be registered on the title to the Lands.
7. The Option shall enure to the benefit of and be binding upon the heirs, executors, administrators, successors and assigns of the Parties.

**IN WITNESS WHEREOF** the parties hereto have executed this agreement as of the day and year first above written.

SIGNED SEALED & DELIVERED

**Lessor:**



-and-

A handwritten signature in black ink, appearing to read 'John Bface', written over a horizontal line.

John Bface  
President  
**Northland Power Inc.**  
30 St. Clair West  
Toronto, Ontario  
M4V 3A2

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**SCHEDULE "A"**

**(the "Lands")**



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**SCHEDULE "B"**

**(Lease)**

**SCHEDULE "C"**

**POSTPONEMENT**

TO:           • (the "**Lessor**")  
AND TO:       • (the "**Wind Farm Lessee**")  
RE:           [Legal Description of the Lands] (the "**Lands**")

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The undersigned hereby refers to:

- A.     the lease for the Lands between the Lessor and the undersigned to allow the undersigned to use the Lands for agricultural purposes (the "**Existing Lease**"); and
- B.     the option to lease and potential lease for the Lands between the Lessor and the Wind Farm Lessee to permit the Wind Farm Lessee to construct wind turbines and related facilities upon the Lands (collectively, the "**Wind Farm Lease**").

FOR VALUE, the undersigned hereby acknowledges and agrees that:

- 1.     the claims, rights and interests that the Wind Farm Lessee has or may hereafter have against the Lands under the Wind Farm Lease are superior to the claims, rights and interests which the undersigned now or may hereafter have under the Lease and the undersigned hereby postpones all of his claims, rights and interests under the Existing Lease to the claims, rights and interests of the Wind Farm Lessee under the Wind Farm Lease.
- 2.     the undersigned certifies that as of the date hereof the undersigned's rights in the Lease, including its rights to occupancy, have not been assigned to any person and that the undersigned has no knowledge of any breach of the terms or conditions of the Lease.
- 3.     this Postponement shall enure to the benefit of and be binding upon the parties hereto and their respective successors and assigns.

Dated the \_\_\_ day of \_\_\_\_\_, 2008.

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**THIS INDENTURE**

Made the \_\_\_\_\_ day of \_\_\_\_\_, 2008.

**BETWEEN**

\_\_\_\_\_ (hereinafter called the "Lessor")

**OF THE FIRST PART**

-- and --

**Northland Power Inc.**

(hereinafter called the "Lessee")

**OF THE SECOND PART**

Lands

WITNESSETH that in consideration of the rents, covenants and agreements hereinafter reserved and contained on the part of the Lessee, to be paid, observed and performed, the Lessor has demised and leased and by these presents doth demise and lease unto the Lessee the Lands.

ALL THOSE CERTAIN LANDS legally described in Schedule "A" attached hereto and forming part of this Agreement (the "Lands"); also attached hereto as Schedule "B" is a Sketch of the Lands.

Term

TO HAVE AND TO HOLD the Lands for and during the term of TWENTY (20) YEARS and to be computed from the \_\_\_\_ day of \_\_\_\_\_, 2008 and from thenceforth ensuing and to be fully completed and ended on the \_\_\_\_ day of \_\_\_\_\_, 2028, together with four additional terms of FIVE (5) YEARS each as hereinafter described (the "Term").

Rental

YIELDING AND PAYING THEREFORE yearly and every year during the Term, unto the Lessor, the sum of [•] (\$[•]) DOLLARS annually in advance, commencing on the first day of the Term of this Lease.

In addition, the Lessee shall pay yearly and every year during the Term, unto the Lessor, the sum of [•] (\$[•]) DOLLARS per generator nameplate MW constructed upon the Lands plus a pro rata share equivalent to \$[•]/MW of Wind Farm Capacity divided equally on a per acre basis of total project land base, annually in advance, commencing upon the completion of the said Wind Turbine.

The Rental payable hereunder shall be increased every [•] ([•]) years during the Term or any renewal Term by an amount equal to the percentage change in the Consumer Price Index during the preceding five-year period.

The Lessee covenants with the Lessor to pay rent.

Business Taxes

AND to pay all businesses taxes in respect of the business carried on by the Lessee in and upon or by reason of their occupancy of the Lands;

Business

THAT the Lands will not, during the Term, be at any time used for any other purpose than for the purpose of the construction and operation of the Facility and the access to and egress from the Facility, including but not limited to, surveying, laying, constructing, maintaining, inspecting, altering, removing, reconstructing, repairing, renewing, moving, using, installing and/or operating One (1) or more Wind Turbines, and generally for any and all purposes and uses as may be deemed by the Lessee to be necessary or useful in connection with each Wind Turbine or the wind power generation business of the Lessee, and further including, without derogating from the generality of the foregoing, for the purpose of installing all wiring for transmission lines and systems for a Wind Turbine or other part of the Facility located on or off the Lands, either overhead or underground, building roads, constructing and/or using equipment, machinery and such other things as the Lessee may deem necessary for any of its operations aforesaid (whether on the Lands alone, or thereon in conjunction with neighbouring or other lands).

No Requirement to Build or Operate Wind Turbines

Notwithstanding anything in this Lease to the contrary, the Lessee shall be under no obligation to construct, install, use and/or operate any Wind Turbines.

Lessor's Covenants

(a) THAT the Lessor shall provide the Lessee, his agents, clerks, servants, successors and all persons transacting business with the Lessee the right to enter and have uninterrupted access to the Lands as may be requisite from time to time;

(b) THAT the Lessee shall have the right to determine the locations to be occupied by the Wind Turbines, wiring for transmission lines and roads, such locations being selected to maximize electricity generation and also to comply with any applicable governmental or regulatory requirements including, without limitation, technical standards guidelines. In determining such locations, the Lessee agrees that it (a) shall not locate any of the Wind Turbines, transmission lines and roads in any location indicated on Schedule "B" (if any); and (b) shall use commercially reasonable efforts to minimize inconvenience with the Lessor's current and reasonable future use of the Lands.

(c) THAT the Lessee shall be permitted to install fences and gates as may be requisite as well as all necessary power lines and buildings, that are ancillary to the construction and operation of a wind farm;

(d) THE Lessor covenants with the Lessee for the quiet enjoyment of the Lands. The Lessor represents and warrants that, except as otherwise herein provided, the Lessor has not and will not enter into any agreement or otherwise do anything that would restrict or inhibit the ability of the Lessee to use the Lands for the purposes contemplated by this Lease;

(e) The Lessor shall not use the Lands or conduct the following operations on the Lands without the written consent of the Lessee, which consent shall not be unreasonably withheld unless the following interferes with the operation of the Wind Turbines:

- (i) deal with the Lands in any manner which could interfere with the Lessee's operations on the Lands;
- (ii) erect any building of any kind on the Lands within Ten (10) meters of any Wind Turbine constructed or to be constructed on the Lands;
- (iii) plant or permit to grow any trees, shrubs or bushes on the Lands; and
- (iv) provided that the Lessee gives prior notice to the Lessor of the need to move the livestock away from the Lessee's operation, allow livestock to interfere with any of the Lessee's operations. The Lessor agrees that the Lessor will move livestock away from the anemometer masts, and the Facility while the Lessee is carrying out surveying, laying, construction, maintenance, inspection, alteration, removing, reconstruction, repair, installation and operation on the Lands, when requested to do so by the Lessee.

(f) THAT, if requested by the Lessee, the Lessor shall cooperate with and provide such support and assistance to the Lessee, as the Lessee reasonably requires, in respect of any regulatory or legal proceedings, including those pertaining to zoning matters, relating to the purposes for which the Lands were leased to the Lessee. The Lessee shall pay to the Lessor all costs borne by the Lessor in connection with this clause.

(g) The Lessor includes their heirs, administrators, successors or assigns.

(h) THAT the Lessee shall have the right at all times during the continuance of this Lease and within the period of any termination notice, to remove or cause to be removed from the Lands structures, fixtures, material and equipment of whatsoever nature or kind, which it may have placed on or in the Lands or area to be surrendered; provided that the Lessee shall not be required to remove any foundation or concrete base located at a depth of one (1) metre below the surface of the Lands.

(i) The Lessor agrees that any equipment or improvements installed upon the Lands shall not become fixtures of the Lease but shall be and remain the property of the Lessee.

Lessee's Covenants

- (a) THE Lessee shall consult the Lessor prior to the construction of roads, buildings and other accessories related to the business;
- (b) THE Lessee includes their successors or assigns;
- (c) THE Lessee undertakes that all gates currently in use and all additional gates installed are to be kept closed (after entering or exiting the Lands) in order to secure the Lessor's cattle or any livestock and privacy.
- (d) THE Lessee shall be responsible for all insurance coverage and payments pertaining to the conduct of its business.
- (e) THE Lessor shall continue to have access to the Lands as pasture for his cattle, livestock or crops, or use existing as of the commencement of this Lease;
- (f) The Lessee shall secure all requisite licenses and permits from various government agencies as may be required;
- (g) The Lessee shall repair any damage to the Lands caused by the construction and operation of the Lessee's improvements, including restoring the surface of the Lands to the same condition, as far as practicable, as existed before the entry thereon.

THE Lessor further covenants with the Lessee as follows:

Taxes and Rates

- (a) To pay all taxes and rates, municipal, parliamentary or otherwise, assessed against the Lands of the Lessor or Lessee on account thereof saving and excepting any business taxes and taxes upon personal property or income of the Lessee, license fees, or other taxes imposed upon the property, business or income of the Lessee and, upon request of the Lessee, provide the Lessee with proof of such payment. In the event that the Lessor fails to pay such taxes and rates, the Lessee shall have the right to pay same on behalf of the Lessor and deduct any amount so paid from the next amount of rental then due;
- (b) Provided that should the Lessor receive an increased municipal tax assessment pertaining to the within portion of land leased by the Lessee herein because of the business carried on by the Lessee then any such increase so related to the use of the property by the Lessee shall be paid by the Lessee within 30 days of receipt of notice from the Lessor of the increased sum, as apportioned by the parties acting reasonably, such payment to be made directly to the taxing authority or, if same has already been paid by the Lessor, to the Lessor (provided that the Lessor shall provide sufficient notice so that a payment by the Lessee directly to the taxing authority would not be in arrears, otherwise such payment must be made by the Lessor, to be

reimbursed by the Lessee). The parties hereto acknowledge that over the years there will be an increase of municipal taxes in the usual course but that any such increase being not so related to the business carried on by the Lessee shall be so paid by the Lessor and the Lessee shall not be required to reimburse the Lessor for any such normal increase in taxes. The Lessor will provide to the Lessee copies of all tax assessments, re-assessments and all other notices or correspondence received by the Lessor in respect of any taxes, rates or assessments that pursuant to the terms of this Lease are payable by the Lessee.

Risk of Injury

AND the Lessor shall not be responsible for any personal injury which shall be sustained by the Lessee or any employee, customer, or other person who may be upon the Lands or the entrances or appurtenances thereto. All risks of any such injury being assumed by the Lessee, who shall hold the Lessor harmless and indemnified therefrom.

Assignment

The Lessee agrees that the Lessor may assign this Lease or sell the Lands, without leave of the Lessee, subject to the Lessee's option to purchase as described below. The Lessee further agrees that the Lessor shall have the right to charge the Lands or otherwise pledge the Lease as security, subject to the obligation of the mortgagee to provide a non-disturbance agreement, as described below.

The Lessor agrees that the Lessee may assign or sublet, without leave of the Lessor, the whole or any part of the Lands provided that the assignment is for the purpose of the business of constructing and operating the Facility and any use ancillary thereto continuing to be carried on by the assignee or the sublet tenant on the same terms and conditions as is contained within the Lease herein and that accordingly, provided the use is as so set out herein, the assignment or sublet shall be without the leave of the Lessor. It is also understood that the Lessee herein may, without leave of the Lessor, assign the within Lease to a company to be incorporated by them to carry on the subject intended business but that the Lessor must be notified of any assignment or subletting. Upon assignment, the Lessor acknowledges that the Lessee shall be released from any and all obligations to observe and perform the terms, covenants and conditions contained in the Lease that occur from and after the effective date of such assignment.

The Lessor further agrees that the Lessee shall have the right to arrange for financing in this Lease, including the granting of a security interest in favour of any lender in the improvements to be made by the Lessee (including the Wind Turbines) or an assignment of this Lease to any lender.

Default

Neither party shall be considered in default in the performance of its obligations under this Lease to the extent that the performance of such obligations or any of them is delayed by circumstances, existing or future,

which are beyond the control of the Lessor or the Lessee; further, the Lessee shall not be considered in default in the performance of any of its obligations under this Lease whether for payment of monies or otherwise unless and until the Lessor has by written notice notified the Lessee of such default and the Lessee has either denied such default or has failed to commence to remedy such default within the period of thirty (30) days next following the date of such notification and, has failed to proceed thereafter with diligence to remedy the same.

Termination

The Lessee shall have the right at any time upon written notice to the Lessor, to terminate this Lease as to the whole or any part of the Lands, and in the event of the Lessee so doing this Lease shall be terminated as to such whole or any part thereof, but there shall be no refund to the Lessee of any rent that may have been paid in advance. Upon the abandonment of the whole or any part of the Lands and the cessation of operations by the Lessee thereon, and upon the termination of the whole or any part of this Lease, the Lessee shall cause all excavations in connection therewith to be filled in, all in compliance with regulations of the government of the Province of Ontario in that regard, and upon the discontinuance of the use of the whole or any part of the Lands to restore the surface thereof to the same condition, so far as practicable, as existed before the entry thereon and the use thereof by the Lessee, including the removal of all structures, fixtures, material and equipment of whatsoever nature or kind located thereon, save and except for any foundation or concrete base located at a depth of one (1) metre or more below the surface of the Lands.

Pre-Existing  
Contaminants

The Lessor hereby covenants and warrants that the Lands do not contain any Contaminants. The Lessee shall promptly notify the Lessor of any discovery of Contaminants during any excavation or assessment work done by the Lessee on the Lands. Unless the Contaminants are sourced from the Lessee's structures, fixtures, materials or equipment or the exercise of any of the Lessee's rights hereunder, the Lessee shall not be liable for and the Lessor hereby releases, discharges and indemnifies the Lessee from and against any claims or costs that may arise as a consequence of the discovery of any Contaminants in, on, or under the Lands during the Lessee's exercise of any of its rights under this Lease.

Arbitration

In the event of any dispute arising respecting this Lease, either party may by notice in writing require that the dispute be arbitrated in accordance with the terms herein. Within fifteen (15) days of delivery of the notice requiring arbitration, the parties shall in good faith attempt to agree upon one arbitrator, and if so agreed, such arbitrator shall be the sole arbitrator. In the event the parties do not so agree, within fifteen (15) days thereafter, each party shall provide written notice to the other of the one arbitrator chosen by them, and the two arbitrators thus chosen shall select within fifteen (15) days after the selection of the later of them, a third arbitrator, and the dispute shall be settled by the award of the three arbitrators of a majority of them. The

arbitration shall be conducted in accordance with the provisions of the applicable provincial arbitration legislation.

Registration

This Lease shall be registered in the Registry Office or in a Land Titles Office for the area in which the Lands are situated.

Confidentiality

The Lessor acknowledges and agrees that the Confidential Information shall not, without the Lessee's prior written consent (which may be withheld for any reason whatsoever), be disclosed, divulged or communicated in any manner to any other person other than the Lessor's employees, agents, professional advisors and consultants as well as any mortgagees or bona fide third party purchasers who shall have a "need to know" the Confidential Information, it being understood that such employees, agents, professional advisors, consultants, mortgagees and bona fide third party purchasers shall be informed at the time of disclosure of the confidential nature of such Confidential Information and shall be directed to treat the Confidential Information as such. The Lessor shall be responsible for any breach of this clause by the Lessor or any of its employees, agents, professional advisors and consultants and the Lessor shall immediately notify the Lessee in writing of any such breach. The Lessor will not be liable for disclosure of the Confidential Information upon the occurrence of one or more of the following events:

- (a) the Confidential Information becoming generally known to the public other than through a breach of this Lease; and
- (b) the Lessee having provided its prior written approval for the disclosure by the Lessor of the Confidential Information.

Non-Disturbance Agreement

During the Term the Lessor covenants and agrees that it shall obtain non-disturbance agreements from any mortgagees on the Lands in such form as the Lessee may reasonable require. Any costs involved in obtaining such non-disturbance agreements shall be borne by the Lessee.

Term of Lease

The parties hereto agree that the term of the within Lease is TWENTY YEARS so as not to contravene the provisions of the PLANNING ACT of Ontario.

Renewal

Should the Lessee wish to renew or extend the term of the Lease, provided that the same has not been terminated pursuant to any provisions hereof, the Lessee shall have the option of renewing this Lease for FOUR (4) additional successive and consecutive terms of FIVE (5) YEARS, each from and after the expiration of the Term on the same terms and conditions as contained in the Term. Each option shall be exercised by the Lessee, its successors or assigns by forwarding written notice to the Lessor, its successors or assigns at least NINETY (90) DAYS prior to the expiration of the initial term, as the case may be, and shall be upon the same terms and

conditions as herein contained. Provided further that if such renewal or extension should require an approval pursuant to the PLANNING ACT of Ontario then the within clause shall not be considered in breach or in contravention of the said Act but rather any renewal or extension of the term shall be conditional upon appropriate permission being granted pursuant to the said Act at the expense of the Lessee. The Lessor, successors and assigns, agree to co-operate and lend their concurrence in any application or hearing being required but same shall be at the expense of the Lessee.

Sale and Option to Purchase

The Lessor herein agree that if at any time they shall consider selling the lands referred to herein (see Schedule "A") or any such portion thereof that contains the property which forms the subject matter of this Lease they shall first give notice of their intent to sell to the Lessee and shall give the Lessee the first right to purchase the said lands or the portion being sold which affects the within Lease at a price equal to the fair market value of the Lands, as agreed upon the parties within 15 business days of such notice (failing which, fair market value shall be determined by arbitration as described in this Lease) and the Lessee shall have the first right prior to any third party to purchase the subject land unless the Lands are being so transferred to a child of the Lessor; and should the Lessee choose not to purchase the subject property then the Lessor shall be at liberty to offer the property for sale to a third party and should the Lessor receive any offer to purchase the Lands on terms acceptable to the Lessor then the Lessor shall give 72 hours notice of the said terms to the Lessee and the Lessee shall have 72 hours to so notify the Lessor that the Lessee will purchase the subject property upon the same terms as offered by the third party in which latter case the Lessor shall then sell the subject property to the Lessee and not to the third party. Should the Lessor transfer or sell the lands herein to a child of the Lessor and then any such child (or in fact any such third party obtaining ownership of the Lands) shall be bound by all of the terms of the within Lease.

Schedules

Schedules "A", "B", "C" and "D" are part of this Lease. Schedule "C" contains definitions of certain of the terms used in this Lease.

Address for Service

Any notice required by this Lease shall be made in writing and shall be considered given or made on the day of delivery if delivered before 5:00 p.m. or by personal delivery upon the Tenant, or three (3) business days after the day of delivery if sent by prepaid registered mail upon the Lessor and Lessee addressed as follows:

LESSOR

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

LESSEE

**Northland Power Inc.**

30 St. Clair West

Toronto, Ontario

M4V 3A2

This Agreement shall enure to the benefit of and be binding upon the heirs, administrators, successors or assigns of the parties.

DATED at \_\_\_\_\_, this \_\_\_\_\_ day of \_\_\_\_\_, 2008.

\_\_\_\_\_  
WITNESS

\_\_\_\_\_  
WITNESS

\_\_\_\_\_  
WITNESS

\_\_\_\_\_  
Lessor

\_\_\_\_\_  
John Brace  
President  
**Northland Power Inc.**  
30 St. Clair West  
Toronto, Ontario

**SCHEDULE "A"**

Legal Description of Lands

[ntd: to be inserted]

**SCHEDULE "B"**

## **SCHEDULE "C"**

### DEFINITIONS

1. IN THIS LEASE the following expressions shall have the following meanings:
  - (a) "Confidential Information" means the terms and conditions of this Lease and all other information relating thereto, whether written or oral, which is not a matter of public record;
  - (b) "Consumer Price Index" means the index for "All-items", for Canada, as published by Statistics Canada (or by a successor or governmental agency, including a provincial agency), or if such index is no longer published, an index published in substitution therefore as designated by the Lessee. If the base year for the index (or the substituted or replacement index) is changed, the Lessee will make the necessary conversion;
  - (c) "Contaminants" means any pollutant, contaminant, hazardous materials, dangerous or toxic substances;
  - (d) "Facility" means the Wind Turbine(s), access roads and electrical infrastructure which includes but is not limited to, transformers, overhead and underground transmission systems and sub-stations.
  - (e) "Lands" means a certain parcel or tract of land situate, lying and being in the Province of Ontario, being approximately ● acres as more particularly described in Schedule "A" attached hereto and also attached hereto as Schedule "B" is a sketch of the Lands;
  - (f) "Lease" means this indenture between the Lessor and Lessee.
  - (g) "person" includes an individual, corporation, partnership, or other entity, whether incorporated or not;
  - (h) "Term" shall have mean the term, in years, of this Lease, as described herein; and
  - (i) "Wind Turbine" means a wind turbine electrical generating facility constructed and operated by the Lessee on the Lands.

**SCHEDULE "D"**  
**SPECIAL PROVISIONS**

[ntd: to be inserted, if necessary]

**SCHEDULE "E"**

[ntd: to be inserted, if necessary]

**POSTPONEMENT**

TO:           • (the "**Lessor**")

AND TO:      • (the "**Wind Farm Lessee**")

RE:           [Legal Description of the Lands] (the "**Lands**")

---

The undersigned hereby refers to:

- A.     the lease for the Lands between the Lessor and the undersigned to allow the undersigned to use the Lands for agricultural purposes (the "**Existing Lease**"); and
- B.     the lease for the Lands between the Lessor and the Wind Farm Lessee to permit the Wind Farm Lessee to construct wind turbines and related facilities upon the Lands (the "**Wind Farm Lease**").

FOR VALUE, the undersigned hereby acknowledges and agrees that:

- 1.     the claims, rights and interests that the Wind Farm Lessee has or may hereafter have against the Lands under the Wind Farm Lease are superior to the claims, rights and interests which the undersigned now or may hereafter have under the Lease and the undersigned hereby postpones all of his claims, rights and interests under the Existing Lease to the claims, rights and interests of the Wind Farm Lessee under the Wind Farm Lease.
- 2.     the undersigned certifies that as of the date hereof the undersigned's rights in the Lease, including its rights to occupancy, have not been assigned to any person and that the undersigned has no knowledge of any breach of the terms or conditions of the Lease.
- 3.     this Postponement shall enure to the benefit of and be binding upon the parties hereto and their respective successors and assigns.

Dated the \_\_\_ day of \_\_\_\_\_, 2005.

\_\_\_\_\_  
•

OFFER TO PURCHASE

THIS AGREEMENT made as of the [REDACTED] day of [REDACTED] 2011.

**BETWEEN:**

MCLEAN'S MOUNTAIN WIND LIMITED PARTNERSHIP,  
by its general partner, MCLEAN'S MOUNTAIN WIND GP  
INC.

(hereinafter called the "PURCHASER")

OF THE FIRST PART

- and -

[REDACTED]  
(hereinafter collectively called the "VENDOR")

OF THE SECOND PART

**WHEREAS:**

- A. The Vendor is the registered owner of the Lands (as defined below);
- B. The Purchaser hereby offers to purchase the Lands (as defined below) from the Vendor upon the terms and conditions hereinafter contained;
- C. This agreement is herein referred to as the "Agreement".

**NOW THEREFORE THIS AGREEMENT WITNESSETH THAT** in consideration of TWO DOLLARS (\$2.00) now paid by the Purchaser to the Vendor and for other good and valuable consideration (the receipt and sufficiency of which are hereby acknowledged), the parties hereto hereby covenant and agree as follows:

- 1. **Offer to Purchase:** The Vendor hereby offers to purchase the lands and premises situated in the Northeastern Manitoulin and the Islands, Ontario, comprising of approximately [REDACTED] acres and legally described in Schedule "A" (the "Lands").
- 2. **Purchase Price:** The purchase price for the Lands shall be the sum of [REDACTED] (the "Purchase Price") which shall be paid by cash, certified cheque or wire/electronic transfer to the Vendor on the Closing Date, subject to the usual adjustments and those adjustments described herein.
- 3. **Deposit:** A deposit of [REDACTED] (the "Deposit") shall be paid by cheque to the Vendor's solicitors ("Vendor's Solicitor") in trust on or before the fifth (5<sup>th</sup>) Business Day following the mutual execution of this Agreement (such date of exercise being referred to as the "Execution Date") to be held by the Vendor's Solicitor in an interest bearing account or Certificate of Deposit, and interest earned thereon shall accrue to the benefit of the Purchaser, and to be credited on account of the purchase money on Closing. In the event that this transaction is not completed due to the default of the Purchaser, the Deposit together with all accrued interest shall be forfeited to the Vendor. In any other event that this transaction is not completed, the Deposit together with all accrued interest shall be paid to the Purchaser.
- 4. **Due Diligence Condition:** The Purchaser's obligation to complete this Agreement of Purchase and Sale shall be conditional for [REDACTED] days from the Execution Date (the "Due Diligence Date") upon the Purchaser having conducted whatever searches the Purchaser, in its sole discretion, deems advisable with respect to physical inspections of the Lands, any agreements affecting the Lands, soil tests, feasibility study respecting the Purchaser's intended purposes, fitness for purpose,

[REDACTED]

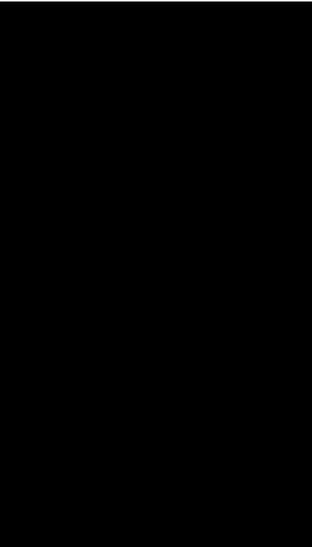
- (c) The transaction will be in compliance with the *Family Law Act*, R.S.O. 1990, c.F.3.
- (d) The Vendor will deliver vacant possession of the Lands and warrants that on or before the Closing Date, the Lands will be free and clear of any and all vehicles, metal, garbage and debris.
- (e) This Agreement has been duly executed and delivered and constitutes a legal, valid and binding obligation of the Vendor, enforceable in accordance with its terms.
- (f) The Vendor is in lawful and peaceable possession of the Lands and has the full power and authority to enter into this Agreement and to convey the Lands and to complete the transaction contemplated hereby on Closing.
- (g) The Vendor is not now and shall not on the Closing Date, be a non-resident of Canada within the meaning ascribed thereto in the *Income Tax Act (Canada)*.
- (h) To the best of the Vendor's knowledge and belief, the Vendor has not received notice of and has no knowledge or information of any pending, contemplated or threatened judicial, administrative or other action relating to the existence of a Hazardous Substance on or affecting the Lands and has no reason to believe that any cause of action for such exists and that the Vendor has never used the Lands as a waste disposal site. To the best of the Vendor's knowledge and belief, the Vendor has no information or reports concerning the existence of a Hazardous Substance on or affecting the Lands. For the purposes hereof, "**Hazardous Substance**" means any contaminant, pollutant, dangerous substance, potentially dangerous substance, noxious material, explosive material, radioactive material, urea formaldehyde foam insulation, asbestos, PCB's and any other substances or materials declared or defined to be hazardous, toxic, a contaminant or a pollutant under any applicable federal, provincial or municipal statutes, by-laws, regulations or orders.
- (i) The Vendor has not received any notice of expropriation of any part of the Lands or of any pending or threatened litigation or other judicial or administrative proceeding affecting the Lands including, without limitation, in any way relating to the use and occupation of the Lands, nor any claims adverse to the title of the Vendor;
- (j) There are no work orders or other orders or directives outstanding against the Lands or any part thereof, or if there are work orders or other orders or directives, the Vendor will take such actions as are necessary to make the Lands compliant;
- (k) To the best of the Vendor's knowledge, there are no easements or rights-of-way affecting the Lands except as expressly disclosed by the registered title to the Lands and there are no encroachments onto the Lands, and no other improvements to the Lands encroaches onto other land
- (l) The Lands abuts public highways and roads and to the best of the Vendor's knowledge and belief there is no reason that the Purchaser will not be able to apply to the applicable municipality and obtain full and uninterrupted ingress and egress for all pedestrians and vehicles utilizing the Lands to and from public highways and roads abutting the Lands.
- (m) On the Closing Date, all amounts for labour and materials relating to the Lands will have been fully paid and no one will have a right to file a lien under the *Construction Lien Act* (Ontario) in respect of such labour or materials.
- (n) The Vendor agrees that the representations and warranties that are made in this Agreement as of the Execution Date shall be true and correct in all material respects as at the Closing Date, subject to such non-material modifications as the Vendor may from time-to-time notify the Purchaser. The Vendor agrees that such representations and warranties, shall survive and not merge on Closing for a period of one year following the Closing Date.

10. **Authorizations:** Each party agrees to use its best efforts to assist the other in this transaction. The Vendor (provided the Vendor shall not incur any liability thereby) agrees to sign all necessary documentation and authorizations at the request of the Purchaser, acting reasonably. The Purchaser may request applicable governmental and municipal authorities to inform the Purchaser of any information concerning the Lands provided that any such requests shall not request or permit any such authority to conduct any inspections in respect of the Lands.
11. **Registration:** The Vendor hereby covenants and agrees that the Purchaser may register this Agreement or notice thereof on title to the Lands, and the Vendor hereby covenants and agrees to execute at no cost to the Purchaser, such further and other instruments and documents as may reasonably be required by the Purchaser to effect registration of this Agreement or notice thereof prior to the Closing Date. Provided that in the event this Agreement is terminated, the Purchaser shall register a Release/Deletion of this Agreement or Notice thereof on title to the Lands. In the event the Purchaser fails to register said Release/Deletion within seven (7) business days of the termination of this Agreement, the Purchaser hereby appoints the Vendor as its attorney for the purpose of executing any and all documents required to register the said Release/Deletion.
12. **Access:** The Vendor consents to Purchaser, its respective officers, employees, agents, contractors, subcontractors, workers and permittees or any of them entering on, exiting and passing and re-passing in, on, over, along, upon, across, through and under the Lands and so much of the Lands as may be reasonably necessary, at all reasonable times after the Execution Date until the completion of the purchase of the Lands or the termination of this Agreement, with or without all plant, machinery, material, supplies, vehicles, and equipment, for the purposes surveying, conducting engineering studies, conducting environmental studies and soil samples. All access to the Lands by the Purchaser shall be at the sole cost, expense and risk of the Purchaser. The Purchaser shall repair any damage caused by or attributable to the Purchaser's entry, inspections, tests and other work and the Purchaser being responsible and shall indemnify the Vendor for all injuries, losses and claims by third parties which may occur as a result of the exercise of its rights described in this Subsection or any of its agents, contractors or employees being on the Lands. The Purchaser will not permit any danger or hazard to exist by virtue of any investigations, testing or work that it is undertaking. The Purchaser will put the Lands back to its condition which it was in after each entry. No entry shall be made, after the Execution Date except on forty-eight (48) hours prior notice to the Vendor and the Vendor shall be entitled (but not obliged) to have its representatives accompany the Purchaser's representatives while on the Lands. If the Purchaser does not perform such repairs, the Vendor may do so at the expense of the Purchaser, such expense payable on demand.
13. **Form of Transfer:** The Transfer/Deed of Land (the "Transfer"), save for Land Transfer Tax Affidavits, shall be prepared in registrable form by the Vendor, and the Purchaser covenants at its cost to register the Transfer on Closing. If requested by Purchaser, Vendor covenants that the Transfer Deed to be delivered on completion shall contain the statements contemplated by s. 50 (22) of the *Planning Act*, R.S.O. 1990.
14. **E-Reg Process:** Where the transaction will be completed by electronic registration pursuant to Part III of the *Land Registration Reform Act*, R. S. O. 1990, Chapter L 4, and any amendments thereto, the Vendor and Purchaser acknowledge and agree that the delivery of documents and the release thereof to the Vendor and Purchaser may, at the lawyers' discretion; (a) not occur contemporaneously with the registration of the transfer/deed (and other registerable documentation), and (b) be subject to conditions whereby the lawyer receiving documents and/or money will be required to hold them in trust and not release them except in accordance with the terms of a written agreement between the lawyers.
15. **Run With The Lands:** The burden and benefit of this Agreement shall run with the Lands and shall be binding upon and enure to the benefit of the Vendor and Purchaser hereto and their respective heirs, executors, administrators, successors and assigns.

**16. Further Assurance:** Each of the Vendor and the Purchaser agrees that it shall and will from time-to-time and at all times do all such further acts and execute all such further documents and provide all such assurances as shall be reasonably required by the other to fully perform and carry out the terms of this Agreement.

**17. Notice:** Any notice, statement, document or other communications required to be given to any party pursuant to the provisions of this Agreement, shall be sufficiently given if such notice, statement or document or other communication is in writing and either delivered or faxed to such other party addressed as follows:

To the Vendor:



With a copy to their solicitors:

Attention:  
Telephone:  
Facsimile:

To the Purchaser:

McLean's Mountain Wind Limited  
Partnership  
c/o 30 St. Clair Ave. West  
17<sup>th</sup> Floor, Toronto, Ontario  
M4V 3A1

Attention: \_\_\_\_\_  
Telephone: \_\_\_\_\_  
Fax: \_\_\_\_\_

With a copy to its solicitors: Borden Ladner Gervais LLP  
40 King Street West, Suite 4100,  
Toronto, Ontario, M5H 3Y4

Attention: Linda Bertoldi  
Telephone: 416-367-6647  
Facsimile: 416-361-7383

or to such other address as may be given to the other in writing from time-to-time. Any such notice, statement, document or other communication shall, if delivered or sent by facsimile transmission prior to 4:29 p.m. (Toronto time) on a day other than a Saturday, Sunday or statutory holiday (a "Business Day"), be deemed to have been received by the other party on the same day on which it is delivered or transmitted and if delivered or transmitted at any other time, be deemed to have been received by the other party on the next following Business Day.

**18. HST:** With respect to any Goods and Services Tax or Harmonized Sales Tax (collectively, the "HST") payable pursuant to the *Excise Tax Act* (Canada) (the "Act"), the parties covenant and agree as follows:

- (a) subject to clause (b) below, the Purchaser shall pay on Closing in the same manner as the balance of the Purchase Price, all HST payable as a result of this Transaction in accordance with the Act, and the Vendor shall remit such HST to the Receiver General for Canada when and to the extent required by the Act;
- (b) notwithstanding clause (a), the Vendor shall not collect the HST from the Purchaser if the Purchaser is registered under the Act and agrees to make the

prescribed election or otherwise agrees to lawfully self-assess, and in that event the Purchaser shall file returns and remit such HST to the government when and to the extent required by the Act; and

- (c) the Purchaser shall provide a declaration and indemnity on Closing confirming its HST registration number under the Act and the Purchaser shall indemnify and save harmless the Vendor from any HST, penalty, interest or other amounts which may be payable by or assessed against the Vendor under the Act as a result of or in connection with the Vendor's failure to collect and remit any HST applicable on the sale and conveyance of the Lands by the Vendor.

If this transaction is not subject to HST, then Section 17 of this Agreement shall not apply.

- 19. **The Project:** The Vendor acknowledges that the Purchaser proposes, in the event that it purchases the Lands, to develop the Lands in connection with a windpower project involving the generation of electricity utilizing windpower facilities (the "**Project**"). The Vendor understands that as part of the development process for the Project the Purchaser will be making various applications to permit the use of the Lands for the Project, including (possibly) land use applications such as zoning and official plans and site plan applications and environmental assessments. The Vendor agrees to support and not object to such applications by the Purchaser but it is understood and agreed that the Vendor shall have no financial obligations in connection with such applications. The Vendor agrees that it shall not object in any way to such activities or consequences of the Project, which obligation shall survive termination of this Agreement or termination or Closing, notwithstanding any other provisions of this Agreement.

- 20. **Time of the Essence:** Time shall be of the essence of this Agreement.

- 21. **Assignment:** The Purchaser may assign this Agreement and the Purchase Agreement contemplated herein to any person, firm, partnership, corporation or other legal entity designated by the Purchaser without the consent of the Vendor, provided such assignee agrees to be bound by the terms of this Agreement.

- 22. **Irrevocable Time:** This offer shall be irrevocable by the Purchaser and open for acceptance by the Vendor until 4:29 p.m. (Toronto time) on \_\_\_\_\_, 2011 and if the Vendor has not accepted such offer, this offer shall be null and void.

- 23. **Entire Agreement:** This Agreement, including the attachments, shall constitute the entire agreement between Purchaser and Vendor and supersede all prior agreements, understandings, negotiations and discussions with respect thereto and there is no representation, warranty, collateral agreement or condition affecting this Agreement or the Lands or supported hereby other than as expressed herein in writing.

- 24. **Laws:** This Agreement shall be construed and enforced in accordance with the laws of the Province of Ontario and the laws of Canada applicable therein.

- 25. **Counterparts:** This Agreement may be executed in any number of counterparts, each of which when executed and delivered shall be deemed to be an original hereof and fully binding upon the signatory thereto, and all such counterparts shall together constitute one and the same instrument.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF the parties hereto have executed this Agreement.

MCLEAN'S MOUNTAIN WIND LIMITED  
PARTNERSHIP, by its general partner,  
MCLEAN'S MOUNTAIN WIND GP INC.

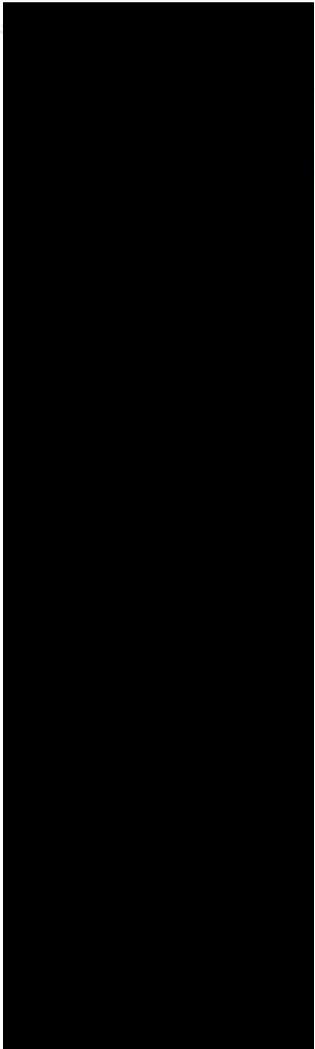
Per: *A. Pantano*  
Name: *S. MANTANO*  
Title: *COO*

Per: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

I/We have the authority to bind the Partnership.

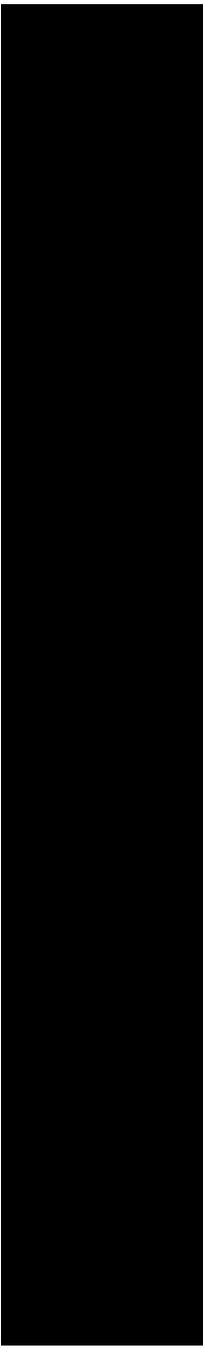
The undersigned accepts the offer of the Purchaser.

DATED this [redacted] day of [redacted] 2011.



SCHEDULE "A"

**LEGAL DESCRIPTION OF THE LANDS**



## AGREEMENT OF PURCHASE AND SALE

WHEREAS, [REDACTED] is the registered owner of the Property hereinafter described.

NOW THIS AGREEMENT WITNESSES as follows:

1. **McLEAN'S MOUNTAIN WIND LIMITED PARTNERSHIP** (the "Purchaser"), hereby agrees to buy from [REDACTED] (the "Vendor") and the Vendor agrees to sell to the Purchaser, the property described as [REDACTED] in the province of Ontario and being [REDACTED] (the "Property") at the purchase price (the "Purchase Price") of [REDACTED] payable as follows:
  - (a) the sum of [REDACTED] by cheque payable to the Vendor as a deposit to be held by it in trust pending completion or other termination of this Agreement and to be credited towards the Purchase Price on completion; and
  - (b) the Purchaser agrees to pay the balance of the Purchase Price by certified cheque on closing, subject to the usual adjustments.
2. The Purchaser covenants and agrees with the Purchaser that, subject to the provisions of this Agreement, it is purchasing the Property on an "as is, where is" basis.
3. The obligation of the Purchaser to complete the transaction contemplated in this Agreement is, for a period of [REDACTED] days following the execution of this Agreement by the Vendor and the Purchaser (the "Condition Date"), subject to the following conditions (it being understood that each of these conditions is for the benefit of the Purchaser and may be waived in whole or in part by the Purchaser by notice to the Vendor on or before 5:00 p.m. on the Condition Date):
  - (a) the Purchaser has satisfied itself in its sole, absolute, arbitrary and unfettered discretion with respect to its examination of the Property to ensure it is suitable for its intended use and is a permitted use under the zoning by-law relating to the Property;
  - (b) the Purchaser shall have arranged satisfactory financing and be satisfied in its sole, absolute, arbitrary and unfettered discretion with the terms of such financing; and
  - (c) the Purchaser has satisfied itself in its sole, absolute, arbitrary and unfettered discretion with respect to title to the Property in accordance with Section 6 of this Agreement, and with respect to its off-title searches.

If each of the above conditions are not satisfied or waived as therein provided on or before the Condition Date, this Agreement will be terminated, be null and void and be of no further force or effect and the deposit will be returned to the Purchaser in full without interest or deduction. If by the Condition Date, the Purchaser has not given notice to the Vendor that such conditions have been satisfied or waived, such conditions will be deemed not to have been satisfied or waived and this Agreement will be terminated as set out above.
4. This Agreement shall be completed on 30<sup>th</sup> day following the date that the conditions referred to in Section 3 herein have been waived or satisfied ("Closing Date"). On the Closing Date, vacant possession of the Property shall be given to the Purchaser.
5. The Purchaser shall be allowed until ten (10) days prior to the Closing Date to examine the title to the Property, at its own expense to satisfy itself that there are no outstanding work orders affecting the Property and that its present use may be lawfully continued.
6. Provided that the title to the Property is good and free from all restrictions, charges, liens, claims and encumbrances, except as otherwise specifically provided in this Agreement, save and except for:
  - (a) any registered restrictions or covenants that run with the land, provided that such are complied with;
  - (b) any registered agreements with a municipality or a supplier of utility service including, without limitation, electricity, water, sewage, gas, telephone or cable television or other telecommunication service, providing such have been complied with or security has been posted to ensure compliance and completion as evidenced by letter from the relevant municipality or utility supplier; and

- (c) any minor easements for the supply of utility service to the Property or to adjacent properties.

If, within the time for examining the title, any valid objection to title, or any outstanding encumbrance, work order or deficiency notice, or to the fact that the said present use may not lawfully be continued is made in writing to the Vendor or the Vendor's solicitor, which the Vendor is unable or unwilling to remove, remedy or satisfy, and which the Purchaser will not waive, this Agreement, notwithstanding any intermediate acts or negotiations in respect of such objections, shall be at an end, and all money theretofore paid shall be returned without interest or deduction and the Vendor and its agents shall not be liable for any costs or damages. Save as to any valid objection so made within such time, and except for any objection going to the root of title, the Purchaser shall be conclusively deemed to have accepted the Vendor's title to the Property. The Vendor hereby consents to the municipality releasing to the Purchaser details of all outstanding work orders or deficiency notices affecting the Property, and the Vendor agrees to execute and deliver to the Purchaser or its solicitors such further authorizations in that regard as the Purchaser may reasonably require.

7. The Purchaser acknowledges having inspected the Property prior to entering into this Agreement and, subject to the condition(s) herein contained, understands that upon the Vendor accepting this Agreement there shall be a binding Agreement of Purchase and Sale between the Purchaser and the Vendor.
8. The Vendor and the Purchaser agree that there is no condition, express or implied, representation or warranty of any kind that the future intended use of the Property by the Purchaser is or will be lawful except as may be specifically stipulated elsewhere in this Agreement.
9. The Purchaser shall not call for the production of any title deed, abstract, survey or other evidence of title to the Property except such as is in the possession or control of the Vendor. The Vendor agrees that, if requested by the Purchaser, it will deliver any sketch or survey of the Property in its possession or within its control to the Purchaser as soon as possible and prior to the last day allowed for examining title. In the event that a discharge of any mortgage or charge held by a corporation incorporated pursuant to the Loan Companies Act (Canada), Chartered Bank, Trust Company, Credit Union or Insurance Company and which is not to be assumed by the Purchaser on completion, is not available in registrable form on completion, the Purchaser agrees to accept the Vendor's solicitor's personal undertaking to obtain, out of the closing funds, a discharge or cessation of charge in registrable form and to register same on title within a reasonable period of time after completion, provided that on or before the completion the Vendor shall provide to the Purchaser a mortgage statement prepared by the mortgagee setting out the balance required to obtain the discharge, together with a direction executed by the Vendor directing payment to the mortgagee, of the amount required to obtain the discharge of the balance due on completion.
10. Provided that this Agreement shall be effective to create an interest in the Property only if the subdivision control provisions of the *Planning Act (Ontario)* are complied with and the Vendor that the prescribed statements pursuant to Subsection 50(22) of the *Planning Act (Ontario)* shall be properly completed by it and its solicitors on the date set for completion.
11. The Purchaser shall be credited towards the Purchase Price with the amount, if any, which it shall be necessary for Purchaser to pay to the Minister of National Revenue in order to satisfy the Purchaser's liabilities in respect of tax payable by the Vendor under the non-residency provisions of the Income Tax Act by reason of this sale. The Purchaser shall not claim such credit if the Vendor delivers on completion:
  - a) its statutory declaration that it is not then a non-resident of Canada;
  - b) a certificate of clearance issued to the Vendor pursuant to Section 116 of the *Income Tax Act (Canada)*;
  - c) the Vendor's solicitor's undertaking to hold back out of the Purchase Price an amount sufficient to satisfy the Vendor's non-resident tax liability until such time as it can deliver the certificate referred to in b) above.
12. Any rents, mortgage interest, realty taxes including local improvement rates and unmetered public or private utility charges and unmetered cost of fuel, as applicable, shall be apportioned and allowed to the day of completion, the day of completion itself to be apportioned to Purchaser.
13. The Transfer/Deed shall, save for the Land Transfer Tax Affidavit, be prepared in registrable form at the expense of Vendor, and any mortgage or charge to be given back by the Purchaser to the Vendor at the expense of the Purchaser. If requested by the Purchaser, the Vendor covenants that the Transfer/Deed to be delivered on completion shall contain the statements contemplated by Clause 50(22) of the *Planning Act, R.S.O. 1990*.

14. Time shall in all respects be of the essence hereof provided that the time for doing or completing any matter provided for herein may be extended or abridged by an agreement in writing signed by the Vendor and the Purchaser or by their respective solicitors who may be specifically authorized in that regard.
15. Any tender of documents or money hereunder may be made upon the Vendor or the Purchaser or their respective solicitors on the day set for completion of this Agreement. Money may be tendered by bank draft or cheque certified by a Chartered Bank, Trust company, Province of Ontario Savings Office, Credit Union or Caisse Populaire.
16. The Vendor and the Purchaser each warrant that all necessary corporate action has been taken to authorize them to complete the transaction contemplated herein
17. If there is a conflict between any provision written or typed in this Agreement (including any Schedule to this Agreement) and any provision in the printed portion hereof, the written or typed provision shall supersede the printed provision to the extent of such conflict. This Agreement, including any Schedules attached hereto, shall constitute the entire Agreement between the Purchaser and the Vendor. There is no representation, warranty, collateral agreement or condition, whether direct or collateral or expressed or implied, which induced any party hereto to enter into this Agreement or on which reliance is placed by any such party, or which affects this Agreement or the Property or supported hereby, other than as expressed herein. This Agreement shall be read with all changes of gender or number required by the context.
18. If the Transaction is not subject to GST/HST, then Section 9.1 of this Agreement shall not apply. With respect to the GST/HST payable pursuant to the *Excise Tax Act* (Canada) (the “Act”), the parties covenant and agree as follows:
  - (a) subject to clause (b) below, the Purchaser shall pay on Closing in the same manner as the balance of the Purchase Price, all GST/HST payable as a result of this Transaction in accordance with the Act, and the Vendor shall remit such GST/HST to the Receiver General for Canada when and to the extent required by the Act;
  - (b) notwithstanding clause (a), the Vendor shall not collect the GST/HST from the Purchaser if the Purchaser is registered under the Act and agrees to make the prescribed election or otherwise agrees to lawfully self-assess, and in the event the Purchaser shall file returns and remit such GST/HST to the government when and to the extent required by the Act.
  - (c) the Purchaser shall provide a declaration and indemnify on Closing confirming its GST/HST registration number under the Act and the Purchaser shall indemnify and save harmless the Vendor from any GST/HST, penalty, interest or other amounts which may be payable by or assessed against the Vendor under the Act as a result of or in connection with the Vendor’s failure to collect and remit any GST/HST applicable on the sale and conveyance of the Property by the Vendor.
19. The Vendor and Purchaser acknowledge that the transaction will be completed by electronic registration pursuant to Part III of the Land Registration Reform Act, R.S.O. 1990, Chapter L4 and the Electronic Registration Act, S.O. 1991, Chapter 44, and any amendments thereto. The Vendor and Purchaser acknowledge and agree that the exchange of closing funds, non-registrable documents and other items (the “Requisite Deliveries”) and the release thereof to the Vendor and the Purchaser will:
  - (a) not occur at the same time as the registration of the transfer/deed (and any other documents intended to be registered in connection with the completion of this transaction); and
  - (b) be subject to conditions whereby the solicitors receiving any of the Requisite Deliveries will be required to hold same in trust and not release same except in accordance with the terms of a Document Registration Agreement (“DRA”) between the said solicitors.

The Vendor and Purchaser irrevocably instruct the said solicitors to be bound by the DRA which is recommended from time to time by the Law Society of Upper Canada. Unless otherwise agreed to by the solicitors such exchange of the Requisite Deliveries will occur in the applicable Land Titles Office or such other location agreeable to both solicitors.

DATED at \_\_\_\_\_ this \_\_\_\_\_ of \_\_\_\_\_, 2011.

**McLEAN'S MOUNTAIN WIND LIMITED PARTNERSHIP**  
(by its General Partner McLean's Mountain Wind GP, Inc.)

Per: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

Per: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

We have authority to bind the Corporation

THE VENDOR hereby accepts the above Offer.



THIS ROAD USER AGREEMENT made this 22 day of April, 2010, between,

**THE CORPORATION OF THE TOWN OF  
NORTHEASTERN MANITOULIN AND THE ISLANDS**  
hereinafter referred to as the “**Corporation**”

OF THE FIRST PART

- AND -

**McLEAN’S MOUNTAIN WIND LIMITED PARTNERSHIP**  
hereinafter referred to as the “**Electric Power Producer**”

OF THE SECOND PART

WHEREAS the Electric Power Producer desires the right to use certain portions of the Municipal Road Allowances which are under the jurisdiction of the Corporation for the purpose of conducting Electric Power by Electrical Interconnections from wind turbines located (or to be located) in the jurisdiction of the Corporation upon the terms and conditions hereinafter set forth;

AND WHEREAS the Corporation has agreed to grant to the Electric Power Producer certain rights in respect to the Municipal Road Allowances;

NOW THEREFORE IN CONSIDERATION of the undertakings and agreement hereinafter expressed and upon the terms hereinafter set forth, the Corporation and Electric Power Producer mutually covenant and agree as follows:

1. In this Agreement:

- (a) “**Affiliate(s)**” means, with respect to any Person, any other Person which directly or indirectly controls or is controlled by or is under direct or indirect common control with the Person or any other Person which is directly or indirectly controlled by an entity which controls the Person;
- (b) “**Applicable Law**” means, in respect of any Person, property, transaction or event, all present or future applicable laws, statutes, regulations, treaties, judgements and decrees and all present or future applicable published directives, rules, policy statements and orders of any Public Authority including the Corporation and all applicable orders and decrees of courts and arbitrators of like application to the extent, in each case, that the same are legally binding;
- (c) “**Corporation**” means The Corporation of the Town of Northeastern Manitoulin and the Islands and its successors;
- (d) “**Drainage Superintendent**” means the most senior individual employed by the Corporation with responsibility for drainage matters on Municipal Road Allowances within the Municipality or such other person as may from time to time be designated by the Council of the Corporation.

- (e) “**Electric Power**” means electrical energy, produced from the wind turbines located in the jurisdiction of the Corporation and more particularly located on the drawing attached to this Agreement as Schedule “A” or such other wind turbines located in the jurisdiction of the Corporation as may in the future be owned or operated by the Electric Power Producer;
  - (f) “**Electrical Interconnections**” means such poles, electrical interconnections, electric conductors, transformers and other equipment situate in the Municipality as the Electric Power Producer may from time to time require or deem desirable for the conduction of Electric Power, along or across the Municipal Road Allowances; and “**Electrical Interconnection**” means any one of such.
  - (g) “**Municipal Road Allowances**” means those portions of common and public highways located in the Corporation of the Town of Northeastern Manitoulin and the Islands, which are currently shown on Schedule “A” to this Agreement (subject to amendment from time to time as further agreed by the parties hereto, both acting reasonably), and shall include ditches, driveways, sidewalks, and sodded or other areas forming part of the road allowance and shall also include unopened road allowances now or at any time during the term hereof under the jurisdiction of the Corporation;
  - (h) “**Municipality**” means and includes the territorial limits under and subject to the jurisdiction of the Corporation as of the date when this Agreement takes effect;
  - (i) “**Person**” means an individual, corporation, partnership, joint venture, association, trust, pension fund, union, governmental agency, board, tribunal, the Corporation commission or department and the heirs, beneficiaries, executors, legal representatives or administrators of an individual;
  - (j) “**Public Authority**” means any governmental, regional, municipal or local body having authority over the Corporation, the Electric Power Producer, any other relevant Person, Electric Power, the Electrical Interconnections or the Municipal Road Allowances;
  - (k) “**Public Works Superintendent**” means the most senior individual employed by the Corporation with responsibility for Municipal Road Allowances within the Municipality or such other person as may from time to time be designated by the Council of the Corporation.
2. This Agreement is conditional upon the Electric Power Producer obtaining and maintaining both a contract with Ontario Power Authority (OPA) under the Feed-In Tariff provisions (FIT) for Wind Farms as well as a Renewable Energy Approval (REA) from the Ministry of the Environment (MOE) as set out pursuant to the provisions of the Green Energy Act and applicable regulations thereto, as such contract or approval or governing program may be succeeded, amended or replaced with other required contracts, approvals or governing programs under Applicable Law from time to time.

3. The location of the proposed Municipal Road Allowances comprising the Electrical Interconnections shall be set out in Schedule "A" to this Agreement (which Schedule, wherever referred to in this Agreement, shall be subject to amendment from time to time as further agreed by the parties hereto, both acting reasonably). Many travelled roads within the Corporation do not have Municipal Road Allowances. To the extent that any further surveying or title searches are required to show the location or title of the Municipal Road Allowances within Schedule "A" for the Electric Power Producer's purposes, the Electric Power Producer shall complete such work at the Electric Power Producer's expense.
4. The term of this Agreement shall commence on May 1, 2010, and shall continue and be in full force and effect for a 22 year period until April 1, 2032, at which point it shall terminate. At the end of the term, this Agreement shall be further automatically renewed for successive terms of one (1) year each on the same terms and conditions unless either party provides sixty (60) days' prior written notice to the other party that it is terminating this Agreement. The parties acknowledge and agree that the termination of this Agreement shall not be deemed a waiver of any rights that the Electric Power Producer may have to the Municipal Road Allowances or otherwise under the *Electricity Act, 1998* or any other Applicable Law.
5. Pursuant to the *Electricity Act, 1998*, the Electric Power Producer and its successors, assigns, wholly owned subsidiaries, agents, licensees, employees and contractors shall have the right to enter upon the Municipal Road Allowances to the extent that any Municipal Road Allowances remains under the jurisdiction of the Corporation to construct, maintain, replace, remove, operate, patrol, inspect, alter, reconstruct, relocate, enlarge and repair Electrical Interconnections for the conduction of Electric Power, to carry out certain work with respect to any Electrical Interconnection required in order to comply with Applicable Law or required by any Public Authority and to clear the Municipal Road Allowances of all obstructions that would interfere with the use of the Electrical Interconnections on the terms and conditions set out herein.
6. The Corporation represents that subject to the provisions of Paragraph 3:
  - (a) it has good right, full power and authority in law to grant the rights over the Municipal Road Allowances confirmed to be in Schedule "A" in the manner set out in this Agreement;
  - (b) there are Persons claiming an interest in the Municipal Road Allowances currently shown in Schedule "A" or any part thereof adverse to or inconsistent with its registered title thereto and that the Electric Power Producers shall satisfy themselves as to the title status of the Municipal Road Allowances shown in Schedule "A", including any claims of adverse possession and First Nation Land claims.
7. The Electric Power Producer will comply with the requirements of any existing easements or utilities infrastructure situated with the Municipal Road Allowances in constructing and operating the Electrical Interconnections.

8. The Electric Power Producer shall ensure that neither its work nor the Electrical Interconnections unduly interferes with the use of any Municipal Road Allowances by members of the public. Without limiting the generality of the foregoing, the Electrical Power Producer shall not be entitled to close or temporarily block any of the Municipal Road Allowances without the prior written consent of the Corporation, acting reasonably. The Electric Power Producer acknowledges that the rights granted hereunder are non-exclusive, and do not constitute a grant of easement or any other permission other than as expressed herein in writing or as otherwise granted to the Electric Power Producer under the *Electricity Act*.
9. The Electric Power Producer acknowledges that the winter and year-round maintenance of the Municipal Road Allowances is, and will continue to be limited and that the Corporation does not provide twenty-four (24) hour snow clearance on any of the Municipal Road Allowances, or any snow clearance at all on some. The Electric Power Producer agrees that the Corporation shall not in any way be responsible for ploughing or maintaining any of the Municipal Road Allowances to a condition to permit the Electric Power Producer's operations hereunder. In the event that the Electric Power Producer chooses to provide, and the Corporation chooses to permit, winter maintenance of the Municipal Road Allowances that the Corporation would not otherwise maintain during the winter season, the Electric Power Producer shall ensure that it maintains the Municipal Road Allowances to a standard that will ensure public safety at all times and to the satisfaction of the Corporation. Without limiting any other provision of this Agreement, the Electric Power Producer shall save harmless and indemnify the Corporation, its servants, officers, councillors and agents from all demands, losses, damages, costs, charges and expenses which may be claimed or recovered against the Corporation by any person or persons as a result of the Electric Power Producer's maintenance of any Municipal Road Allowances for the winter season under the terms of this Agreement.
10. Save as hereinafter provided, the consent, permission and authority hereby given and granted to the Electric Power Producer to enter upon the Municipal Road Allowance shall be at all times subject to the approval of the Public Works Superintendent, not to be unreasonably withheld or delayed. All work done under this Agreement is subject to the approval (which approval shall not be unreasonably withheld or delayed) and direction of the Public Works Superintendent who has full power and authority, in connection with the approval of the Corporation, to give directions and orders that he/she considers in the best interest of the Corporation in connection with the matters approved by the Corporation and the Electric Power Producer will follow the directions and orders that the Public Works Superintendent gives. Notwithstanding the foregoing, the Electric Power Producer shall have the right to carry out routine maintenance and field testing work without the approval of the Public Works Superintendent.
11. Before commencing any work, the Electric Power Producer will deposit with the Public Works Superintendent a plan, drawn to scale, showing the Municipal Road Allowances where the work is proposed and the location, including height of the Electrical Interconnections or part thereof, together with specifications relating to the proposed Electrical Interconnections or part thereof. For the purposes of this paragraph, works of

the Electric Power Producer include not only original installations, but also any and all repair or relocation work or additions to or replacements of any part of the Electrical Interconnections.

12. The Public Works Superintendent shall review the plans and specifications submitted by the Electric Power Producer and may not approve the work or may approve the work with such, if any, modifications to the plans and specifications and upon such terms and conditions as he/she considers in the best interest of the Corporation. No work, including any excavation, opening or other work which may disturb or interfere with any road or Municipal Road Allowance or its traveled surface, shall be undertaken by the Electric Power Producer unless the plans and specifications therefor have been approved in writing by the Public Works Superintendent and then the work shall be undertaken and completed in accordance with the approved plans and specifications with such modifications, if any, as may have been made by the Public Works Superintendent and in accordance with any terms and conditions that may have been included by the Public Works Superintendent. The Corporation agrees that any response required from the Public Works Superintendent or the Drainage Superintendent pursuant to this Agreement shall be given as soon as commercially reasonable.
13. The Electric Power Producer shall where possible endeavour to utilize co-location opportunities using existing infrastructure so as to minimize the need to install new poles and wires within the Municipal Road Allowances.
14. For the purposes of paragraphs 10, 11 and 12 of this Agreement, in the circumstances that the work of the Electric Power Producer interferes with or may interfere with a municipal drain, the Drainage Superintendent or other person responsible for drainage matters appointed by the proper authority under the Drainage Act with respect to such municipal drain, shall have the same rights as the Public Works Superintendent to receive, review and consider the plans and specifications submitted by the Electric Power Producer and to deny approval of the work or to approve the work with such, if any, modifications to the plans and specifications and upon such terms and conditions as he/she, the Drainage Superintendent or other person responsible for drainage matters, considers will best preserve effective operation and maintenance of the municipal drain.
15. The construction, installation, maintenance and repair of the Electrical Interconnections shall be the full and entire responsibility of the Electric Power Producer, and the approval or non-approval or the modification or the imposition of any terms and conditions in connection with the granting of approval shall not relieve the Electric Power Producer of responsibility for any errors or omissions or from the Electric Power Producer's obligation to construct, install, maintain and repair the Electrical Interconnections in a good and complete manner and in accordance with sound and safe engineering practice.
16. The Electric Power Producer will not cut, trim or interfere with any trees on the Municipal Road Allowances without providing details of such work to the Public Works Superintendent, to allow the Public Works Superintendent to receive, review and consider such details and provide comments, if any, to the Electric Power Producer before the Electric Power Producer commences such work.

17. Notwithstanding any provisions of this Agreement, in the event of any emergency involving the Electrical Interconnections, the Electric Power Producer shall notify the appropriate authorities immediately upon becoming aware of the situation and shall do all that is necessary and desirable to control the emergency, including such line repair and other work in and to the Electrical Interconnections or the Municipal Road Allowances as may be required for the purpose. As soon as practical after the emergency is discovered, the Electric Power Producer shall advise the Public Works Superintendent by telephone and shall keep him advised throughout the emergency. The Electric Power Producer shall reimburse the Corporation for any and all costs incurred in connection with the emergency. Forthwith after it has become necessary for the Electric Power Producer to exercise its emergency powers under this paragraph, the Electric Power Producer shall make a written report to the Public Works Superintendent of what work was done and the further work to be undertaken, if any, and seek the approval of the Public Works Superintendent for the further work as contemplated in the preceding paragraphs.
18. The Electric Power Producer shall repair to the reasonable satisfaction of the Public Works Superintendent, all damages to the Municipal Road Allowances or municipal drains, ditches, street surfaces, storm or sanitary sewer systems located therein which it may interfere with in the course of constructing, repairing or removing the Electrical Interconnections, and shall make good any settling or subsidence thereafter caused by such construction interference. Such restoration shall be to the same condition, as nearly as may be possible, as was in existence of the Municipal Road Allowances when the excavation or interference commenced. If the Electric Power Producer fails at any time to do any work required by this paragraph within a reasonable time the Corporation may do or may cause such work to be done and the Electric Power Producer shall on demand pay any reasonable account therefor as certified by the Public Works Superintendent. The Corporation may elect to undertake such restoration of the Municipal Road Allowances, in which case the Electric Power Producer shall reimburse the Corporation for all of the reasonable direct costs of so doing as certified by the Public Works Superintendent; but if the Corporation does not choose to carry out the restoration, it shall be completed by the Electric Power Producer at the Electric Power Producer's sole expense. Notwithstanding the foregoing, the Electric Power Producer shall not be required to carry out and shall not be responsible for any costs associated with any maintenance, repairs or restoration of the Municipal Road Allowances other than as set out in this paragraph nor shall the Electric Power Producer be required to restore or replace any crops located on the Municipal Road Allowances which it may interfere with in the course of constructing, repairing or removing the Electrical Interconnections or be responsible for any costs relating to such restoration or replacement of crops.
19. In the placing, maintaining, operating and repairing of the Electrical Interconnections or any part thereof, the Electric Power Producer will use care and diligence to ensure that there will be no unnecessary interference with any Highway or any other municipal works or improvements. If any additional municipal works or improvements are made necessary by reason of any work done as approved by the Public Works Superintendent as described in this Agreement or omitted to be done by the Electric Power Producer, such work will be constructed and maintained by the Electric Power Producer at its own expense.

20. The Electric Power Producer agrees on behalf of itself, its agents, trustees, administrators and permitted assigns to indemnify and save harmless the Corporation its servants, officers, councillors and agents from and against all claims, liability, loss, costs, damages or other expenses of every kind that the Corporation may incur or suffer as a consequence of personal injury, including death, and property damage arising out of or in any way incurred or suffered in connection with the construction, maintenance, operation, removal or repair of the Electrical Interconnections or any part thereof, except to the extent that such liability is attributable to the wilful or negligent acts or omissions of the Corporation as a result of or arising out of or in relation to any of the terms of this Agreement.
21. The Electric Power Producer shall purchase and maintain Commercial General Liability insurance in a form satisfactory to the Corporation and with a minimum coverage limit of [REDACTED] per occurrence, covering the legal liability arising out of the installation of the Equipment and the operations of the Electrical Interconnections of The Electric Power Producer related to the Municipal Road Allowances, which shall name the Corporation as an additional insured and include cross liability and contractual liability, non-owned automobile coverage with blanket contractual and physical damage coverage for hired automobiles and thirty (30) days written notice of cancellation. The Electric Power Producer shall provide the Corporation with a valid certificate of such insurance as evidence of the foregoing coverage upon signing this Agreement. The Electric Power Producer shall provide the Corporation with any renewal and replacement certificates as may be necessary during the term of the Agreement.
22. The Corporation agrees, in the event of the voluntary closing by by-law of any of the Municipal Road Allowances identified on Schedule "A" to this Agreement to give the Electric Power Producer reasonable prior notice of such closing and to provide the Electric Power Producer, at no cost to the Electric Power Producer and prior to the closure of the applicable Municipal Road Allowance, with easements, in registrable form, over that part of the Municipal Road Allowance closed sufficient to allow the Electric Power Producer to preserve any part of the Electrical Interconnections in its then existing location, and to enter upon the closed Municipal Road Allowance to maintain and repair such part of the Electrical Interconnections on the terms and conditions set out in this Agreement. In the event of any other adverse claim or encumbrance affecting the Municipal Road Allowance of which the Corporation becomes aware (including, without limitation, First Nation land claims), the Corporation will provide notice of such claim or encumbrance to the Electric Power Producer as soon as reasonably possible.
23. If the Corporation, in pursuance of its statutory powers, decides to alter the construction of the Municipal Road Allowances identified on Schedule "A" to this Agreement or of any associated municipal works or improvements, or to construct, lay down, or establish any municipal works or improvements, and if the location of any part of the Electrical Interconnections interferes with the location of construction of such alteration, work or improvement, then upon receipt of reasonable notice in writing from the Corporation specifying the point where such part of the Electrical Interconnections interferes with the plans of the Corporation, the Electric Power Producer shall, at the cost and expense of the Corporation, alter or relocate such part of the Electrical Interconnections at the point

specified to a location owned by the Corporation as designated by the Public Works Superintendent within a reasonable period of time.

24. The Electric Power Producer may elect to permanently discontinue the use of ("abandon") any part of the Electrical Interconnections on at least sixty (60) days prior written notice of such abandonment to the Corporation specifying the part of the Electrical Interconnections to be abandoned and the date when the abandonment will occur.
25. If during the term of this Agreement, the Electric Power Producer abandons any part or all of the Electrical Interconnections, or in the event of the termination or expiry of the Agreement, in which event the Electric Power Producer will be deemed to have abandoned all of the Electrical Interconnections, the Electric Power Producer shall have the right to remove such part of its Electrical Interconnections as have been abandoned, but if the Electric Power Producer does not remove such of the Electrical Interconnections as have been abandoned, within three months the Electric Power Producer shall at the conclusion of the three month period of abandonment deactivate such parts of the abandoned Electrical Interconnections in the Municipality as are not so removed and the Corporation shall have the right to require the Electric Power Producer to remove overhead and above-grade Electrical Interconnections at its expense within a further six month period in accordance with the Decommissioning Plan which is approved by the Ontario Ministry of the Environment as part of the Renewable Energy Approval Plan (the "Decommissioning Plan"). If the Electric Power Producer fails to remove the Electrical Interconnections within six months after being requested to do so by the Corporation, the Corporation may do the required Decommissioning work itself or cause it to be done by a third party contractor and the Electric Power Producer shall pay the reasonable costs associated with this work.
26. This Agreement and the respective rights and obligations hereunto of the parties hereto are hereby declared to be subject to the provisions of all regulating statutes and regulations and to the provisions of all municipal by-laws, and to all orders and regulations made thereunder and from time to time remaining in effect.
27. All notices, communications and requests for approval which may be or are required to be given by either party to the other herein shall be in writing and shall be given by delivery by courier or by facsimile addressed or sent as set out below or to such other address or facsimile number as may from time to time be the subject of a notice:

To the Corporation:



To the Electric Power Producer:

McLean's Mountain Wind Limited Partnership  
c/o Northland Power Inc.  
30 St. Clair Avenue  
Suite 1700  
Toronto, ON M4V 3A1

Attention: John Brace, President  
Facsimile: 416 962-6266  
Emergency Telephone No.:

Any notice, if delivered by courier, shall be deemed to have been validly and effectively given and received on the date of such delivery and if sent by facsimile with confirmation of transmission, shall be deemed to have been validly and effectively given and received on the day it was received, whether or not such day is not a business day.

28. The Electric Power Producer may not assign this Agreement or any part thereof without the written approval of the Corporation, which may not be unreasonably withheld or delayed. Notwithstanding the foregoing, the Electric Power Producer may assign any part of this Agreement without the prior approval of the Corporation to the following:
- (a) any Affiliate of the Electric Power Producer, provided that such Affiliate also assumes the contract referred to in Section 2 and is responsible for the wind power project to which this Agreement relates; or
  - (b) any entity succeeding to the business and assets of the Electric Power Producer, by way of merger, amalgamation or consolidation, provide that such entity also assumes the contract referred to in Section 2 and is responsible for the wind power project to which this Agreement relates; or
  - (c) any entity (a "Secured Party") holding security, whether by way of a mortgage, charge or other encumbrance of this Agreement or the Electrical Interconnections or any part of the Electrical Interconnections or by any other arrangement under which this Agreement or the Electrical Interconnections become security, for any indebtedness or other obligation;

(the above entities being hereinafter referred to as the "Permitted Transferees").

The Electric Power Producer shall provide the Corporation with written notice of the assignment to a Permitted Transferee within thirty days of the occurrence of such assignment. Any assignment by the Electric Power Producer of any part of its interest in this Agreement is subject to the requirement that on or before the making of such assignment, the assignee (including a Permitted Transferee) shall agree in writing with the Corporation (and in a form acceptable to the assignee and the Corporation, both acting reasonably) to observe and perform all the obligations of the Electric Power Producer under this Agreement; provided however that in the case of an assignment to and assumption by a Secured Party, the Secured Party shall only agree to be bound by this Agreement in the event of a foreclosure or entry into possession of the Electrical Interconnections and then only while the Secured Party is in possession of or the owner of the Electrical Interconnections.

Upon the assignment of this Agreement (except in the event of an assignment to a Permitted Transferee, where condition (b) below shall not be required (provided that in the event of an assignment to a Secured Party, condition (b) below shall be required in the event of a foreclosure or entry into possession of the Electrical Interconnections by the Secured Party or any third party taking such possession as a result of the Secured Party enforcing its remedies pursuant to its security), the Electric Power Producer shall be released from any obligations under this Agreement that arise from and after the date of such assignment, provided that:

- (a) the assignee has agreed in writing with the Corporation (in a form acceptable to the assignee and the Corporation, both acting reasonably) to observe and perform all the obligations of the Electric Power Producer under this Agreement; and
- (b) if required by the Corporation, there has been sufficient financial security provided to the Corporation, acting reasonably, to ensure the satisfaction of the Electric Power Producer's obligations under the Decommissioning Plan have been satisfied.

The Electric Power Producer acknowledges that a change in control of the Electric Power Producer shall be considered and deemed an assignment of this Agreement or of any of the Electric Power Producer's rights and obligations under this Agreement and all of the terms and conditions contained in this paragraph applicable to an assignment thereof shall apply to the deemed assignment.

29. In addition to its obligations under Section 22 of this Agreement, the Corporation shall only have the right to assign, transfer or dispose all or any part of its interest under this Agreement in conjunction with an assignment, transfer or other disposition of its interest in all or any part of the Municipal Road Allowances which are subject to this Agreement, in which case the Corporation shall provide the Electric Power Producer with written notice of any such assignment, transfer or other disposition within thirty days of its occurrence and any such assignment, transfer or disposition by the Corporation is subject

to the requirement that on or before the making of such assignment, transfer or disposition, the assignee shall agree in writing with the Electric Power Producer (and in a form acceptable to the assignee and the Electric Power Producer, both acting reasonably) to observe and perform all the obligations of the Corporation under this Agreement.

30. Other or special conditions:

- (a) The Electric Power Producer shall pay to the Corporation the sum of [REDACTED] by way of reimbursing the Corporation for the staff time required to process this Agreement; and as well the Electric Power Producer shall reimburse the Corporation for all reasonable legal fees incurred in connection with the review of this Agreement;
- (b) The Electric Power Producer shall provide the Corporation with a certified cheque for the amount of [REDACTED] prior to the initial installation of the Electrical Interconnections under this Agreement; and such funds shall be held in trust until the initial installation work is completed to the satisfaction of the Public Works Superintendent, acting reasonably; and, in addition to any other remedies which may be available to the Corporation for breach of this Agreement, the Public Works Superintendent is authorized to apply such funds to see to the proper completion of such initial installation work if it is not completed to his satisfaction, acting reasonably; and after the Public Works Superintendent is satisfied, acting reasonably, with the completed work, the funds shall be released, without interest, to the Electric Power Producer;
- (c) The Electric Power Producer agrees that upon the commencement of construction by the Electric Power Producer on the Municipal Road Allowances and on each anniversary of such date thereafter until the date that this Agreement expires or is earlier terminated in accordance with the provisions hereof, the Electric Power Producer will pay to the Corporation [REDACTED]. These payments shall be used by the Corporation for worthy individual, community and charitable causes as judged by a panel composed of two (2) members nominated by the Council of the Corporation and one (1) member nominated by the Electric Power Producer; and
- (d) The Electric Power Producer shall pay to the Corporation the sum of [REDACTED] per hour for each Corporation staff member (including administrative staff) supervising the installation of the Electrical Interconnections and restoration work done on the Municipal Road Allowances (such sum to be adjusted from time to time to reflect any increase in pay to such staff by the Corporation, provided that such increases are reasonable).

31. If the Electric Power Producer shall commit a breach of or omit to comply with any of the provisions of this Agreement, the Corporation may give to the Electric Power Producer notice in writing specifying the breach complained of and indicating the intention of the Corporation to terminate the consent, permission and authority of the Corporation hereby granted to the Electric Power Producer unless the Electric Power

Producer shall have remedied the breach within the period mentioned in the notice, which period shall be not less than one month or unless the Electric Power Producer shall have within such notice period commenced to remedy the breach and has diligently pursued the remedying thereof, and such breach, in any event, has been remedied within 60 days after the expiry of the original notice period. Provided that notwithstanding anything contained in this Agreement, the Corporation may give notice to terminate this Agreement on fifteen (15) days written notice for default in payment of any monies owing to the Corporation by the Electric Power Producer and provided further that notwithstanding anything contained in this Agreement, the Corporation may terminate this Agreement immediately without any notice whatsoever upon the happening of any one or more of the following events:

- (a) Bankruptcy of the Power Producer;
- (b) The appointment of a Receiver or Receiver/Manager of all or any part of the assets of the Electric Power Producer;
- (c) The seizure of any major assets of the Electric Power Producer by any creditor of the Electric Power Producer;

“Major asset” means an asset of the Power Producer that is essential to the operation of the Electric Power Producer’s business.

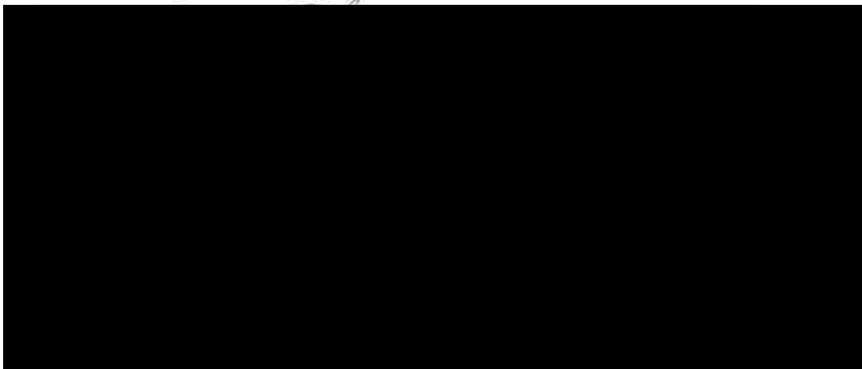
Upon the happening of an event in Clause A or B above, or after the expiration of the fifteen (15) day period noted in Clause C above or the above-noted thirty (30) day period (60 days if extended), the consent, permission and authority of the Corporation hereby given and granted to the Electric Power Producer shall, at the option of the Corporation, terminate and this Agreement shall be of no further force and effect. Notwithstanding the termination of this Agreement, the Electric Power Producer’s obligations under this Agreement with regard to repairing damage or payment of any monies owing under this Agreement, together with any of the obligations under the Decommissioning Agreement annexed hereto as Schedule “B”, shall remain in full force and effect and the Electric Power Producer shall be liable for the payment or performance thereof.

32. This Agreement shall extend to, benefit and bind the parties thereto, their successors and assigns, respectively.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF the parties hereto had duly executed these presents with effect from the day first above written.

**THE CORPORATION OF THE TOWN OF  
NORTHEASTERN MANITOULIN AND  
THE ISLANDS**



I/We have authority to bind the Corporation.

**McLEAN'S MOUNTAIN WIND LIMITED  
PARTNERSHIP, by its general partner,  
McLEAN'S MOUNTAIN WIND GP INC.**

Per: \_\_\_\_\_

Name: **JOHN W. BRACE**  
Title: **PRESIDENT & CEO**

Per: \_\_\_\_\_

Name:  
Title:

I/We have authority to bind the Corporation.

**COMMUNITY AND STAKEHOLDER CONSULTATION**

Stakeholder consultation has been a cornerstone of the MMWF Project with multiple information sharing and stakeholder feedback opportunities provided. The consultation program was initiated in June 2004 and continues to date. Further consultations/ communications are planned through the proposed construction, operations, and decommissioning phases of the project.

An extract of the Consultation Report is attached to this application as **Exhibit H, Tab 1, Schedule 2**, and the maps illustrating the proposed routing and location of the Transmission Facilities, as presented in the Public Information Centre, are attached as **Exhibit H, Tab 1, Schedule 3**.

**McLean's Mountain Wind Limited Partnership**  
**Exhibit H**  
**Tab 1**  
**Schedule 2**

**COMMUNITY AND STAKEHOLDER CONSULTATION: CONSULTATION REPORT**

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**APPENDIX B**  
Project Notifications and Letters

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## **Project Notification (Notices and Letters)**

**MCLEAN'S MOUNTAIN WIND FARM PROJECT**  
**First Notice of Public Review**  
**Regarding a Draft Renewable Energy Approval (REA) Submission Package**

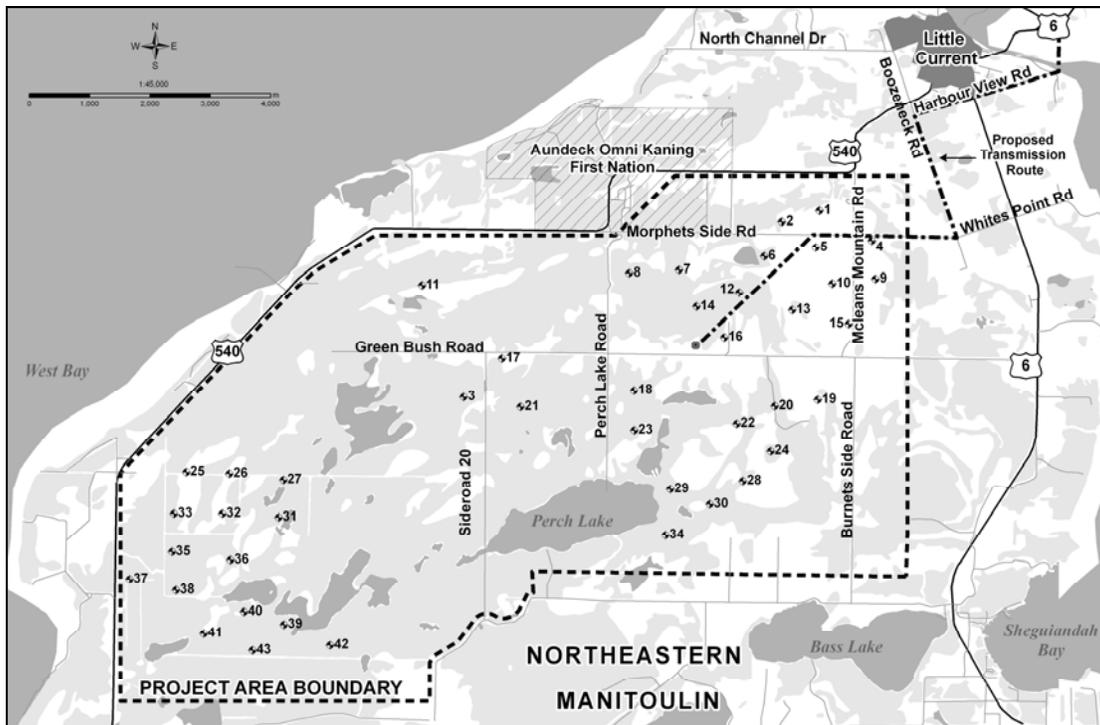
**Project Name:** Maclean's Mountain Wind Farm

**Project Location:** Municipality of Northeastern Manitoulin and the Islands (Manitoulin Island), Ontario

Dated at the Municipality of Northeastern Manitoulin and the Islands this 13<sup>th</sup> day of January 2010.

Northland Power Inc. (NPI) proposes to develop the McLean's Mountain Wind Farm (MMWF), located south of the community of Little Current, in the Municipality of Northeastern Manitoulin and the Islands (NEMI); geographic Township of Howland, and the geographic Township of Bidwell in the District of Manitoulin, Ontario. The proposed MMWF is expected to consist of up to 43 wind turbines that will generate 77 MW of electricity. The proposed project will require approval under Ontario Regulation 359/09 – Renewable Energy Approval (REA) under the *Green Energy Act*. The REA replaces approvals formerly required under the *Environmental Assessment Act*, *Planning Act* and *Environmental Protection Act*. NPI intends to develop the project under the new Green Energy Act (GEA) Feed-In-Tariff (FIT) program. This notice is distributed in accordance with REA requirements.

**Map of Proposed Project Location**



**Project Description**

The proposed MMWF project will include 43 wind turbines with an initial installed capacity of 77 MW. All turbines will be located within the project boundary area as shown in the map above. The turbine locations shown on the above map may be subject to change based on input received through the REA process. The proposed project will connect with the Hydro One Transmission system (the provincial grid) that is located on Goat Island. There will be the need to cross the North Channel with a submarine cable to facilitate the transmission connection.

**Documents for Public Inspection**

A written copy of the Environmental Screening Report/Environmental Impact Statement (ESR) was made available for public inspection on July 2009 at NEMI's Clerk Office. Under REA, NPI is obligated to provide several reports to support the REA application. NPI has prepared draft supporting documents in order to comply with the requirements of REA and intends to rely on the previously submitted ESR (July 2009) to partially fulfill the required documentation. A Draft REA Package including supplementary documentation in fulfillment of REA requirements will be made available for a 60-day review period as of January 18<sup>th</sup>, 2010. NPI will also be holding a Public Information Centre (PIC) on March 22, 2010. Ads will be provided in the local newspaper to notify you of the upcoming PIC. The draft REA Reports will be available as of January 18<sup>th</sup>, 2010 at the project website [www.northlandpower.ca](http://www.northlandpower.ca) click tab for Development Projects and for review at these locations:

**Township of the Northeastern Manitoulin and the Islands**

Clerk's Office  
15 Manitowaning Road  
Little Current ON, POP 1K0

**Northland Power Inc. Little Current Office**

McLean's Mountain Wind Farm Office  
P.O. Box 73  
Little Current ON, POP 1K0

**Project Contacts and Information:** To learn more about the proposed project, upcoming public meetings or to provide your comments on the draft REA Reports, please contact:

**Rick Martin, Project Manager**

Northland Power Inc. Little Current Office  
McLean's Mountain Wind Farm Office  
P.O. Box 73  
Little Current ON, POP 1K0  
Tel: (705)271-5358 cell, (705)368-0303 Manitoulin Island Office  
E-mail: [rickmartin@northlandpower.ca](mailto:rickmartin@northlandpower.ca)

**Don McKinnon, REA Project Manager**

Dillon Consulting Limited  
235 Yorkland Blvd, Suite 800  
Toronto, Ontario, M2J 4Y8  
Tel: 416.229.4647 ext. 2355  
E-mail: [dpmckinnon@dillon.ca](mailto:dpmckinnon@dillon.ca)

**MCLEAN'S MOUNTAIN WIND FARM PROJECT  
 Second Notice of Public Review  
 Regarding a Draft Renewable Energy Approval (REA) Submission Package**

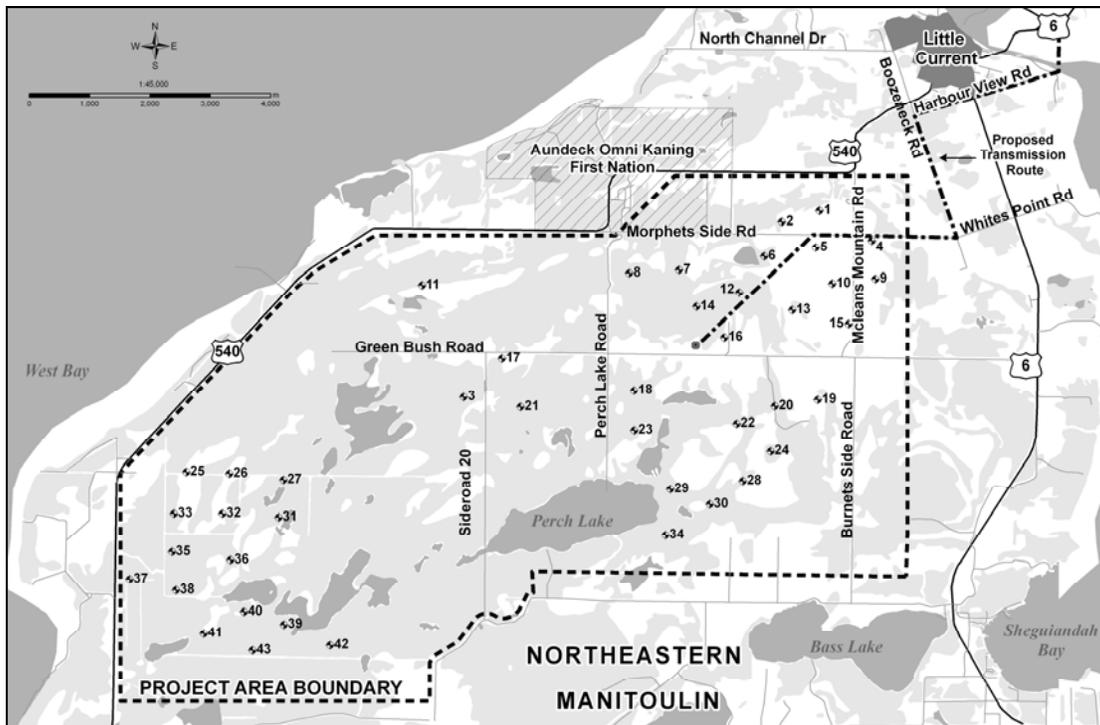
**Project Name:** Maclean's Mountain Wind Farm

**Project Location:** Municipality of Northeastern Manitoulin and the Islands (Manitoulin Island), Ontario

Dated at the Municipality of Northeastern Manitoulin and the Islands this 20<sup>th</sup> day of January 2010.

Northland Power Inc. (NPI) proposes to develop the McLean's Mountain Wind Farm (MMWF), located south of the community of Little Current, in the Municipality of Northeastern Manitoulin and the Islands (NEMI); geographic Township of Howland, and the geographic Township of Bidwell in the District of Manitoulin, Ontario. The proposed MMWF is expected to consist of up to 43 wind turbines that will generate 77 MW of electricity. The proposed project will require approval under Ontario Regulation 359/09 – Renewable Energy Approval (REA) under the *Green Energy Act*. The REA replaces approvals formerly required under the *Environmental Assessment Act*, *Planning Act* and *Environmental Protection Act*. NPI intends to develop the project under the new Green Energy Act (GEA) Feed-In-Tariff (FIT) program. This notice is distributed in accordance with REA requirements.

**Map of Proposed Project Location**



**Project Description**

The proposed MMWF project will include 43 wind turbines with an initial installed capacity of 77 MW. All turbines will be located within the project boundary area as shown in the map above. The turbine locations shown on the above map may be subject to change based on input received through the REA process. The proposed project will connect with the Hydro One Transmission system (the provincial grid) that is located on Goat Island. There will be the need to cross the North Channel with a submarine cable to facilitate the transmission connection.

**Documents for Public Inspection**

A written copy of the Environmental Screening Report/Environmental Impact Statement (ESR) was made available for public inspection on July 2009 at NEMI's Clerk Office. Under REA, NPI is obligated to provide several reports to support the REA application. NPI has prepared draft supporting documents in order to comply with the requirements of REA and intends to rely on the previously submitted ESR (July 2009) to partially fulfill the required documentation. As indicated in the first Notice (released on January 13<sup>th</sup>, 2010) a Draft REA Package including supplementary documentation in fulfillment of REA requirements was made available for a 60-day review period on January 18<sup>th</sup>, 2010. NPI will also be holding a Public Information Centre (PIC) on March 22, 2010. Ads will be provided in the local newspaper to notify you of the upcoming PIC. The draft REA Reports have also been available as of January 18<sup>th</sup>, 2010 at the project website [www.northlandpower.ca](http://www.northlandpower.ca) click tab for Development Projects and for review at these locations:

**Township of the Northeastern Manitoulin and the Islands**

Clerk's Office  
 15 Manitowaning Road  
 Little Current ON, POP 1K0

**Northland Power Inc. Little Current Office**

McLean's Mountain Wind Farm Office  
 P.O. Box 73  
 Little Current ON, POP 1K0

**Project Contacts and Information:** To learn more about the proposed project, upcoming public meetings or to provide your comments on the draft REA Reports, please contact:

**Rick Martin, Project Manager**

Northland Power Inc. Little Current Office  
 McLean's Mountain Wind Farm Office  
 P.O. Box 73  
 Little Current ON, POP 1K0  
 Tel: (705)271-5358 cell, (705)368-0303 Manitoulin Island Office  
 E-mail: [rickmartin@northlandpower.ca](mailto:rickmartin@northlandpower.ca)

**Don McKinnon, REA Project Manager**

Dillon Consulting Limited  
 235 Yorkland Blvd, Suite 800  
 Toronto, Ontario, M2J 4Y8  
 Tel: 416.229.4647 ext. 2355  
 E-mail: [dpmckinnon@dillon.ca](mailto:dpmckinnon@dillon.ca)



January 11<sup>th</sup>, 2010

**INSETRT MAIL MERGE ADDESSES**

Dear Landowner,

**Re: Northland Power Inc., McLean's Mountain Wind Farm Project  
Renewable Energy Approval (REA) Draft Submission Package**

Northland Power Inc. (NPI) proposes to develop the McLean's Mountain Wind Farm (MMWF), located south of the community of Little Current, in the Municipality of Northeastern Manitoulin and the Islands (NEMI); geographic Township of Howland, and the geographic Township of Bidwell in the District of Manitoulin, Ontario. This wind farm is expected to consist of approximately 43 wind turbines that will generate about 77 MW of electricity.

It is NPI's intention to obtain a contract for the sale of electricity with the Ontario Power Authority (OPA) through the Province's Feed-in-Tariff (FIT) program. The project will require approval under Ontario Regulation 359/09 – Renewable Energy Approval (REA) under the *Green Energy Act*. The REA process replaces the previous process that required several separate approvals including for example, the *Environmental Assessment Act*, *Planning Act* and *Environmental Protection Act*. As specified in the REA regulations (Section 16), a project proponent is required to:

- Notify the local community of the proponent's intent to develop the project (accomplished through this letter);
- Provide paper copies of the drafts of all documents as required by the REA Regulations (as described in this letter); and,
- Provide electronic copies of the drafts of all documents as required by the REA Regulations on the Project website (available via [www.northlandpower.ca](http://www.northlandpower.ca) *click tab for Development Projects on January 18<sup>th</sup>, 2010*)

NPI would like to take this opportunity to inform you that a Renewable Energy Approval (REA) Draft submission package will be available for your review and comment on January 18<sup>th</sup>, 2010 for sixty (60) days at the following locations:

**Township of the Northeastern  
Manitoulin and the Islands**  
Clerk's Office  
15 Manitowaning Road  
Little Current ON, P0P 1K0

**Northland Power Inc.  
Little Current Office**  
McLean's Mountain Wind Farm Office  
23A Vankoughnet St. East  
Little Current ON, P0P 1K0

The draft reports are also available at the project website: [www.northlandpower.ca](http://www.northlandpower.ca)  
(*Click tab for Development Projects*)

The REA Draft submission package provides supplementary information to the existing McLean's Mountain Wind Farm Environmental Screening Report/Environmental Impact Statement (ESR) (July 2009) and includes the following sections:

### **Section 1: Concordance Table**

NPI is relying on the previously completed McLean's Mountain Wind Farm Environmental Screening Report/Environmental Impact Statement (ESR) released in July 2009 to fulfill much of the REA reporting requirements. The Ministry of Environment advised that this is an acceptable approach for this project. The Concordance Table document outlines NPI's fulfillment of the REA requirements for a Class 4 Wind Facility. This document summarizes the REA requirements and illustrates how these requirements were fulfilled through the ESR (July 2009). The McLean's Mountain Wind Farm ESR document was released in July 2009 for a 30-day public review as part of the former Environmental Assessment process. The ESR document is consistent with the former Environmental Screening provisions of Ontario Regulation 116/01 for a Category B project and with the requirements of the *Canadian Environmental Assessment Act*. The ESR document was developed to assist in the determination of potential environmental effects, including both the social and natural environment, which could result from the proposed project. NPI intends to rely on the ESR (July 2009) to fulfill, at least partially, the necessary REA documentation. The concordance table also references any supplementary information that was provided as part of the REA Draft submission package.

*Please note that the wind farm layout presented in the ESR is to be considered as draft subject to revisions based on the input received from government agencies, aboriginal communities, the public and landowners through the REA consultation process.*

### **Section 2: The McLean's Mountain Wind Farm ESR/EIS (ESR), July 2009 Comment/Response Table**

A comment-response table that documents the NPI's responses provided to the comments received during the 30-day review period of the ESR document was developed.

### **Section 3: Supplementary REA Reports**

NPI is obligated to provide the required documentation to support its REA application. NPI intends to rely on the ESR that was released in July 2009 to fulfill, at least partially, the necessary documentation.

The following supplementary documents, which were not required for the ESR process, are included in the REA Draft submission package:

- ✓ Project Description Report
- ✓ McLean's Mountain Wind Farm Environmental Management and Protection Plan - Supplementary Information for the Design and Operations Report
- ✓ Community Response Plan - Supplementary Information for the Design and Operations Report
- ✓ Construction Schedule - Supplementary Information for Construction Plan Report
- ✓ Decommissioning Plan Report

A comprehensive Consultation Report will be prepared once the REA consultation process has concluded. The Consultation Report will be prepared to reflect REA requirements and will

document the consultation program that will be conducted under the REA process. The Consultation Report will include a summary of communication and consultation activities conducted with the public, government agencies and Aboriginal communities and will include responses to comments received. NPI has met the REA requirements for the first Public Information Centre under the former Environmental Screening process.

#### **Section 4: Supplementary Mapping**

A map depicting the REA wind farm setback requirements is enclosed. This map depicts all applicable REA setbacks which have been met for the draft wind farm project layout. The setbacks include the distances from the proposed wind turbines to the important features within the project area boundary such as residences and natural features.

Comments on the draft REA reports are to be submitted in writing (see below for contact information) by **March 18th, 2010**.

NPI is pleased to continue its communications with members of your community with respect to this project. The proposed project and findings of the REA process will be presented at a future Public Information Centre (PIC) that is planned for March 22, 2010. Notice of this future PIC will be released in your community close to the date of the planned PIC.

If you have questions about the project please do not hesitate to contact me at:

- McLean's Mountain Wind Farm Project, P.O. Box 73, Little Current ON, P0P 1K0
- Phone (mobile): (705)-271-5358, Phone (project office): (705)-368-0303; or
- E-mail: [rickmartin@northlandpower.ca](mailto:rickmartin@northlandpower.ca).

Yours truly,

A handwritten signature in black ink, appearing to read "Rick Martin". The signature is fluid and cursive, with the first name "Rick" and last name "Martin" clearly distinguishable.

Rick Martin  
Project Manager  
**Northland Power Inc.**



January 18<sup>th</sup>, 2010

Dear Sir/Madam;

**Re: Northland Power Inc., McLean's Mountain Wind Project  
Renewable Energy Approval (REA) Draft Submission Package**

Northland Power Inc. (NPI) proposes to develop the McLean's Mountain Wind Farm (MMWF), located south of the community of Little Current, in the Municipality of Northeastern Manitoulin and the Islands (NEMI); geographic Township of Howland, and the geographic Township of Bidwell in the District of Manitoulin, Ontario. This wind farm is expected to consist of approximately 43 wind turbines that will generate about 77 MW of electricity.

It is NPI's intention to obtain a contract for the sale of electricity with the Ontario Power Authority (OPA) through the Province's Feed-in-Tariff (FIT) program. The project will require approval under Ontario Regulation 359/09 – Renewable Energy Approval (REA) under the *Green Energy Act*. The REA process replaces the previous process that required several separate approvals including for example, the *Environmental Assessment Act*, *Planning Act* and *Environmental Protection Act*. As specified in the REA regulations (Section 16), a project proponent is required to:

- Notify the local community of the proponent's intent to develop the project (accomplished through this letter);
- Provide paper copies of the drafts of all documents as required by the REA Regulations (accomplished through this submission); and,
- Provide electronic copies of the drafts of all documents as required by the REA Regulations on the Project website (available via [www.northlandpower.ca](http://www.northlandpower.ca) *click tab for Development Projects*)

This Renewable Energy Approval (REA) Draft submission package has been released as of January 18th, 2010 for a 60-day review period and includes the following sections:

**Section 1: Concordance Table**

NPI is relying on the previously completed Environmental Study Report to fulfill much of the REA reporting requirements. The MOE advised that this is an acceptable approach for this project. The Concordance Table document outlines the NPI's fulfillment of the REA requirements for a Class 4 Wind Facility. The Concordance Table summarizes the REA requirements and illustrates how these requirements were fulfilled through the McLean's Mountain Wind Farm Environmental Screening Report/Environmental Impact Statement (ESR) released in July 2009. The McLean's Mountain Wind Farm ESR document was released in July 2009 for a 30-day public review as part of the former Environmental Assessment process. The ESR document is consistent with the former Environmental Screening provisions of Ontario Regulation 116/01 for a Category B project. The ESR document was developed to assist in the determination of potential environmental effects, including both the social and natural environment, which could result from the proposed project.

The concordance table also references any supplementary information that was provided as part of the REA Draft submission package.

*Please note that the wind farm layout presented in the ESR is to be considered as draft subject to revisions based on the input received from government agencies, aboriginal communities, the public and landowners through the REA consultation process.*

## **Section 2: The McLean's Mountain Wind Farm ESR/EIS (ESR), July 2009 Comment/Response Table**

A comment-response table that documents NPI's responses to the comments received during the 30-day review period the ESR document was developed.

## **Section 3: Supplementary REA Reports**

NPI is obligated to provide the required documentation to support its REA application. NPI intends to rely on the ESR that was released in July 2009 to fulfill, at least partially, the necessary documentation. The following supplementary documents, which were not required for the ESR process, are included in this REA Draft submission package:

- ✓ Project Description Report
- ✓ McLean's Mountain Wind Farm Environmental Management and Protection Plan - Supplementary Information for the Design and Operations Report
- ✓ Community Response Plan - Supplementary Information for the Design and Operations Report
- ✓ Construction Schedule - Supplementary Information for Construction Plan Report
- ✓ Decommissioning Plan Report

A Comprehensive Consultation Report will be prepared once the REA consultation process is completed. The Consultation Report will be prepared to reflect REA requirements and will document the consultation program that will be conducted under the REA process. The Consultation Report will include a summary of communication and consultation activities conducted with the public, government agencies and Aboriginal communities and will include responses to comments received. NPI has met the REA requirements for the first Public Information Centre under the former Environmental Screening process.

## **Section 4: Supplementary Mapping**

A map depicting the REA wind farm setback requirements is enclosed. This map depicts all applicable REA setbacks that have been met for the draft wind farm project layout. The setbacks include the distances from the proposed wind turbines to the important features within the project area boundary such as residences and natural features

Comments on the draft REA reports are to be submitted in writing (see below for contact information) by **March 18th, 2010**.

NPI is pleased to continue its communications with members of your community with respect to this project. The proposed project and findings of the REA process will be presented at a future Public Information Centre (PIC) that is planned for March 22, 2010. Notice of this future PIC will be released in your community close to the date of the planned PIC.

If you have questions about the project please do not hesitate to contact me at:

- McLean's Mountain Wind Farm Project, P.O. Box 73, Little Current ON, P0P 1K0
- Phone (mobile: (705)-271-5358, project office: (705)-368-0303); or
- E-mail: [rickmartin@northlandpower.ca](mailto:rickmartin@northlandpower.ca).

Yours truly,

A handwritten signature in black ink, appearing to read "Rick Martin". The signature is fluid and cursive, with the first name "Rick" and last name "Martin" clearly distinguishable.

Rick Martin  
Project Manager  
**Northland Power Inc.**

**MCLEAN'S MOUNTAIN WIND FARM PROJECT  
First Notice of Public Information Centre  
Regarding a Draft Renewable Energy Approval (REA) Submission Package**

**Project Name:** Maclean's Mountain Wind Farm

**Project Location:** Municipality of Northeastern Manitoulin and the Islands (Manitoulin Island), Ontario  
Dated at the Municipality of Northeastern Manitoulin and the Islands this 17<sup>th</sup> day of February 2010.

Northland Power Inc. (NPI) proposes to develop the McLean's Mountain Wind Farm (MMWF), located south of the community of Little Current, in the Municipality of Northeastern Manitoulin and the Islands (NEMI); geographic Township of Howland, and the geographic Township of Bidwell in the District of Manitoulin, Ontario. The proposed MMWF is expected to consist of up to 43 wind turbines that will generate 77 MW of electricity. The proposed project will require approval under Ontario Regulation 359/09 – Renewable Energy Approval (REA) under the Green Energy Act. The REA replaces approvals formerly required under the Environmental Assessment Act, Planning Act and Environmental Protection Act. NPI intends to develop the project under the new Green Energy Act (GEA) Feed-In-Tariff (FIT) program. This notice is distributed in accordance with REA requirements.

**Public Information Centre**

**DATE:** Monday, March 22, 2010

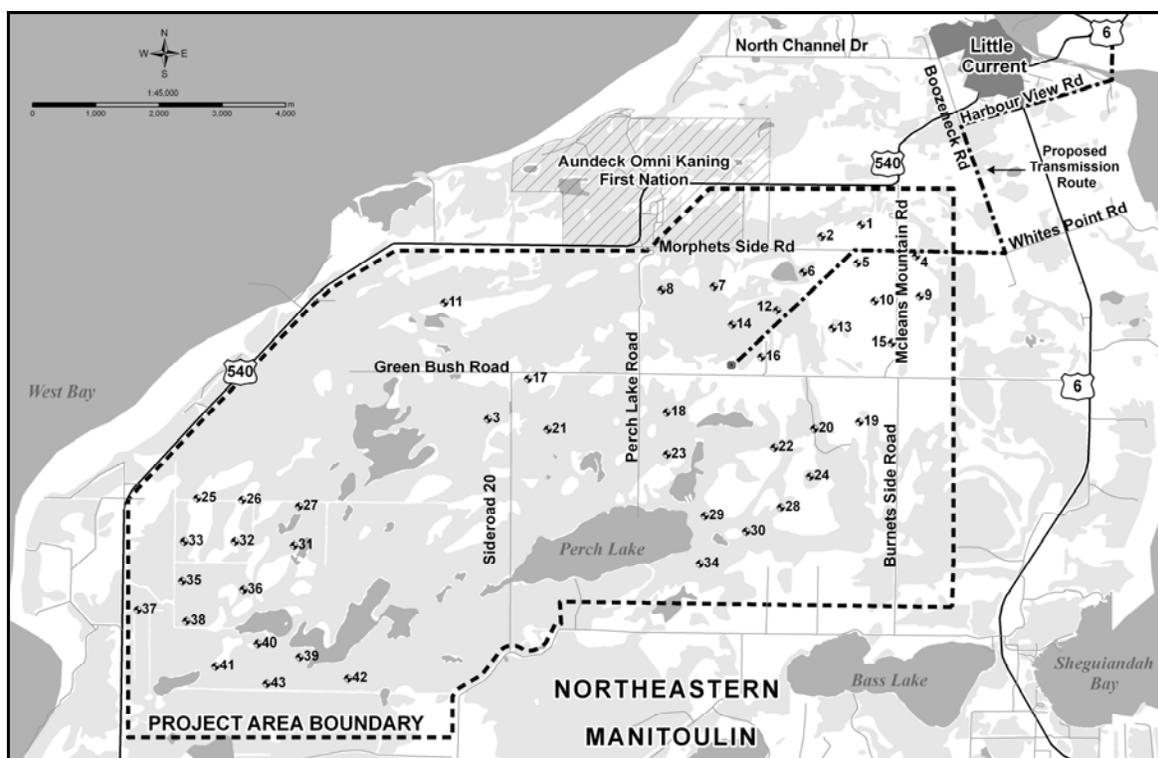
**TIME:** 7:00 p.m. – 10:00 p.m.

**PLACE:** Royal Canadian Legion No 177, Vankoughnet E., Little Current, Ontario

**Project Description**

The proposed MMWF project will include 43 wind turbines with an initial installed capacity of 77 MW. All turbines will be located within the project boundary area as shown in the map below. The turbine locations shown on the above map may be subject to change based on input received through the REA process. The proposed project will require the construction of a transmission line to connect with the Hydro One Transmission system (the provincial grid) that is located on Goat Island. There will be the need to cross the North Channel with a submarine cable to facilitate the transmission connection.

**Map of Proposed Project Location**



**Purpose of the Public Information Centre**

NPI has prepared a Draft REA Package including supplementary documentation in fulfillment of REA requirements that was made available for a 60-day review period on January 18<sup>th</sup>, 2010. The package of materials has been available at: the municipal office of the Township of the Northeastern Manitoulin and the Islands, at the Northland Power Inc. Little Current Office and on the project website [www.northlandpower.ca](http://www.northlandpower.ca) click tab for Development Projects. Comments on the draft REA reports were requested by March 18<sup>th</sup>, 2010. The purpose of this Public Information Centre is to present the proposed project, the REA process and to respond to public questions, issues and concerns. This PIC is the final public meeting required under the REA process.

**Project Contacts and Information:** To learn more about the proposed project, upcoming public meeting or to provide your Comments on the draft REA Reports please contact:

**Rick Martin, Project Manager**

Northland Power Inc. Little Current Office  
McLean's Mountain Wind Farm Office  
P.O. Box 73  
Little Current ON, P0P 1K0  
Tel: (705)271-5358 cell, (705)368-0303 Manitoulin Island  
Office  
E-mail: [rickmartin@northlandpower.ca](mailto:rickmartin@northlandpower.ca)

**Don McKinnon, REA Project Manager**

Dillon Consulting Limited  
235 Yorkland Blvd, Suite 800  
Toronto, Ontario, M2J 4Y8  
Tel: 416.229.4647 ext. 2355  
E-mail: [dpmckinnon@dillon.ca](mailto:dpmckinnon@dillon.ca)

**MCLEAN'S MOUNTAIN WIND FARM PROJECT  
Second Notice of Public Information Centre  
Regarding a Draft Renewable Energy Approval (REA) Submission Package**

**Project Name:** Maclean's Mountain Wind Farm

**Project Location:** Municipality of Northeastern Manitoulin and the Islands (Manitoulin Island), Ontario  
Dated at the Municipality of Northeastern Manitoulin and the Islands this 24<sup>th</sup> day of February 2010.

Northland Power Inc. (NPI) proposes to develop the McLean's Mountain Wind Farm (MMWF), located south of the community of Little Current, in the Municipality of Northeastern Manitoulin and the Islands (NEMI); geographic Township of Howland, and the geographic Township of Bidwell in the District of Manitoulin, Ontario. The proposed MMWF is expected to consist of up to 43 wind turbines that will generate 77 MW of electricity. The proposed project will require approval under Ontario Regulation 359/09 – Renewable Energy Approval (REA) under the Green Energy Act. The REA replaces approvals formerly required under the Environmental Assessment Act, Planning Act and Environmental Protection Act. NPI intends to develop the project under the new Green Energy Act (GEA) Feed-In-Tariff (FIT) program. This notice is distributed in accordance with REA requirements.

**Public Information Centre**

**DATE:** Monday, March 22, 2010

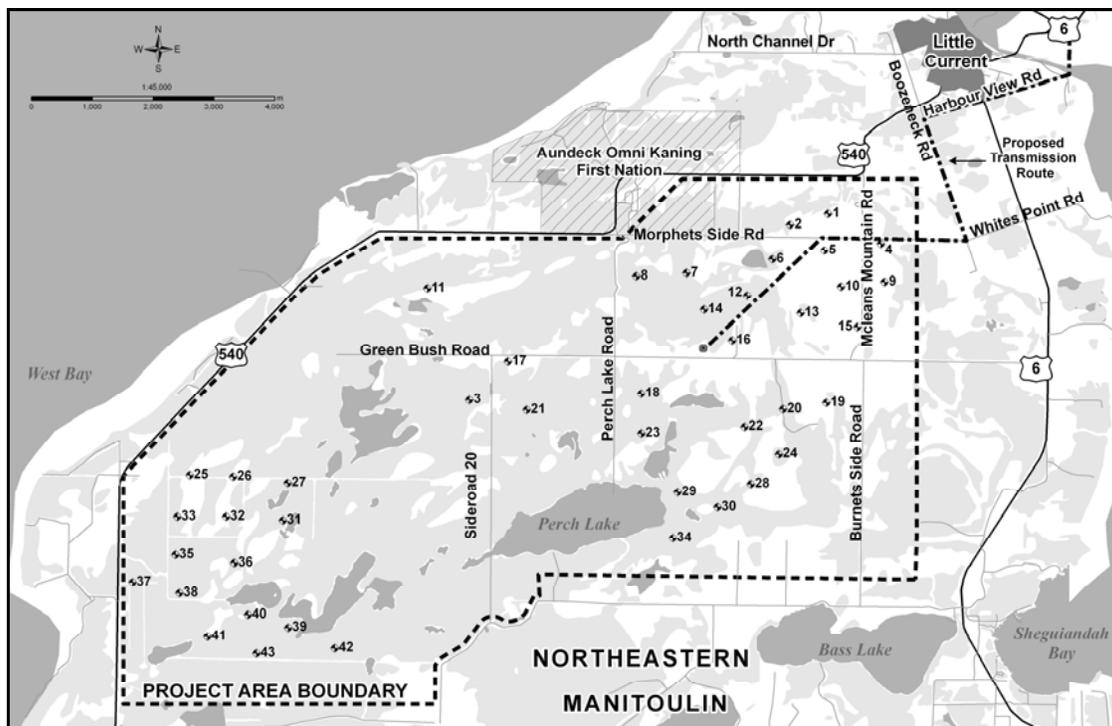
**TIME:** 7:00 p.m. – 10:00 p.m.

**PLACE:** Royal Canadian Legion No 177, Vankoughnet E., Little Current, Ontario

**Project Description**

The proposed MMWF project will include 43 wind turbines with an initial installed capacity of 77 MW. All turbines will be located within the project boundary area as shown in the map below. The turbine locations shown on the above map may be subject to change based on input received through the REA process. The proposed project will require the construction of a transmission line to connect with the Hydro One Transmission system (the provincial grid) that is located on Goat Island. There will be the need to cross the North Channel with a submarine cable to facilitate the transmission connection.

**Map of Proposed Project Location**



**Purpose of the Public Information Centre**

NPI has prepared a Draft REA Package including supplementary documentation in fulfillment of REA requirements that was made available for a 60-day review period on January 18th, 2010. The package of materials has been available at: the municipal office of the Township of the Northeastern Manitoulin and the Islands, at the Northland Power Inc. Little Current Office and on the project website [www.northlandpower.ca](http://www.northlandpower.ca) click tab for Development Projects. Comments on the draft REA reports were requested by March 18th, 2010. The purpose of this Public Information Centre is to present the proposed project, the REA process and to respond to public questions, issues and concerns. This PIC is the final public meeting required under the REA process.

**Project Contacts and Information:** To learn more about the proposed project, upcoming public meeting or to provide your Comments on the draft REA Reports please contact:

**Rick Martin, Project Manager**  
Northland Power Inc. Little Current Office  
McLean's Mountain Wind Farm Office  
P.O. Box 73  
Little Current ON, P0P 1K0  
Tel: (705)271-5358 cell, (705)368-0303 Manitoulin Island Office  
E-mail: rickmartin@northlandpower.ca

**Don McKinnon, REA Project Manager**  
Dillon Consulting Limited  
235 Yorkland Blvd, Suite 800  
Toronto, Ontario, M2J 4Y8  
Tel: 416.229.4647 ext. 2355  
E-mail: dpmckinnon@dillon.ca

**MACLEAN'S MOUNTAIN WIND FARM PROJECT**  
**Third Notice of Public Information Centre**  
**Regarding a Draft Renewable Energy Approval (REA) Submission Package**

**Project Name:** Maclean's Mountain Wind Farm

**Project Location:** Municipality of Northeastern Manitoulin and the Islands (Manitoulin Island), Ontario  
Dated at the Municipality of Northeastern Manitoulin and the Islands this 10<sup>th</sup> day of March 2010.

Northland Power Inc. (NPI) proposes to develop the McLean's Mountain Wind Farm (MMWF), located south of the community of Little Current, in the Municipality of Northeastern Manitoulin and the Islands (NEMI); geographic Township of Howland, and the geographic Township of Bidwell in the District of Manitoulin, Ontario. The proposed MMWF is expected to consist of approximately 43 wind turbines that will generate about 77 MW of electricity. The proposed project will require approval under Ontario Regulation 359/09 – Renewable Energy Approval (REA) under the Green Energy Act. The REA replaces approvals formerly required under the Environmental Assessment Act, Planning Act and Environmental Protection Act. NPI intends to develop the project under the new Green Energy Act (GEA) Feed-In-Tariff (FIT) program. This notice is distributed in accordance with REA requirements.

**Public Information Centre**

**DATE:** Monday, March 22, 2010

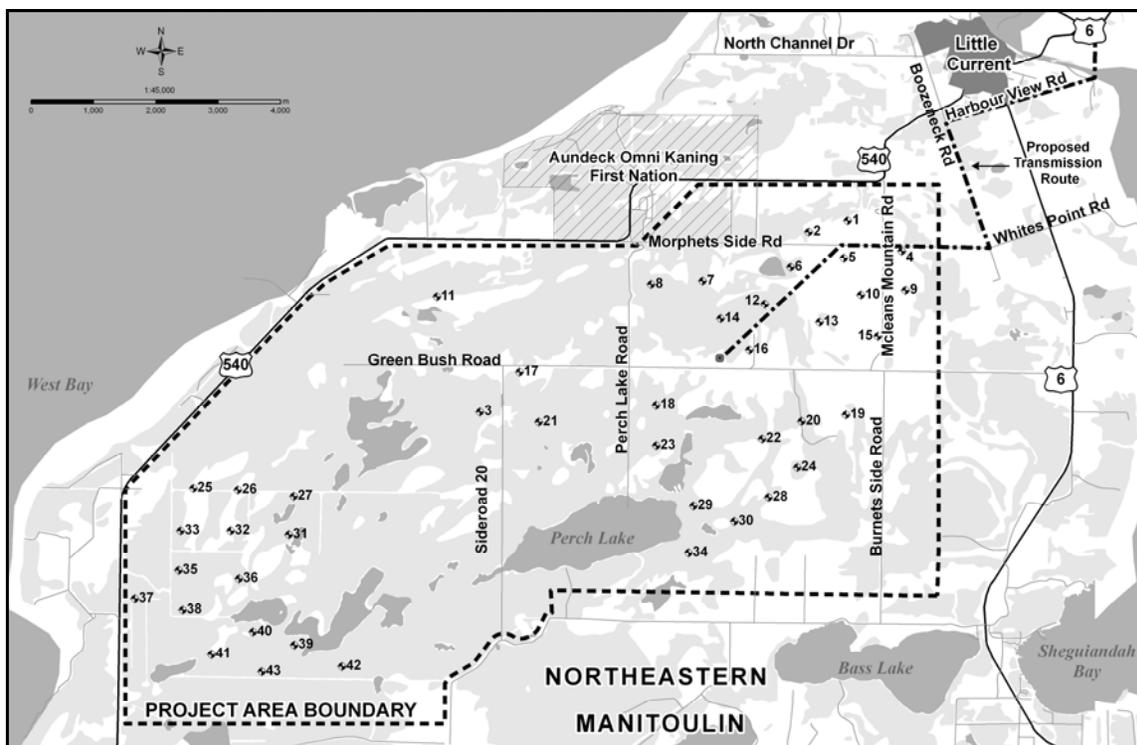
**TIME:** 7:00 p.m. – 10:00 p.m.

**PLACE:** Royal Canadian Legion No 177, Vankoughnet E., Little Current, Ontario

**Project Description**

The proposed MMWF project will include approximately 43 wind turbines with an initial installed capacity of about 77 MW. All turbines will be located within the project boundary area as shown in the map below. The turbine locations shown on the above map may be subject to change based on input received through the REA process. The proposed project will require the construction of a transmission line to connect with the Hydro One Transmission system (the provincial grid) that is located on Goat Island. There will be the need to cross the North Channel with a submarine cable to attach the transmission connection.

**Map of Proposed Project Location**



**Purpose of the Public Information Centre**

NPI has prepared a Draft REA Package including supplementary documentation in fulfillment of REA requirements that was made available for a 60-day review period on January 18th, 2010. The package of materials has been available at: the municipal office of the Township of the Northeastern Manitoulin and the Islands, at the Northland Power Inc. Little Current Office and on the project website [www.northlandpower.ca](http://www.northlandpower.ca) click tab for Development Projects. Comments on the draft REA reports were requested by March 18th, 2010. The purpose of this Public Information Centre is to present the proposed project, the REA process and to respond to public questions, issues and concerns. This PIC is the final public meeting required under the REA process. Notification of this scheduled PIC was provided on February 17<sup>th</sup> and 24<sup>th</sup>, 2010.

**Project Contacts and Information:** To learn more about the proposed project, upcoming public meeting or to provide your Comments on the draft REA Reports please contact:

**Rick Martin, Project Manager**

Northland Power Inc. Little Current Office  
MacLean's Mountain Wind Farm Office  
P.O. Box 73  
Little Current ON, POP 1K0  
Tel: (705)271-5358 cell, (705)368-0303 Manitoulin Island Office  
E-mail: rickmartin@northlandpower.ca

**Don McKinnon, REA Project Manager**

Dillon Consulting Limited  
235 Yorkland Blvd, Suite 800  
Toronto, Ontario, M2J 4Y8  
Tel: 416.229.4647 ext. 2355  
E-mail: dpmckinnon@dillon.ca

**March 22, 2010**  
**Public Information Centre**

## **Sign-In Sheet**



**NORTHLAND POWER**

**McLean's Mountain Wind Farm Project  
Public Information Centre  
March 22, 2010  
Sign-in Sheet**

	<b>Name (please print)</b>	<b>Address</b>	<b>E-mail Address</b>
21	Tony Ferraro		
22	June M. Connell		
23	Ch. Lawrence		
24	L. KELLY		
25	F. HAN		
26	Don Easter		
27	ALAN AVERY		
28	B. Selus		
29	STAN FEQUON		
30	Ken Wright		
31	Carol Labelle		
32	Margie Labelle		
33	Cathy Ely		
34	Wade Brown		
35	Chris Ely		
36	William M. Lettier		
37	SOPHIE JONES		
38	PETER JONES		
39	Lois Walker		
40			



**NORTHLAND POWER**

**McLean's Mountain Wind Farm Project  
Public Information Centre  
March 22, 2010  
Sign-in Sheet**

	<b>Name (please print)</b>	<b>Address</b>	<b>E-mail Address</b>
1	SIANA PARRILL		
2	Bud Wilson		
3	Bill Clate		
4	Heck Wood		
5	Kyla Jansen		
6	Leah Bowesma		
7	Martina White		
8	Perry Kowalace		
9	R. Rickard		
10	M. Moffatt		
11	Edmund Hawas		
12	Ed. Hen		
13	FILSON AGUONIE		
14	Chet Omik Agunie		
15	Elisabeth Mall		
16	Bruce Kee		
17	Chaplene Macdonald		
18	KISS Bond		
19			
20			



**NORTHLAND POWER**

**McLean's Mountain Wind Farm Project  
Public Information Centre  
March 22, 2010  
Sign-in Sheet**

	<b>Name (please print)</b>	<b>Address</b>	<b>E-mail Address</b>
1	Ellen + Dawn Leonard		
2	Larry Stearn		
3	Alex McQuinn		
4	Fred Roy		
5	<del>John Lacey</del>		
6	John Lacey		
7	Frank Best		
8	Perry Best		
9	Roger Wilson		
10	Don Abbott		
11	Godfrey Cranston		
12	A. Hall		
13	Mark Anderson		
14	BRIAN BRADAMS		
15	Rose Marie Martin		
16	Ron Tester		
17	Michelle		
18	Doug Hone		
19	Brad Wilkin		
20			

C. ARBITRARY  
C. SHIMMER TOWER  
100.7 FM THE ISLAND



**NORTHLAND POWER**

**McLean's Mountain Wind Farm Project  
Public Information Centre  
March 22, 2010  
Sign-in Sheet**

	Name (please print)
21	J.H. Turner
22	Chris Bell
23	Emily Weber
24	Lynnda Lee
25	William Lee
26	Lee Spang
27	Michael Spang
28	V. Mazzoni
29	Bruce & Carol
30	Dean & Darlene L.
31	W. Kochler
32	G. Green
33	Brid Bond
34	John Street
35	Doeg Waksinić
36	Sharon McFarlane
37	Lane McFarlane
38	Barb Lawrence
39	Mae + Jac. Dakin
40	



**NORTHLAND POWER**

**McLean's Mountain Wind Farm Project  
Public Information Centre  
March 22, 2010  
Sign-in Sheet**

	<b>Name (please print)</b>	<b>Address</b>	<b>E-mail Address</b>
1	Craig & KT Timmermans		
2	M. Gauthier		
3	Kyle Keltner		
4	Howard Cohen		
5	P. Salanki		
6	Wayne Cole		
7	Abie Hughes		
8	Paul Higgins		
9	Bruce in Rod		
10	Petra Will		
11	Guy NIELSEN		
12	Maia Nielson		
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**NORTHLAND POWER**

**McLean's Mountain Wind Farm Project  
Public Information Centre  
March 22, 2010  
Sign-in Sheet**

	<b>Name (please print)</b>	<b>Address</b>	<b>E-mail Address</b>
1	Lizyone Cook		
2	John W. Gys		
3	Harold Simon		
4	Mel Madaleno		
5	Mel Madaleno		
6	Dennis		
7	Harold		
8	Jim Stringer		
9	Ernest Lewis		
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**NORTHLAND POWER**

**McLean's Mountain Wind Farm Project  
Public Information Centre  
March 22, 2010  
Sign-in Sheet**

	<b>Name (please print)</b>	<b>Address</b>	<b>E-mail Address</b>
1	Patti Beaudry		
2	Chris Beaudry		
3	RAYMOND BEAUDRY		
4	Carol Deppard		
5	Carl Anault		
6	Kerena Dilsen		
7	Dill Studzieny		
8	Alexander Mc Gillivray		
9	in Sound		
10	<del>W. Sater</del>		
11	W. Sater		
12	W. J. Wankem		
13	Sid & Mary Coen		
14	Ken Lippold		
15	K. Bingham		
16	AWI WILKIN		
17	Patti WILKIN		
18	GORD BICKELL		
19			
20			

## **Handout Materials**



Welcome to the  
McLean's Mountain Wind  
Farm Project

Public Information Centre

Municipality of NEMI/Traditional Territory of  
Manitoulin First Nations

**March 22, 2010**

**7:00 p.m. – 10:00 p.m.**

# Welcome to our Public Information Centre

- **The purpose of this information centre is to:**
  - ✓ Introduce Northland Power as the project proponent
  - ✓ Provide an update on the project
  - ✓ Listen to you
  - ✓ Respond to your questions
- **We welcome an open and courteous dialogue with you regarding the project**



# Project Update

- **The project has been in the planning stages for over 7 years – the first PIC was held in 2004**
- **An Environmental Screening Report was completed (July 2009) as part of the former Environmental Assessment process**
- **Some changes made to project layout to accommodate the provincial setback requirements**
- **The proposed project now subject to Ontario Regulation 359/09 – Renewable Energy Approval under the *Green Energy Act***
  - ✓ Draft REA package was released for 60 day public review in January 2010
  - ✓ Final REA package to be submitted to MOE in April 2010



# Ontario Regulation 359/09 Renewable Energy Approval

- **Renewable Energy Approval process replaces the previous process that required several separate approvals including the *Environmental Assessment Act, Planning Act and Environmental Protection Act***
- **The Renewable Energy Approval requires:**
  - ✓ Meeting specific turbine setbacks (minimum distances from noise receptors, roads, water bodies, etc)
  - ✓ Comprehensive consultation requirements
  - ✓ Technical study reports



# About Northland Power

- ✓ **Canadian owned company based in Ontario**
- ✓ **Has been active in the development and operation of electrical generation facilities in Northern Ontario for 20 years**
- ✓ **Construction of a 54 MW wind farm on Miller Mountain and a 127.5 MW wind farm in St. Ulric, both projects in the Gaspé Peninsula of Quebec**
- ✓ **2,000 MW of other opportunities across Canada in early stages of development**



# Project Description

- **Construction of approximately 43 1.8 MW wind turbines**
- **Total generation capacity of about 77 MW of electricity.**
- **Wind farm infrastructure to include:**
  - ✓ A115 kV Electrical transmission line to connect the project to the provincial grid at Goat Island (with underwater crossing of North Channel)
  - ✓ Substation (to step up the electric output from 34 kV to 115 kV)
  - ✓ Wind turbine access roads
  - ✓ Overhead and underground electrical collection system
  - ✓ Temporary staging areas for the erection of wind turbines
  - ✓ Meteorological towers (4) already installed and operating
- **Project studies covered an area of over 20,000 acres – leased lands cover an area of about 6,500 acres**
- **The Project will require about 50 acres of land for the turbines plus about 150 acres for access roads**
- **First Nation lands, including the ceremonial lands of Sheguiandah First Nation, are not included**
- **Unopened road allowances adjacent to First Nation lands are not included**

# Project Communications & Consultation

- **Northland Power has conducted communications and consultation activities with:**
  - ✓ Provincial agencies
  - ✓ Local landowners
  - ✓ NEMI
  - ✓ Local interest groups
- **Northland Power has engaged in communications and conversations with individual aboriginal people and communities that have an interest in the project**
- **Northland Power is committed to continuing its consultation activities as the project moves from the planning stage to implementation**
- **There will be additional public review and comment opportunities during the MOE review and approval process**

# Proposed Wind Turbine

- **A Vestas machine model V-90**
- **Rated at 1.8 MW**
- **Gearbox turbine**
- **Three (3) blade up wind horizontal axis**
- **Tubular steel tower with a rotor diameter of 90 meters**
- **Blade Length 45 meters**
- **Pitch control – optimizes power generation**
- **Computer controlled microprocessor-based monitoring and control of all turbine functions**
- **Lighting in accordance with Transport Canada regulations**
- **Typical life span – over 20 years**



# Local Economic Benefits

## Construction Employment Opportunities

- ✓ Project will require an investment of about \$220 million
- ✓ Northland Power will endeavor maximize the dollars that are spent in the community
- ✓ About 140 people employed during the construction phase
- ✓ The project construction contractor is required to hire union labour
- ✓ Non-union employment positions will also be available
- ✓ Northland Power will hold a future job fair in the community
- ✓ Economic opportunities for local suppliers, hotels, restaurants and other service providers



# Local Economic Benefits

- **20-year Operational Phase:**
  - ✓ 7 -10 full time employees (operators, technicians, mechanics)
  - ✓ Sub-contractor services (e.g. road maintenance)
  - ✓ Local maintenance and spare parts centre
- **Tax Revenue:**
  - ✓ Approximately \$100K/year - based on the generator capacity and provincial tax formula
  - ✓ Generated through construction permits and approvals
  - ✓ Additional annual funding for betterment of the Municipality
  - ✓ 20-year project cash-flow
- **Annual community fund for local projects**

# Birds and Bats

## Birds

- Bird field surveys June 2004 and October 2009, covering all seasons
- Significant impacts are not expected
- Additional pre-construction surveys are planned for June 2010 as per MNR request
- Mitigation measures will include no vegetation clearing during breeding season (May 9th –July 23rd) and buffering of sensitive natural features



## Bats

- Pre-construction bat surveys were conducted during July and September of 2008 and August of 2009
- Based on the monitoring results, the proposed project is located in an area of relatively low bat activity
- 2 years of post-construction bat mortality monitoring will occur



# Mitigation Measures

## Key Mitigation Measures

- **Environmental Management Plan (EMP) was developed for all phases of the proposed project:**
  - ✓ Protect environmentally sensitive areas
  - ✓ Respect required setbacks from natural and sensitive features
  - ✓ Sediment and erosion control measures, such as silt fencing and revegetation to be used during construction
  - ✓ Water crossings to be constructed when dry as much as possible  
Watercourse crossings in accordance with DFO and MNR practices
  - ✓ Mitigate and/or replace impacted fish habitat

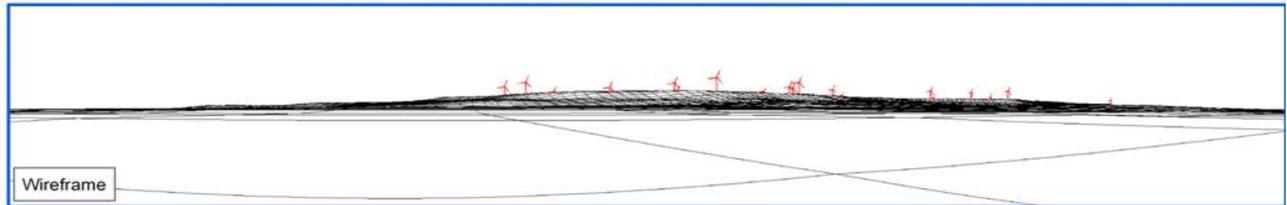
## Key monitoring activities:

- ✓ Site rehabilitation measures will be monitored
- ✓ Post-construction surveys will include mortality monitoring and breeding surveys to assess displacement of sensitive open country and forest species
- ✓ Environment Canada and MNR to be consulted for further mitigative actions



# Visual Simulation

## Visual Simulation - McLean's Mt - Site 2



**Prepared By:**



<b>Location of Visual Simulation:</b>	Southwest Corner of North Chanel Dr and Boozeneck Rd
Coordinates (UTM NAD 83, Zone 17N):	427256, 5092108
Direction of View (With respect to North):	198.5
Closest Visible Turbine ID:	1
Distance:	2870m

# Visual Simulation

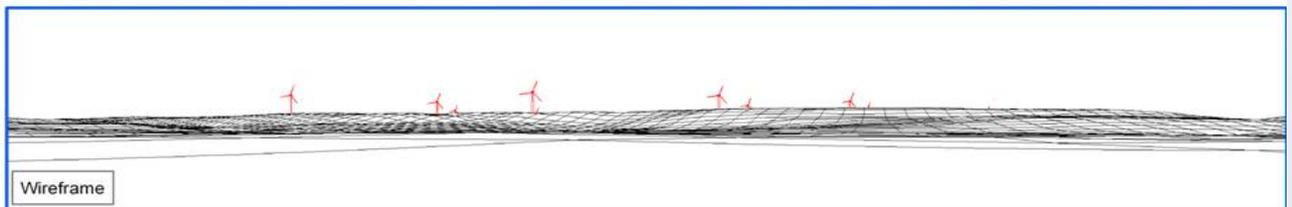
## Visual Simulation - McLean's Mt - Site 5



Visual Simulation



Original Photo



Wireframe

**Prepared By:**



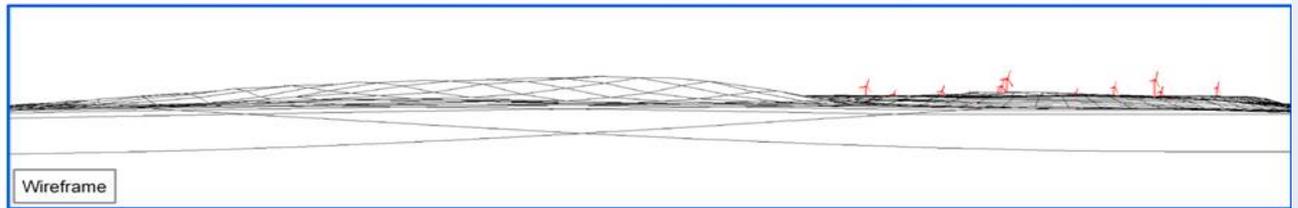
**Location of Visual Simulation:**

Town Line at Bass Lake

Coordinates (UTM NAD 83, Zone 17N):	425321, 5083014
Direction of View (With respect to North):	337.0
Closest Visible Turbine ID:	30
Distance:	1950m

# Visual Simulation

## Visual Simulation - McLean's Mt - Site 6



**Prepared By:**



**Location of Visual Simulation:** Hwy 6 at Municipal Dump Entrance

Coordinates (UTM NAD 83, Zone 17N):	429518, 5088517
Direction of View (With respect to North):	223.0
Closest Visible Turbine ID:	9
Distance:	2570m

# Noise Levels

- **MOE noise restriction limit of 40 dBA will be met for all recognized noise receptors**
- **The wind turbine layout has been designed to meet MOE noise guidelines, as outlined in the *“Interpretations for Applying MOE NPC Technical Publications to Wind Turbine Generators”***
- **Sound modelling assumes receptors to be downwind of all surrounding turbines**

# Health Effects of Noise

- NPI is aware of the community's health concerns
- There are reports of residents expressing “annoyance” by other operating wind turbines
- The December 2009 “Wind Turbine Sound and Health Effects, An Expert Panel Review”, concludes:
  - *“There is nothing unique about sounds and vibrations emitted by wind turbines”*
  - *The body of accumulated knowledge about sound and health is substantial*
  - *The body of accumulated knowledge provides no evidence that the audible or sub-audible sounds emitted by wind turbines have any direct adverse physiological effects”*

## Health Effects of Noise

- Ontario's Chief Medical Officer of Health, Dr. Arlene King, stated in an October 2009 memorandum to Medical Officers of Health and Environmental Health Directors throughout Ontario:
  - *"... there is no scientific evidence, to date, to demonstrate a causal association between wind turbine noise and adverse health effects."*
- Chatham-Kent's Acting Medical Officer of Health, Dr. David Colby:
  - *"In summary, as long as the MOE Guidelines for location criteria of wind farms are followed, it is my opinion that there will be negligible adverse health impacts on Chatham-Kent citizens. Although opposition to wind farms on aesthetic grounds is a legitimate point of view, opposition to wind farms on the basis of potential adverse health consequences is not justified by the evidence."*
- The Province has committed to establish a research chair in Renewable Energy Technologies & Health

# Property Values

- NPI has consulted with Ms. Dale Godfrey, a “Realtor of Record” for the Godfrey Group Inc. regarding property values near the Prince Wind Farm in the community of Goulais River north of Sault Ste. Marie
- Ms Godfrey indicated that:

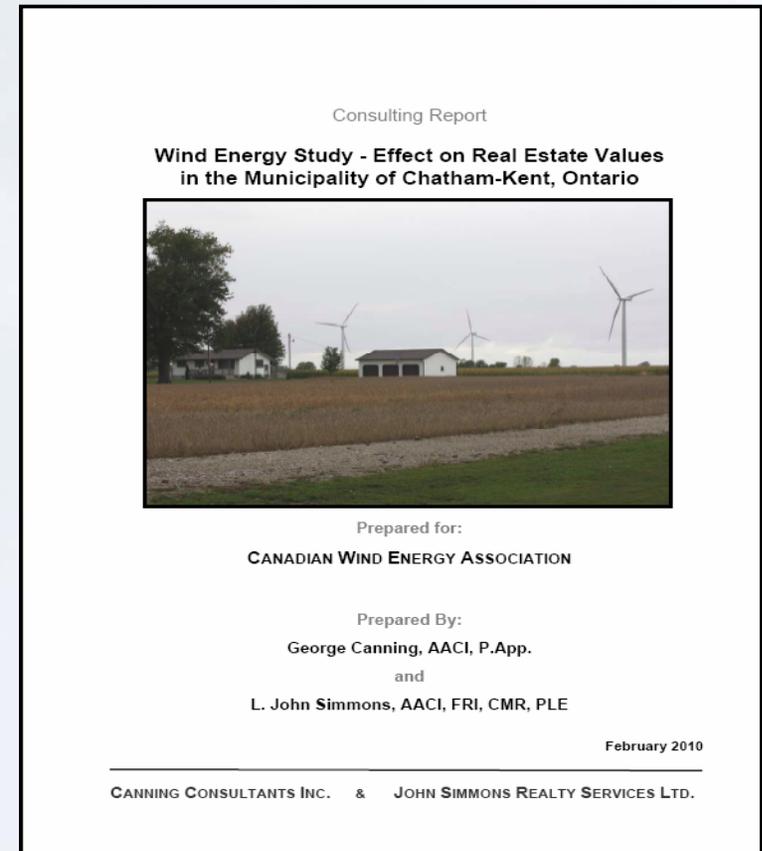
***“It has not affected the value of any properties that I am aware of, and I sell a lot of the real estate in the Goulais area.***

***As a matter of fact, I sold 200 acres of vacant land directly under the turbines, on Thielman Road, and the buyers are planning on building a new home on the property, and have no concern about the wind farm.”***



# Property Values

- A just released property value study for the Municipality of Chatham-Kent, which is home to a large number of wind turbines was conducted by two independent consultants both of whom are certified property value appraisers:
  - ✓ In the study area, where wind farms were clearly visible, there was no empirical evidence to indicate that rural residential properties realized lower sale prices than similar residential properties within the same area that were outside of the viewshed of a wind turbine.
  - ✓ No statistical inference to demonstrate that wind farms negatively affect residential market values in Chatham-Kent was apparent in this analysis. Furthermore, this study did not find any consistent evidence from the analyzed data that such a negative correlation exists. During the course of gathering data, there were no unusual quantities of rural residential properties listed for sale in the study area.



## **NPI Commitments**

- **To keep the community informed of its future project activities through local media**
- **To develop the project in a manner that will minimize impacts on the environment – the Environmental Management Plan will be followed**
- **To conduct 2 year post construction avian surveys and respond/mitigate if necessary**
- **Respond to reported concerns regarding the operation of the facility**
- **To follow the Project Decommissioning Plan at time of project decommissioning**

## Next Steps

- **Northland Power intends to submit the wind farm layout as presented to the MOE for approval**
- **Renewable Energy Approval application to be submitted to the MOE in April**
- **Obtain a contract for the sale of electricity with the Ontario Power Authority through the Province's Feed-In-Tariff program.**
- **Conduct Stage II Archaeological Assessment for select portions of the project area prior to construction**
- **Construction could start as early as August 2010 – pending Provincial approvals and permits**



# Thank You!

- **We would like to hear from you! Your input is important to us.**
- **For your input to be considered as part of the approval application to the MOE, please provide your comments by April 29, 2010.**

**If you have any questions or comments,  
please fill out a questionnaire or contact:**

**Rick Martin, Project Manager**

Northland Power Inc. Little Current Office

McLean's Mountain Wind Farm Office

P.O. Box 73

Little Current ON, P0P 1K0

Tel: (705)271-5358 cell

(705)368-0303 Manitoulin Island Office

E-mail: ***rickmartin@northlandpower.ca***



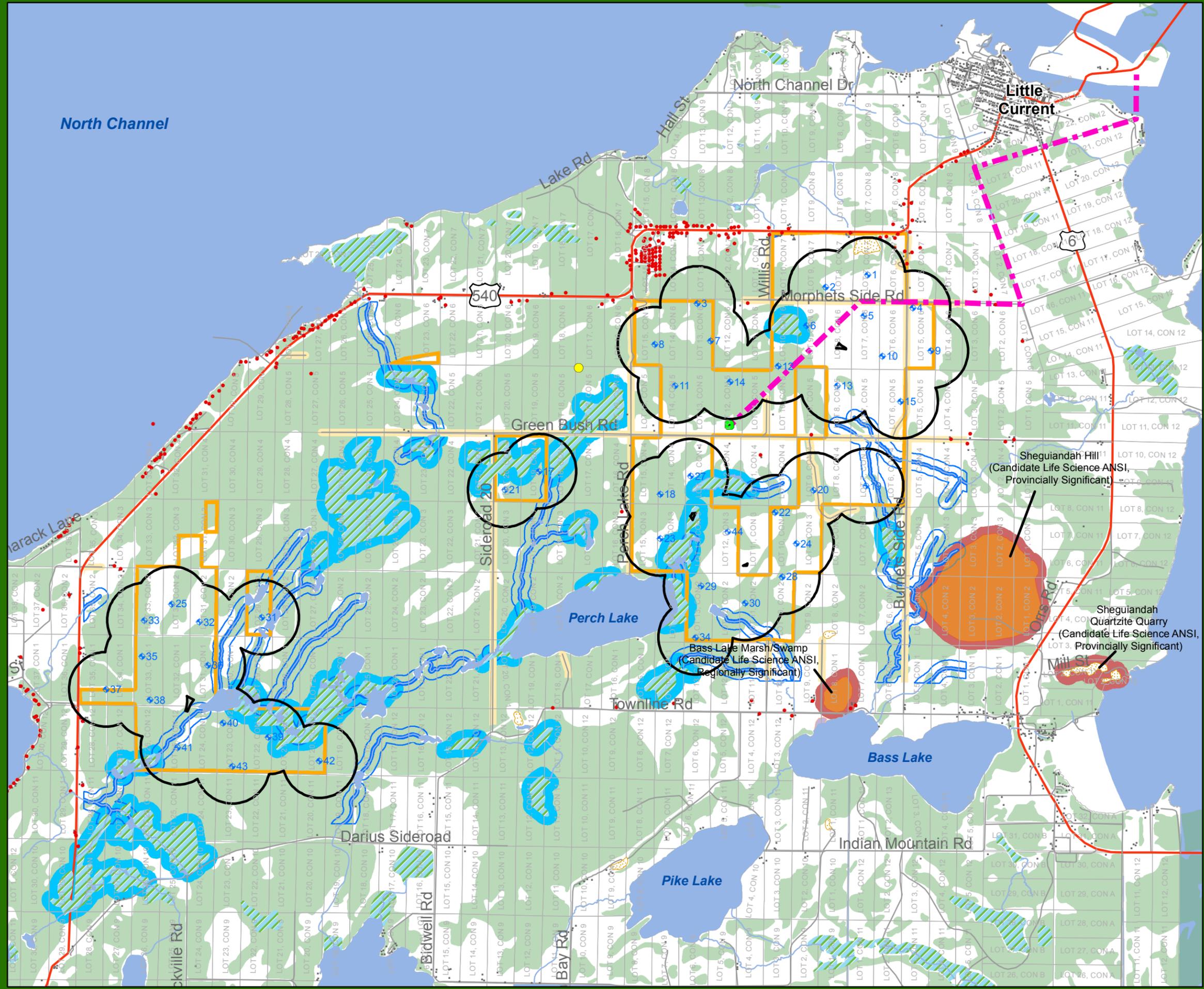
### McLean's Mountain Wind Farm REA Constraints

**Legend**

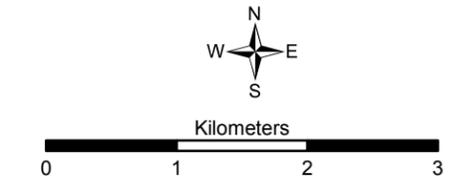
- Turbine
- Residence
- Substation
- Building
- Unknown Large Stick Nest
- Secondary Roads
- Highway
- Proposed Transmission Line (115kv)
- Watercourse
- Lots
- ANSI
- Pit or Quarry
- Waterbody
- Wetland
- Woodlots

**REA Constraints**

- 30m Watercourse Setback
- 120m River/Stream Setback
- 55m Non Participating Lot Setback
- 55m Road Setback
- 120m Wetlands Setback\*
- 120m Life Science Area of Natural and Scientific Interest (ANSI) Setback
- 550m Noise Receptor Setback



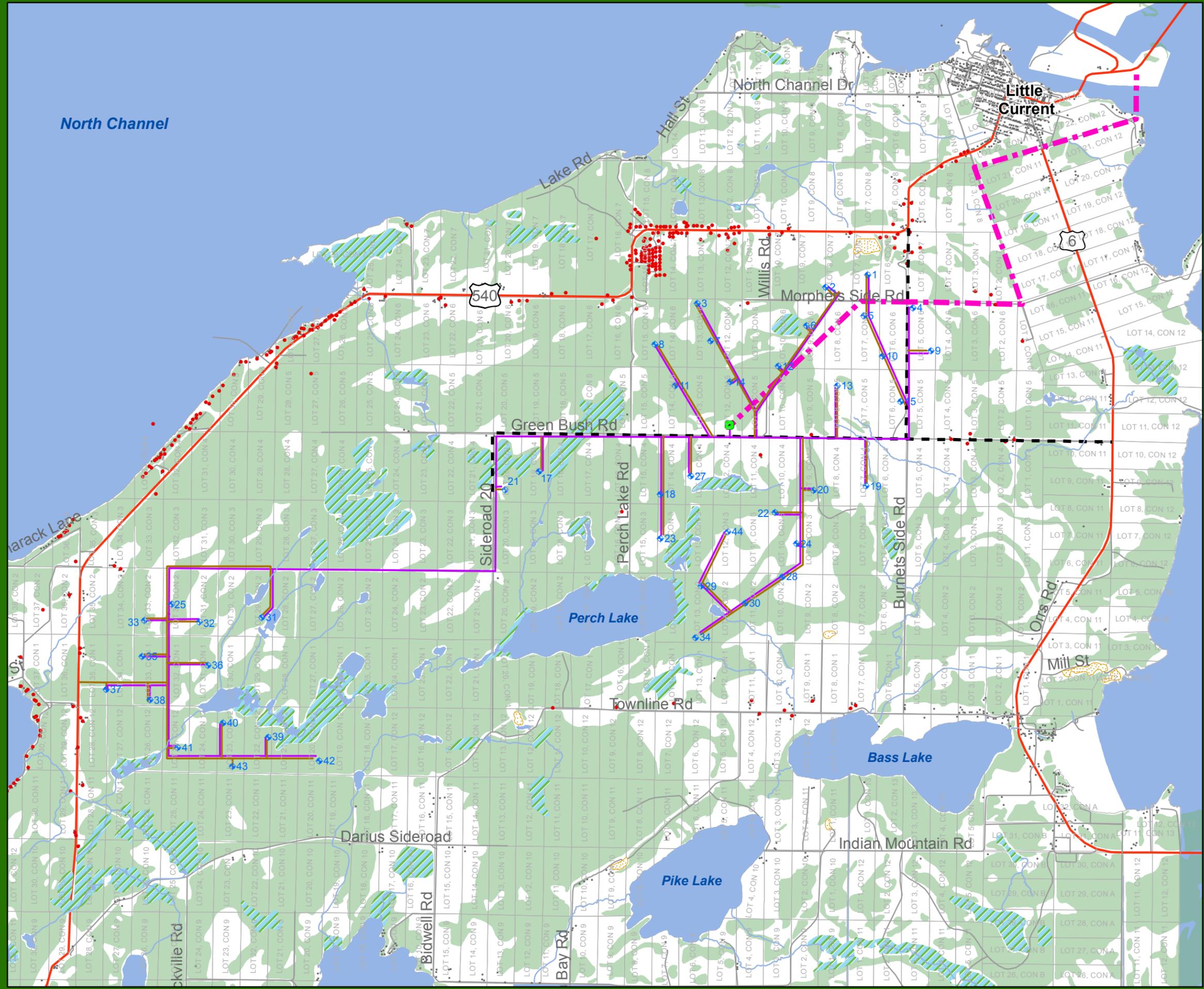
**Notes:**  
 The wind farm layout is draft and subject to revision based on input received from government agencies, Aboriginal communities, landowners and the public.  
 \* All wetlands are assumed to be Provincially Significant



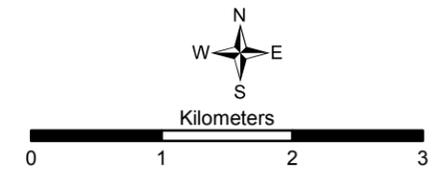
### McLean's Mountain Wind Farm Turbine Locations

**Legend**

-  Turbine
-  Residence
-  Substation
-  Building
-  Feeder Lines
-  Access Roads
-  Upgraded Roads
-  Secondary Roads
-  Highway
-  Proposed Transmission Line (115kv)
-  Watercourse
-  Lots
-  Pit or Quarry
-  Waterbody
-  Wetland
-  Woodlots



**Notes:**  
 The wind farm layout is draft and subject to revision based on input received from government agencies, Aboriginal communities, landowners and the public.  
 \* All wetlands are assumed to be Provincially Significant



**The McLean's Mountain Wind Farm Comment  
Response Table under REA, May 2010**

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

Stakeholder	Comment Received	Proponent Response
<b>Human Health</b>		
Krogh, Carmen	<p>Provided a Health Canada letter regarding a wind power project in Nova Scotia that states that "there are peer reviewed scientific articles indicating that wind turbines may have an adverse impact on human health". Listed four new studies that have come out showing a connection between wind turbines and health problems (a 2009 study in Japan, a 2009 study in France, a 2010 study in the UK and preliminary findings of a study being conducted by Dr. Nissenbaum and available on the wind vigilance website). Notes that "annoyance may sound trivial to some; however in clinical terms, annoyance is recognized by the World Health Association as an adverse health effect".</p>	<p>NPI is committed to providing up-to-date information about wind energy and the McLean's Mountain Wind Farm to help people stay informed about our project. Ontario has some of the most stringent regulations in North America regarding turbine siting and sound restrictions and Northland Power will meet or exceed these regulations.</p> <p>It's important to note that although wind energy is relatively new to Ontario, it's a very well-established and proven form of electrical generation around the world. For more than 30 years, tens of thousands of people have been living near wind turbines with no ill effects.</p> <p>Ontario's Chief Medical Officer of Health, Dr. Arlene King, recently sent a memorandum to all Medical Officers of Health and Environmental Health Directors stating the following about wind energy and human health:</p>
Jeffery, Roy	<p>As a medical doctor, he is aware of a "large body of knowledge that shows that noise has the potential for serious impacts on human health" mainly due to sleep disturbance. He provides a summary of a "definitive paper by Dr. Chris Hanning" which states that "turbines which result in external noise levels greater than 35dB(A), or are sited closer than 1.5km from housing, present an unacceptable risk of causing sleep disturbance and high levels of annoyance to those</p>	<p>"... there is no scientific evidence, to date, to demonstrate a causal association between wind turbine noise and adverse health effects."</p> <p>Further, a report was released last December, authored by an international panel of medical doctors and sound experts</p>

## McLean's Mountain Wind Farm Summary of REA Comments and Responses

Stakeholder	Comment Received	Proponent Response
	residents and, to a small number, a risk to health."	entitled <i>Wind Turbine Sound and Health Effects: An Expert Panel Review</i> . It concluded that sound from wind turbines has no direct harmful effect on human health.
Jansen, Kyla	Concerned about personal health because she suffers from severe migraines and heart palpitations.	To see the report, visit: <a href="http://www.canwea.ca/pdf/talkwind/Wind_Turbine_Sound_and_Health_Effects.pdf">http://www.canwea.ca/pdf/talkwind/Wind Turbine Sound and Health Effects.pdf</a>
Harfield, Nicolas	"Potential health effects from wind turbines are still poorly understood. Organizations like the World Health Organization are approaching this issue with caution. I do not feel it is safe for us (residents within or near the project area) to be living in such close proximity to wind turbines until our provincial and national governments have a clearer understanding of the potential health effects from wind turbines."	To see an executive summary of the report, visit: <a href="http://www.canwea.ca/pdf/talkwind/Wind_Turbine_Sound_and_Health_Effects-Executive_Summary.pdf">http://www.canwea.ca/pdf/talkwind/Wind Turbine Sound and Health Effects-Executive Summary.pdf</a>  For more information please refer to the previous comment/response table provided in the draft REA package, which is included in this final submission package.
Morphet, Blair	Concerned about health effects of turbines and points out that "ten years ago we had not heard of second hand smoke but today the adverse effects are accepted as fact. The health of the people within the project boundaries should not be placed at risk for the sake of an increased tax base for the municipality".	There is no scientific evidence that indicates that wind turbines general excess amounts of infrasound that would result in health effects.  The generic letter (April 2010) that was signed by a number of individuals is appended. NPI acknowledges the health concerns raised in this letter regarding the potential health effects of wind turbines. Responses to the health issue are included in this table (see above) as well as the previously prepared comment-response table prepared under the former environmental screening process.
Courtin, Gerard M	Concerned that wind farms generate low-frequency sound that causes severe medical problems including	

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
	<p>high blood pressure, migraines and loss of sleep. Requests that the development be stopped until a full, scientific study has been made by an independent authority.</p>	<p>The REA process does not require a proponent to conduct a flicker assessment. The previous flicker assessment conducted as part of the environmental screening process demonstrated that the project would not result in excess amounts of flicker to residents in the area. It is expected that results for the final layout would be the same.</p>
<p>Raised in a generic letter sent by multiple people (April, 2010)</p>	<p>Provided a number of studies that discuss the impact of wind turbines on human health. Among these studies were those authored by: A/CanWEA, Ontario Ministry of Health and Long Term Care, World Health Organization, and Health Canada as well as various peer-reviewed studies.</p> <p>Notes that "there is no scientific evidence that the current Ministry of Environment wind turbine noise guidelines and regulations are adequate to protect Ontario individuals from suffering wind turbine induced adverse health effects."</p> <p>"In the past, Ontario wind energy projects have included Shadow Flicker Reports as part of their Environmental Screening Reports/Environmental Review Reports. The REA does not require the wind energy proponent to address the risk of shadow flicker."</p>	

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
Jansen, Barbara	Concerned about the health effects of changed air patterns, motion, noise, and lights.	
Group Concerns	The following individuals were also concerned about health: Cathy Jeffery, Lynda & Arthur Lee, Maurice Labelle, Paul Salanki, Shari Lariviere, Ron Haney, Anne Casson (on behalf of the North Channel Preservation Society), Raymond Beaudry, Ina Wesno, Brad Bond, Elizabeth Quinn, Natasha Abotossaway, Emily Weber, William Davis, Judy Young and Anonymous (3).	
<b>Natural Environment</b>		
Thoma, Heather	Noted that the NPI-commissioned geological study concluded that additional sites should be tested but that this testing had not been done.	Each turbine site will be tested prior to construction to confirm that geological conditions are suitable.
Courtin, Gerard M.	Concerned that because turbines will be anchored to the rock due to lack of soil, vibrations will be propagated for a considerable distance and requested that issues of propagation distance and intensity be addressed.	Detailed engineering will consider the propagation of vibrations. The initial tests indicate that there is nothing inherent in the geology to suggest that vibration propagation will be an issue.

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
Bell, Christopher	Wanted to know whether NPI will be removing aggregates at or adjacent to the turbine sites and is concerned about the impact on the Niagara Escarpment if a quarry was present.	NPI expects to obtain the required amount of aggregate material from existing licensed pits in the area.
Beaudry, Raymond	Indicated that Manitoulin is known locally for the existence of gas pockets in the rock which can lead to fires and that drilling has also taken place for oil wells and salt brine. He is concerned that these could be released to the environment during construction.	Gas pockets are unlikely to be found during construction as the foundations extend to a depth of only 3m. The initial tests show that the rock near the surface is fractured and permeable and therefore unlikely to contain gas. Nevertheless, care will be taken during the drilling of additional bore holes prior to construction and the excavation during construction to protect against the unlikely release of gas. Given the turbine foundation would only be excavated to a depth of 3 m, it is very unlikely that oil or salt brine would be encountered.
Strickland, John N.	Indicated that "McLean's Mountain is a cuesta which has been modified by erosion creating a plateau-like topography which is essentially flat-lying on the top, having escarpments on the north and south sides and sloping sides on the east and west. The top layer of limestone strata has a jointed or fractured surface which is both vertical and horizontal, allowing water to circulate horizontally and vertically at depth. Below the limestone strata are a series of inter-bedded limestone	Given the shallow depth of the foundations (3m) and the fractured and permeable nature of the geology, no measurable effects on ground water flow is expected. There is no reason to expect that turbine excavation activities would have an effect on the hydrologic regime of wetlands in the area given the shallow depth of the excavations. As per above, given the turbine foundation would only be excavated to a depth of 3 m, it is very unlikely that oil would be encountered.

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
	<p>and shale which are strongly foliated horizontally allowing water to circulate freely. Some of this shale is badly fractured leaving even more space for subsurface waters. Over thousands of years, subsurface drainage patterns have evolved and a large percentage of water draining off the plateau ends up providing water to the land surrounding the base of the escarpment."</p> <p>Expressed concern about construction activities and their potential to disturb subsurface drainage patterns. Indicated that "problems could include: dried up wells, dried up wetlands, new wetlands, soil erosion, flooding, changes in natural vegetation" and the "possible release of oil into the system caused by the intersecting of oil bearing strata during drilling."</p>	
Beaudry, Raymond	"The 120m setback distance from a surface water table is, I feel, inadequate for identification of underground water flow, which has not been thoroughly studied."	The 120m setback from surface waters is not related to groundwater. The project is not expected to have any impact on groundwater given that the turbine foundation area will only be excavated to a depth of 3 m.
Morphet, Blair	"The impact of the vibration from the wind turbines on the ground water, drainage and water flow is unknown. Many ratepayers within the project area depend on ground water for their drinking water."	Detailed engineering will consider the propagation of vibrations. The initial tests indicate that there is nothing inherent in the geology to suggest that vibration propagation will be an issue or affect the ground water flow.

## McLean's Mountain Wind Farm Summary of REA Comments and Responses

Stakeholder	Comment Received	Proponent Response
<p>Young, Joyce Morphet, Tom and Connie Jansen, Kyla Beaudry, Raymond Harfield, Nicolas Beaudry, Raymond Machum, Michael &amp; Jennifer Thoma, Heather Jansen, Barbara Weber, Emily Bingaman, Veronika &amp; Timothy</p> <p>Also raised in a generic letter sent by multiple people (April, 2010)</p>	<p>Concerned about blasting of holes for turbine foundations and other construction effects on surface and groundwater. Main concerns are as follows:</p> <ul style="list-style-type: none"> <li>• “Limestone aquifers generally contain high concentrations of carbon, sulphur, nickel, vanadium and kerogen and vanadium compounds should be considered toxic.”</li> <li>• “The blasting may cause oil or sulphur to be directed into the lakes. Any wells that depend on the springs of the plateau may dry up or be made unusable”</li> <li>• “With fractured rock and rain and watering for dust control, can cement, dust, oils and contaminants be sent to unknown locations travelling for great distances?”</li> <li>• Environmental damage may be caused by releasing naturally occurring “gas, oil and/or salt water into the groundwater.”</li> <li>• Concern about extensive gas pockets and unplanned explosions from test drilling and holes for turbine foundations</li> </ul>	<p>Three bore holes have been drilled to a depth of 13m. No oil, gas or saltwater has been found to date. Given the shallow depth of the foundations (3m) and the fractured and permeable nature of the geology no measurable effects on ground water flow or quality is expected.</p> <p>Given the turbine foundation would only be excavated to a depth of 3 m, it is very unlikely that the ground water table would be affected. Based on the bore holes information collected to date, the water table is expected to be well below the depth of turbine foundation excavation.</p> <p>Given the nature of a wind farm (and the specific mitigation measures proposed for this project), the project is highly unlikely to have any impact of surface or ground water resources.</p> <p>The application of water to roads for dust control would not have an affect on surface or ground water resources in the area. And while there is always the potential for the spills of oils/contaminants during the construction process, the quantities involved would be very small. The procedures to be employed should a spill occur are detailed in the Environmental Management and Protection Plan that is included in the REA submission.</p>

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
	<ul style="list-style-type: none"> <li>• It is difficult to predict how water travels through fractured limestone. Construction may cause pollutants to show up at another location several kilometers away.</li> <li>• Northland has not studied the Perch Lake fishery, possible impacts to the clean waters of the inland lakes, or done hydro-geological work on McLean's Mountain.</li> <li>• Perch Lake has been designated by the township as an environmentally sensitive area and there is an identified ANSI area at the east of the project area.</li> <li>• Possible impacts to the Bass Lake Marsh/Swam – AREA ID – 4853.</li> <li>• Impact to horses drinking from the “natural fed water system”</li> </ul>	<p>Drilling for water wells to a much greater depth than is proposed for testing is routinely done on McLean's Mountain with no negative effects.</p> <p>The project is well removed from Perch Lake. Mitigation measures as outlined in the Environmental Management and Protection Plan (EMPP) would make the likelihood for any effects on Perch Lake to be highly unlikely. EMPP measures would prevent any contamination of waterways during construction. No long term operational effects on Perch Lake are likely.</p>
Harfield, Nicolas	<p>“It is my understanding that there have not been any wind farms developed in Ontario on this type of bedrock. It is also my understanding that the spring water (groundwater) flowing down through the escarpment to my farm originates from proposed turbine sites. I am concerned that the construction of</p>	<p>Given the shallow depth of the foundations (3m), the fractured and permeable nature of the geology and the small area of the turbine foundations no measurable effect on ground water flow is expected.</p>

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
	<p>the turbines (particularly turbines 24, 28, 29, 30, and 34) may alter the flow of groundwater to my farm. I rely on this water to operate my farm. What will happen to the flow of groundwater as a result of the blasting required to pour foundations for the turbines? What is an appropriate compensation for the loss of access to clean water?"</p>	
<p>Bell, Christopher</p>	<p>"It appears that the company is proposing a road crossing over the Perch Lake Creek. This creek is an undisturbed eight-kilometre long stretch of wetlands. As far as I know no studies have been made of this interesting area. A full environmental study should be made and the crossing site chosen to allow construction with minimum damage to the environment. The bridge or culvert must be designed and constructed to suit the locale."</p>	<p>NPI will be conducting detailed fish habitat studies for all motor crossings to obtain necessary permits under the federal Fisheries Act under DFO.</p>
<p>Harfield, Nicolas</p>	<p>"In the ESR it states that "no surface water will be required for the project" but later it notes that a "Permit to Take Water" may be needed for a temporary cement plant/concrete batch plant. Will surface water be required for this project or not?"</p>	<p>We do not anticipate the need for a batch plant. Subsequently, we do not expect to use surface water.</p>

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
Harfield, Nicolas	"Were qualified wetlands evaluators used to evaluate the wetlands that will not be avoided [in construction]? If not, this should be completed in the requested EA."	It was not necessary to evaluate each wetland in the study area to avoid them. Available mapping, information from the MNR and field work was all considered to identify the location of wetlands in the project area. All wetlands were assumed to be "significant" and the required REA setbacks were observed (with the exception of T17).
Beaudry, Raymond	Long term vibration from turbines (and short term compaction of pads or roads through rock) travel great distances. Even subtle vibrations have their effect on sensitive wildlife. Studies on this effect must be initiated to address this before construction is commenced.	There is no evidence to suggest that vibrations from wind turbines affect wildlife.
Beaudry, Raymond	Concerned about the impact of noise and flicker effect on mares and foals.	NPI is not aware of any studies that indicate that this should be a problem. Should this prove to be a problem for the project, NPI would review and incorporate mitigation measures as appropriate.
Young, Joyce Bingaman, Veronika & Timothy	Concerned that no additional studies of the impact on the bat population and migration have been done even though recommended by the MNR. Claims the MNR recommended that the bat study be done in August but that NRSI did their study in July. Requested that NPI	The bat monitoring for the proposed project was conducted in accordance to guidelines provided by the Ministry of Natural Resources. As requested by the MNR additional bat monitoring was undertaken as a post ESR submission activity (August-Sept 2009). The findings of this additional survey

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
	do a May bat migration study as per MNR's suggestion and investigate the face of McLean's mountain for bat nesting and roosting.	work have been made available for the MNR to review. Post-construction monitoring studies will also be conducted to confirm the impact of the project on bats.
Beaudry, Raymond & Patti Bond	Listed a variety of concerns about the natural environment, including an area of Lots 6 to 10, Conc. 4 which is a recognized breeding area for the sharptail grouse. Notes that there is a known rare plant on Harbour View Rd and a "deer yard" in the area of Side Road 20 (west toward Honora Bay) as well as at the west end of Green Bush Rd. Stated that "the contactor hired for the lagoon expansion in Little Current did a small study and found a rare bird, the Lecontes Sparrow. There are also dozens of nesting pairs of sand hill cranes that gather here for pre-migration".	<p>Bird Studies conducted have documented sharp-tailed grouse in the Study Area, with one small breeding lek being observed southwest of the Greenbush Road-Burnett Side Road intersection, and other individuals observed in this area. Post-construction monitoring will document any adverse effects to grouse and other bird species. Further mitigation options will be considered in the event that negative impacts to the local grouse population are discovered.</p> <p>NPI is aware of the presence of Houghton's Goldenrod along Harbour View Road. Pre-construction surveys at turbine and other infrastructure locations in potential habitat areas are planned to determine the presence of this plant in these areas.</p> <p>No turbines are planned in the area immediately west of Side Road 20 or at the west end of Greenbush Road and impacts should not occur to deer yard habitats.</p> <p>Le Conte's sparrow was not documented in the Study Area during fieldwork. If it occurs in the Study Area, it would be in very low numbers. As such, no adverse effects to LeConte's sparrow population are expected.</p>

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

Stakeholder	Comment Received	Proponent Response
		<p>Bird studies have documented sandhill crane presence during breeding season. We maintain that sandhill cranes will not be adversely affected by the project. Post construction monitoring will verify this assertion, and mitigation will be considered if it is determined that cranes are negatively affected by the project's wind turbines.</p>
Crowley, Joe	<p>Concerned that the wind farm is being developed in a "large expanse of relatively pristine forest habitat."</p>	<p>Some of the turbines will require the removal of some forested lands (particularly the south-west portion of the project). Efforts will be taken to minimize the amount of trees to be removed.</p>
St. Onge, Jeremy	<p>Felt that "many unique ecological features" of McLean's Mountain were overlooked in the biological portion of the Environmental Impact Assessment such as Alvar communities that "are sensitive to development and are not commonly represented in Ontario." Also expressed concern that several "amphibians and reptiles in the area are listed as Species at Risk (including the snapping turtle, Blanding's turtle, Henslow's sparrow, vesper sparrow, Northern Leopard frog, and others)."</p>	<p>Vegetation surveys were conducted in the Study Area. In general, alvar habitats sited at turbine locations have been previously altered through cattle grazing. While each proposed turbine will remove a small amount of vegetation, the overall impact to alvar habitat will be low.</p> <p>NPI is aware of the potential presence of a rare plant species in the Study Area (e.g., Houghton's goldenrod) and pre-construction surveys at turbine locations in potential habitat for these species are planned.</p> <p>Though not observed in the Study Area during fieldwork, NPI is aware of the potential presence of Blanding's Turtle. Recent observations of this species have been documented</p>

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

Stakeholder	Comment Received	Proponent Response
		<p>at Perch Lake. In addition, NPI is aware of the potential presence of Massasauga rattlesnake. Mitigation is planned in the event that herptile Species At Risk or their habitat are discovered within or in proximity to turbine and project infrastructure locations.</p> <p>Henslow's Sparrow was not recorded during fieldwork in the Study Area and was not recorded on Manitoulin Island during the Ontario Breeding bird atlas project. The chances of this species regularly occurring in the Study Area, and thus being affected by the project, is remote.</p>
Crowley, Joe	Concerned about species at risk, especially the eastern milk snake.	The eastern milk snake has not been identified as a species of concern at this site by Dillon or the MNR. As noted previously, additional field work is being undertaken in 2010 to confirm the absence of other species of concern including the Massasauga rattlesnake.
Scannell, Mary	Concerned that Manitoulin is one of the few pristine places left in the world today and that it is a unique biosphere that will be destroyed by the wind farm. Feels that "the land recovers but at some reduced level of complexity and with a reduced carrying capacity for people, plants and animals" and asks if we are willing to "pay this price for a wind farm on Manitoulin?"	Your concern is acknowledged. Extensive studies on the natural environment have been conducted with the input of the MNR and Environment Canada to ensure that the Manitoulin environment is protected.

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
<p>Harfield, Nicolas</p> <p>Similar issues also raised in a generic letter sent by multiple people (April, 2010)</p>	<p>Does not feel that NPI "provided sufficient evidence in the ESR or REA to ensure that rare, threatened or endangered species will not be affected by this project."</p> <p>"I sincerely feel that Dillon Consulting did not study the project area thoroughly enough to reach the conclusions made in the ESR. I take particular exception to the exclusion of the North American Puma (<i>Puma concolor</i> cougar) in Table 2 of the "Natural Environment Report" which comprises Appendix C of the ESR. Manitoulin Island is identified as Puma habitat, with confirmed tracks in Misery Bay and many sightings in the project area. I do not feel that the column "Observed During Fieldwork" in Tables 2 and 3 of Appendix C of the ESR in any way allows Dillon Consulting to make conclusions about the presence of these animals in the project area."</p>	<p>A Natural Environment Assessment, in consultation with the Ontario Ministry of Natural Resources and Environment Canada, was conducted for this project. The assessment concluded that the risk to rare, threatened and endangered species in the area is low and minimal significant adverse effects are anticipated. NPI will implement mitigation measure where required.</p> <p>Additional vegetation survey work will be conducted in August, 2010 to confirm the absence/presence of any endangered vegetation species within the lands to be cleared.</p> <p>Eastern cougar is listed as <i>Endangered</i> by the MNR, but its status and occurrence in Ontario is not well known. Detection of cougars in the Study Area would be extremely unlikely due to its secretive nature, vast home range and low population size. It is unlikely that this species would suffer long-term negative impacts due to the construction and operation of the wind farm.</p>
<p>Courtin, Gerard M.</p>	<p>Indicated that REA reports should include mention of the endangered eastern cougar which is "slowly making a come-back in eastern Canada" and requests that the studies consider the impact of the turbines on the cougar, its movements, and ability to hunt successfully.</p>	<p>See the response above regarding potential occurrence and impacts to eastern cougar.</p>

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
Harfield, Nicolas	"This proposed wind farm will result in more habitat loss in the project area than has ever before been experienced – it not only has the potential to result in effects to wildlife – it will have effects to wildlife."	The potential effects on natural habitat as a result of wind farm construction are documented in the ESR (both disturbance and removal effects). Further, NPI continues to work with the MNR and Environment Canada to ensure that effects of the project are minimized.
Harfield, Nicolas	"Ducks Unlimited acknowledges that the indirect impacts of wind farms on migratory birds are not well understood and that quality information on this particular issue is generally lacking (Pers. Comm.). How can Dillon Consulting and NPI assess and mitigate the effects of something the scientific community knows very little about?"	There exists an extensive amount of literature, along with monitoring reports from operating wind farms, regarding the impacts of wind turbines on birds.
Harfield, Nicolas	Because every turbine will require the construction of at least some length of road and a foundation, natural vegetation will be destroyed at every turbine site. Also, because many (nearly 50%) of the proposed turbine sites are located in wooded areas, much of the vegetation that is destroyed will be forest, including harvestable forest.	The effects to any harvestable forests from the project would be on private land. No concerns have been expressed by landowners to NPI in this regard. No public forested lands are affected.

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Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
Harfield, Nicolas	"Two of the breeding bird sampling locations (on Fig 4 'Map of the 2007/2008' breeding bird locations) are shown to have been on my family's farm (Lot 9, Conc. 2). Dillon Consulting did not receive permission from my family to access our lands. This means either the sites were not visited (raising concerns about the reliability of the work conducted by this company) or Dillon Consulting is guilty of trespassing. The only other explanation is that the sites have been improperly positioned on the map, which also raises concerns about the quality of work carried out by Dillon Consulting."	Lot 9, Concession 2 is located directly adjacent to lands for which Dillon had permission to enter. A slight error in the bird survey mapping has connected point counts in the incorrect order, linking #44 directly to #46 and skipping #45, indicating a travel path crossing Lot 9, Concession 2. The travel path actually taken did not cross over onto Lot 9, Concession 2.
Harfield, Nicolas	"I feel that Dillon Consulting and NPI have grossly underestimated the abundance and diversity of bird species in the project area and the importance of the bird habitat used by these birds. My home is directly below the well-traveled flight path between Bass Lake and Perch Lake. I have seen Sandhill Cranes nesting within 200 m of the proposed sight for turbine 28. My kitchen window faces the Bass Lake Marsh/Swamp – AREA_ID 4853, I regularly see birds follow a flight path from this area over the escarpment towards Perch Lake.	An assessment of avifauna and wildlife in the project area was conducted in accordance with Ministry of Natural Resources and Environment Canada guidelines. The assessment concludes that the potential effects of the proposed project in the avian and other wildlife populations are minimal. There is a large amount of information available regarding the effects of wind farms on birds and this base of information continues to grow. From the experience of existing wind farms, the effects to birds are generally minimal during operation.

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Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
Johnson, Tom	Provided location of a wetland approximately 25 acres in size and requests that this be included in the maps. Notes that "there has been a good deal of migratory bird activity here in the spring and fall." Recommends that "if Tower 19 were placed further north than its current position shown on the map then that may be of benefit to provide as little disruption as possible to the waterfowl when in the area of the wetlands."	Wetlands in the Study Area have generally received buffers of 120m. One turbine is located within 120m of a wetland feature: Turbine 17, which is located southeast of the Greenbush Road –Side Road 20 intersection. Turbine 19 is located approximately 500m north of the nearest wetland. These turbines not expected to affect bird movement to and from this wetland features.
Bell, Christopher	Provided three detailed emails and reports with data on bird sightings and bird counts.	Thank you for the bird records that you provided. These have been Appended.
Wesno, Ina	Requests that the project not move forward until a "thorough environmental impact study has been completed."	The necessary documentation to support the REA approval application has been prepared and submitted to the MOE for their review and approval.
Harfield, Nicolas	Concerned that the REA draft submission package is inadequate because it relies on the ESR to fulfill many of the REA requirements.	We disagree. Some additional materials have been prepared to accompany the ESR to satisfy REA requirements.
Anonymous	Concern for "Zeus" a Golden Eagle from Southern Ontario who was relocated to the area for rehabilitation and then later released from 'Indian Mountain'.	Thank you for your comment. NPI does not believe that the wind farm will affect golden eagles that could be in the area. Raptors have shown good avoidance behaviour of modern

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
		turbine designs.
Group Concerns	The following individuals are also concerned about the environmental impacts and/or unanswered questions relating to the environment: Lynda & Arthur Lee, Carol Lee, Cathy Jeffery, Paul Salanki, Natasha Abotossaway, William Davis, Judy Young, Joyce Young and Barbara Jansen.	
<b>Location</b>		
St. Onge, Jeremy Wall, Petra Jansen, Barbara	<p>"Will development of McLean's Mountain help Manitoulin Island produce more local energy or will it feed the larger provincial grid? We need to get away from burdening rural communities with urban Ontario's power problems."</p> <p>"Let Toronto wind energy stay in Toronto on the lake and generate energy here only for Manitoulin."</p> <p>Concerned that the energy won't help local people but will be "shipped out".</p>	<p>Choosing a location for a wind farm is largely based on available wind resources and access to the transmission grid. For the wind turbine to achieve maximum efficiency, the wind must be strong and consistent. These winds are found on McLean's Mountain. Many people have suggested that the turbines be put in uninhabited places. However, the further the electricity must travel before it is used, the greater the losses. For turbines to be most efficient they need to be placed near the receiving sources. A criticism has been made that the largest energy users are cities and that wind turbines should not be placed in the countryside to provide energy to big cities. It is certainly true that cities use large quantities of energy but the nature of cities is such that many energy savings come from the close proximity of people. Shared walls and floors in apartment buildings or split homes reduce</p>
Crowley, Joe	Notes that wind projects should be sited in areas that are "already highly compromised by human	

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
	development." Notes that there is an "abundance of agricultural land on the island where a wind farm would have little-to-no impact on the immediate ecosystem, and where much of the required infrastructure already exists."	energy use, public transit allows for reduced car use, etc. So while energy use is high in cities because of the number of people who live there, the per person energy use is much lower than that of the suburbs or homes that are dispersed in the countryside. A fair portion of the energy generated on Manitoulin will be used in the local area.
Wesno, Ina	The project "does not benefit islanders, just off-islanders that see it as a way to reduce their taxes on their recreational properties".	Regarding the comment that there is an abundance of agricultural land that could be used for the project, NPI notes that a large portion of the project is on agricultural (pasture) land. The site has been chosen due to its high elevation and good wind resource. It is our opinion that the project can be developed with minimal impact on the ecosystem as described in the ESR and the REA reports.
Haney, Ron Lee, Carol	Questions why the turbines can't be placed further west away from residences or on the mainland.	The McLean's Mountain WF site was chosen due to the good wind resource of the site. The site is considered to be generally well removed from residences. There are very few residences in the immediate vicinity of the turbines.
<b>Property Values</b>		
Bell, Christopher	Stated that properties "adjacent to proposed turbines and those in sight of turbines will have property values reduced and homes will be very hard to sell".	A recent study conducted in the Chatham-Kent area, where there are a number of wind turbines, found no evidence that wind farms have any measurable affect on rural residential market values.

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Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
Jeffery, Roy	"I am aware that there is a divergence of opinion regarding the effect on land values with the newer studies suggesting significant adverse effects". As a director of the Manitoulin Coalition for Safe Energy Alternatives (MCSEA) he notes that the group is concerned about the general devaluation of property.	<p>The study was conducted during May and June of 2009 by John Simmons Realty Services Ltd. and Canning Consultants Inc. and was commissioned by the Canadian Wind Energy Association to review possible effects of wind energy developments on real estate values on near-by properties.</p> <p>This information was provided at the PIC on March 22<sup>nd</sup>, 2010.</p>
Harfield, Nicolas	"A large percentage of the lands in the project area are used solely for hunting. Should the wind farm cause the emigration of game resources from the area it is possible that many of these landowners will sell at depreciated property values"	<p>To see the study, visit: <a href="http://www.canwea.ca/pdf/talkwind/PropertyValuesConsultingReportFebruary42010.pdf">http://www.canwea.ca/pdf/talkwind/PropertyValuesConsultingReportFebruary42010.pdf</a></p> <p>For more information and older studies, please see the previous comment/response table which is included in this final submission package.</p>
Carson, Ann Rapski, Albert and Joan Bachiu, Rebecca Weber, Emily Macleod, Susan Pascos, Harry Abbotossaway, Natasha	"Recently in Ontario an appeals review board through MPAC (Municipal Property Assessment Corporation" ruled in favour of a 50% assessed reduction in property value on a property due to excessive noise from a transformer station in a wind farm project."	<p>This was a very specific case in which a particular transformer was not functioning properly, causing excess noise. MPAC uses market and sales analysis to determine property values and has provided an outline of how they assess properties. This was displayed on a large panel at the March 22<sup>nd</sup> PIC and states: "To date, MPAC's analysis of sales does not indicate that the presence of wind turbines that are either abutting or in proximity to a property has either a positive or negative impact on its value."</p>

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
Group Concerns	The following individuals are also concerned about property values: Lynda & Arthur Lee, Cathy Jeffery, Ina Wesno, Maurice Labelle, William Davis, Judy Young, Emily Weber and Anonymous (1).	Comment noted. See previous response regarding property values.
<b>Cultural and Heritage Features</b>		
Beaudry, Raymond & Patti Bond	Noted that "the Sheguiandah First Nation is currently in consult with our township to develop a site for history and tourism in the area of Sheguiandah as the First Nations have a record of history from 9,500 years prior. There may be potential sites in the project area that have not been identified yet that could support the existing plans for preservation".	NPI is continuing discussions with First Nation communities in the project area. Mapping will be corrected to ensure that First Nation reserves are appropriately identified.  The ceremonial sites of Sheguiandah FN are well known to NPI. Historical discussions with Sheguiandah Chief and Councilors have clearly defined these borders. The closest turbine from any border of these lands is 1.9km from it. The next two are 2.5 and 2.7km these setbacks are all much higher than are required by the GEA and have been such out of respect to our FN neighbors.
Young, Joyce Bingaman, Veronika & Timothy	Indicated that at Perch Lake there is a First Nations traditional ceremonial site (still used today) and that 13 turbines will surround this ceremonial site. Stated that "Under the Class EA 'Proposed transfer of Crown land to UCCM First Nations' ownership of this site is scheduled to be transferred to Sheguiandah First Nation but that the REA makes no mention of this and that the REA makes no mention of this proposed land	Aundek Omni Kaning is referred to as such throughout all of our documentation. Although many residents of the reservation continue to refer to the area as "Sucker Creek" we have recognized the recent renaming and its significance to the Anishnabee of Mnidoo Mnissing.

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
	transfer." Also indicated that "the boundaries of FN lands are not shown on NPI's maps. The map entitled V90 Layout refers to the First Nation of Aundeck Omni Kaning (AOK) as 'Reserve Indienne Sucker Creek' but it has not been called that for years."	
Young, Joyce Bingaman, Veronika & Timothy	Requested that a Stage 2 archeological assessment be done at the site known as "the giant" as suggested by the archeological consultants.	Stage 2 archeological is being initiated in May 2010 at select locations in the project area.
<b>Safety Issues</b>		
Beaudry, Raymond & Patti Bond	Concerned about ice throw from turbine blades along the primary snowmobile OFSC trail system.	Turbines are equipped with a computer-controlled sensor which will shut down the turbine automatically when even small amounts of ice buildup are present.
Thomas, Heather	Expressed concern that the location of turbine #37 could pose a safety hazard to vehicles on Hwy 540 from ice fall from the blades in wintertime.	Turbine 37 has been moved as input from the community has helped us to see that it could be better located.
Raised in a generic letter sent by multiple people (April, 2010)	"Will the soft limestone rock foundation support turbines of a height of a 40 storey high building over the lifespan of the turbine?"	Additional geotechnical investigations will confirm the characteristics of the rock and provide input to the design for the turbine foundations to support the turbines. Wind turbines

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Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
		<p>can be erected in a variety of soil/rock conditions. The risk of turbine collapse is extremely low.</p> <p>The foundations that will be used for the turbines on this site are the same as the ones used in locations with sandy soil. The large spread foundation disperses the mass of the turbine equally over a significant footprint to enhance its stability.</p>
Beaudry, Raymond	Long-term vibration from turbines (and short-term compaction of pads and roads) travel through rock for great distances. Concerned that the vibration will affect the structural stability of his house foundation.	Detailed engineering will consider the propagation of vibrations. The initial tests indicate that there is nothing inherent in the geology to suggest that vibration propagation will be an issue or affect the structural stability of a house.
<b>Financial Issues and Tourism</b>		
Beaudry, Raymond & Patti Bond	"FedNor, Ontario Trillium Foundation, have announced last August the granting of approximately 2 million dollars into the community to preserve and promote Manitoulin as it is". Expressed concern that this money will not be granted now due to the wind farm.	Comment noted. There is no reason why the wind farm would influence the provision of these funds.
Salanki, Paul	Suggested that because the Ontario Parks listing for LaCloche states "there are no visitor facilities", that NPI	Comment noted. The project is approximately 30km away from Killarney Provincial Park. Impacts to that park are

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

Stakeholder	Comment Received	Proponent Response
	should have used Killarney as the point of study for tourism effects.	therefore not likely.
Ferguson, Ken	As President of the Manitoulin Tourism Association, Ken is concerned that "prominently located wind turbine farms, such as the one currently at issue and proposed for the McLean's Mountain - Green Bush Road area, will detract from tourists' enjoyment of Manitoulin and will, in fact, deter them from choosing our area as a holiday destination".	Wind farms generally have positive long term effects on the local tourism economy. There are 6,000 wind turbines in Denmark, which are used for marketing tourism. Hotels, guesthouses, and campsites may use wind turbines to promote "green tourism". This is particularly targeted towards the German market, where the public is known to have a high level of interest in both environmental issues and in new technology. In a Scottish study <sup>1</sup> 43% of respondents said a wind farm would have a positive effect on their inclination to visit the Argyll area, an area of high landscape value. About the same proportion of respondents said it would make no difference, while less than 8% felt that it would have a negative effect. Nine out of ten tourists visiting some of Scotland's top beauty spots say the presence of wind farms makes no difference to the enjoyment of their holiday. Twice as many people would return to an area because of the presence of a wind farm than would stay away, according to a poll carried out by MORI Scotland.
Lariviere, Shari Jansen, Kyla Harfield, Nicolas Labelle, Maurice Lee, Lynda & Arthur Jeffery, Cathy Wall, Petra Abotossaway, Natasha William Davis Young, Judy Weber, Emily Crowley, Joe	Concerned that because Manitoulin "survives on tourism" the Island's economy will suffer. Feel that tourists do not come to Manitoulin Island to see wind turbines but instead come to get away from "large man-made structures like turbines and the light and noise pollution associated with such structures." People seek "calmness from finding beauty and awe in its spiritual nature". In particular it is noted that equestrian businesses will be affected and that boaters in the North Chanel will no longer want to visit.  Concerned that "vacationers and long time island	Commercial tour companies provide guided tours of several wind farms in the Pincher Creek, Alberta region. Several wind

<sup>1</sup> *Tourist Attitudes Toward Wind Farms*, MORI Summary Report, September 2002 [www.bwea.com/pdf/MORI.pdf](http://www.bwea.com/pdf/MORI.pdf)

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Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
<p>Also raised in a generic letter sent by multiple people (April, 2010)</p>	<p>residents who used to enjoy the peace and quiet of the natural world will leave and take their economic resources elsewhere.”</p>	<p>farms in Australia attract so many visitors that commercial tour operators provide opportunities for the public to get a close up view of the wind farms.</p> <p>Out of the proposed 43 wind turbines only a few of the wind turbines (east of Highway 540) are sited near (1.5 km to 3km away) the shoreline of the North Channel.</p> <p>NPI does not expect that the presence of the turbines would factor into a person's decision on whether to visit the Island.</p> <p>A survey conducted by NPI staff in 2004 indicated over 95% support of a wind farm by visitors to Little Current. Boaters especially noted that the Turbines provide a landmark coming into the port of Little Current.</p>
<p>Harfield, Nicolas</p>	<p>“NPI's commitment to support the local economy through job creation and to the purchase local supplies and services is not convincing. Full-time, long-term job creation has been estimated by NPI to be anywhere from 7-10 jobs, with no written commitment to hire locally. I have also not seen any written commitment in the form of a legally binding contract that holds NPI to using local businesses and labour during the construction phase of the project. It seems very likely that there will be no net economic benefit to the Island [and] it seems more likely that there will be a long-term</p>	<p>The Wind Farm can definitely create jobs in the community by using local people in the construction, maintenance and eventual decommissioning of the project. However, local people will not feel that they can accept the jobs being offered to them if they worry about risking a loss of business from the local community and First Nations due to boycotts. People who oppose the wind farm and boycott local businesses that get involved in the project make it difficult for local jobs to be created with wind farms. NPI has made local job commitments.</p>

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<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
	net negative impact to the local economy."	
St. Onge, Jeremy	"I don't believe that the development company has been very realistic with its economic impact projections. While some short-term jobs in aggregates are likely, I don't see any long-term jobs arising from this development; I believe they would be sourced abroad among already-hired company employees"	Comment noted. Long term jobs will be available to the local community.
Wesno, Ina	"Northeastern Manitoulin and the Islands (NEMI) will receive some tax revenues from the project but this benefit will likely be offset by a downturn in tourism and lost tax revenues resulting from property devaluation."	See previous responses regarding tourism impacts and property values.
St. Onge, Jeremy	Concerned that "municipalities will be stuck servicing roads that otherwise would have remained undeveloped, and repairing damages to existing roads due to the intensive traffic of heavy machinery."	Any damaged roads will be repaired to their pre-construction condition or better at the expense of NPI.  The road use agreement with NEMI has clearly identified that Northland Power is responsible for maintaining roads and even snow removal from any additional roads utilized for this project. No unopened roads will be opened for this project for travel on a regular basis.

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
Salanki, Paul	"Manitoulin, as one of the lowest per-capita income areas of the province, also has one of the most fragile [economies]. The largest part of this fragile economy, and therefore local subsistence here, is based on tourism that comes through subjective interpretation and valuing of the place, its people, ambiance and its unfettered landscape." Suggested that NPI post a bond for half the value of the annual Manitoulin tourist economy and distribute the funds over the next 20 years to those who are impacted.	See previous response regarding tourism impacts
Wesno, Ina	Requests that the project not move forward until "an economic impact study has been prepared."	Comment noted. The REA process does not require an economic impact study to be done. See previous response regarding tourism impacts.
Jones, Judith	<p>Concerned about destroying the local economy and notes that the Environmental Screening Report (ESR) on the NPI website leaves out many key issues that need to be addressed. These include:</p> <p>The project area has been defined too narrowly to exclude cottagers and others.</p> <p>Examples of property values are not comparable to</p>	The defined project area relates to the area in which turbines are to be sited. In some cases, (e.g. visual) the potential for effects outside the project area were considered. Cottages in the area, largely focused along the Island shoreline, are well removed from the project. Further, cottages along the shore would likely face over the water to the north and east. As such, their properties would not likely experience visual effects. Although we do acknowledge that there is a potential for views of the turbines from the water.

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<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
	<p>Manitoulin Island's situation where outdoor recreation, hunting, and boating make up the majority of the economy. "The most direct example would be the wind farm at Gros Cap, a cottaging area outside Sault Ste. Marie, just 4 hours from Manitoulin Island. At this site, there has been a major impact to the cottaging property values."</p> <p>In the ESR, it appears that NPI "has almost completely ignored potential impacts to outdoor recreation. Cottaging, hunting, and boating will all be affected which will impact the economy.</p> <p>"NP makes no mention of impacts to the best known hiking trail on Manitoulin Island, which is the Cup and Saucer Trail, located just 3km south of the project. This trail receives thousands of visitors every year, and a study by the Escarpment Biosphere Conservancy showed that these visitors provide a significant input to the local economy. Obviously arriving at the top of the escarpment to view 43 wind turbines will not provide the same experience."</p>	<p>Our direct contact with real estate sales representatives have indicated that there has been no effect on property values as a result of the Prince Wind Farm near Sault St. Marie. This information was presented at the March 2010 PIC.</p> <p>It is our understanding that since the McLeans Mountain Wind Farm has been in advanced development stages adjacent properties including Farms have been sold at quite appreciated values.</p> <p>NPI has not ignored the potential for effects of the project on recreation activities. The project is well removed from the shoreline areas of the project. There is no reason to expect that the project would impact boating activity. The closest turbines to the shoreline (the four most western turbines) are about 2 km away. The turbines at the eastern end of the project area are greater than 3 km from the shore. We are aware that project area is used for hunting activity. And while construction activity could result in some game species (e.g. deer) moving out of the immediate area during the construction period, once the turbines are operational there is no evidence to suggest that the turbines would reduce deer population in the area. Further, all the turbines are located on private land and these lands would not be open to hunting by the public unless landowner permission is provided. As such, over the long term, there is little reason to expect that the project would effect hunting activity in the area.</p>

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Stakeholder	Comment Received	Proponent Response
		<p>NPI is aware of the Cup and Saucer trail, the entrance to which is off of Bidwell Rd (east of Hwy 540) that is located to the south of the western group of turbines. The trail extends to the west/south of Bidwell Rd and away from the turbines. And while it is possible that some of the turbines could be visible from portions of the trail, possible views to the north, as the trail would be at least 3 km away from the closest turbines, it is the opinion of NPI that the project would have minimal impact on a users decision to use this trail and on the users experience. The experience of the Cup and Saucer trail is extraordinary the view of Pike, Bass, Huron and Lake Manitou are highlights to the South and East. Appreciating that tourists interests vary between individuals it is the opinion of Northland Power that to many the view of the windfarm especially from the Hanora Bay end will be outstanding as well as unobstructing to the previous viewscape of the lakes mentioned.</p>
<p>Wall, Petra Macleod, Susan Anonymous (1)</p>	<p>Concerned that taxpayers are subsidizing wind energy</p>	<p>It is true that electricity from wind is more costly per kilowatt hour than nuclear- or coal-based electricity (approximately \$0.135/kWh vs. \$0.04/kWh) and that our tax dollars are subsidizing it. However, if you take into account the environmental, health, and other costs of pollution from coal burning or storing uranium you would find that your tax dollars also subsidize conventional sources of electricity, especially through higher health care costs. Furthermore, the cost of electricity from new coal or nuclear facilities is considerably</p>
<p>Labelle, Maurice Jansen, Barbara</p>	<p>Notes that wind energy is too costly.</p>	

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<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
		higher, while the cost of wind energy is continually dropping and is expected to reach \$0.07 in the near future. In comparison, the cost of solar electricity per kilowatt hour is more than double and often more than triple that of wind.
<b>Aesthetics</b>		
Beaudry, Raymond & Patti Bond Bell, Christopher	Concerned about polluting the night sky with light from the turbines. Stated that turbine lighting may interfere with an area in Tehkummah which was officially designated a dark sky preserve by the Royal Astronomical Society of Canada.	Wind turbines will be lighted according to Transport Canada (TC) standards. Select turbines on the perimeter will be lit with a single red flashing light (horizontal distance between lit turbines can not exceed 900 meters for any approaching aircraft). The highest turbine in the wind farm will also be lit. All lighted turbines will flash simultaneously. The amount of lighting required should not unduly impact residents and cottagers in the area. Current lighting systems ensure pilot safety, minimal impact on birds and minimal impacts on the night sky viewing and are unobtrusive for communities. Light shrouds and shielding will be used where appropriate to minimize the impact of nighttime lighting.
Lariviere, Shari Haney, Ron Lee, Lynda & Arthur Jeffery, Cathy Bell, Christopher	Feel that the aesthetics of the island (including dark sky at night, seeing wild animals in their natural habitat and an unobstructed view of the escarpment and landscape) will be ruined. Consider the turbines on the	Perceptions regarding the visibility of wind turbines are subjective. NPI, in the siting of the turbines, has attempted to balance the visibility of the turbines with maximizing the output of the turbines. Visual simulations have been prepared

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<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
<p>Soter, Mishka Lee, Carol Casson, Anne Abotossaway, Natasha Macleod, Susan Young, Judy Jansen, Barbara Anonymous (3)</p>	<p>mountain "very visible". Notes that "their height of 410 feet is excessive and not in keeping with the landform".</p>	<p>as part of the Environmental Screening process. The machines used for this project will blend in well with the surrounding area.</p>
<p>Turner Casson, Anne</p>	<p>"I picked wild strawberries with my grandmother, rode horses bareback in winter, trapped beaver, skied cross-country, packed my children in a backpack to pick choke cherries for jelly, hunted deer, drove my dying father here to view his beloved North Chanel, walked my dogs, visited friends, fished, tapped maple trees, rode quads and snowmobiles, photographed, admired autumn leaves in SILENCE and you have taken this away."</p>	<p>Thank you for your comment. Sound levels in the area would not detract from the activities that you note.</p>
<p>Salanki, Paul</p>	<p>Notes that the reason the Group of Seven came into being was because of places like Killarney Park and the undisturbed nature of the place.</p>	<p>Comment noted. It should be mentioned that the distance between the wind farm site and Killarney Park is 30km.</p>

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Stakeholder	Comment Received	Proponent Response
<b>Consultation Process</b>		
Harfield, Nicolas	<p>“Which local experts were contacted for consultation? Judith Jones, Dr. Gerard Courtin, and Chris Bell were not consulted. Local residents, who know the land and its communities better than any, were not consulted. I have seen a list of “local” authorities in the ESR who were consulted with, and most if not all of these people hold offices that are not on Manitoulin Island. Was John Diebolt used as a consultant in this project? He is our local, senior Conservation Officer who likely knows the project area extremely well.” Also noted that there was a lack of information shared with landowners adjacent to properties with wind turbines and a general lack of public consultation, including that with First Nations.</p>	<p>Discussions were held with several agencies, including the MNR and Environment Canada, and input was received from local people with knowledge on conservation issues (eg. Christopher Bell has provided input). If there are other individuals in the area with relevant knowledge then NPI would be quite willing to speak with them.</p>
Thoma, Heather	<p>Expressed disapproval of the consultation process. Stated “public consultation process has not been adequate or responsible. NPI has not responded at all to many of the concerns and questions raised by many residents of Manitoulin.... and in those that they have responded to, their responses have been insubstantial.”</p>	<p>It is NPI's opinion that the consultation program exceeds what is required by applicable legislation. Responses to key issues have been included in the REA report package.</p>
Young, Judy	<p>Feels that the community should have input in determining the appropriate scale of the project in order</p>	<p>The size of the project is typically based on a number of considerations including: wind resource, environmental</p>

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<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
	for it to fit into the community and environment.	constraints, available land, project economics, etc. Larger projects result in greater economies of scale. The MMWF project has been sized taken into account all of the above variables. A much smaller project would not be economically viable.
Harfield, Nicolas	Is not satisfied with the previous responses to his questions and concerns raised in his elevation request.	Comment noted.
Jacko, Art	Provided a letter from First Nations Chiefs who state that the process for reviewing the McLean's Mountain wind farm "has not respected the inherent aboriginal and treaty rights of the Anishinabek of Mnissing."	Communication with First Nation communities has been ongoing for several years. NPI has received letters from the UCCM regarding their concerns. NPI is continuing its consultations with First Nation communities as the project continues. Correspondence to date has focused more on rights than impacts the project would have which is unfortunate. As FN's rights are not in question with Northland Power, NPI would appreciate more contact on the issues with the land and how mitigation to impacts can be implemented. NPI feels that the Anishinabek of Mnissing are best suited to provide this to us and we welcome this direction.
Lee, Lynda & Arthur	"Northland's policy has been to act just within the guidelines of the Green Energy Act with no regard for the greater ethical question of whether the wind turbines are in the interest of the Manitoulin	Comment noted.

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<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
	community."	
Beaudry, Raymond	Felt that inadequate responses were provided in the consultation report to his original letter sent August 21, 2009. Criticized the entire process. Recommended a Town Hall session where the public could ask questions of NPI reps with a sound system that would allow all attendees to hear the response. Also stated: "I am aware of letters sent to NPI from the public in regards to this project and yet were not included in your responses."	NPI has made every effort to include all relevant comments and concerns. Letters were not reproduced in their entirety, but rather, key issues and concerns were summarized in table format so that the public could access the information without scanning dozens of letters, emails and faxes. In cases where a number of people raised similar issues those were grouped together, paraphrased, or quoted in parts. Comments using inappropriate language were not included.
Salanki, Paul	Feels the consultation process has not been good and criticizes the REA consultation report previously submitted. Notes that his previous letter was not included in the Jan 18, 2010 Comment/Response Table.	Please note the response above in this section that discusses the inclusion of comments.
Young, Joyce	"Affected landowners and concerned citizens were given 30 days, in the middle of the summer, to read a huge report, that was at least two years in the making, and make their concerns known to you. Given that the scientific studies were completed at least six months ago, why did the company wait until the middle of the	The draft REA reports for the new approval process were provided to the public in January 2010. The public was provided a 60-day review period.

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<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
	summer to tell the public?"	
Young, Judy	"Until a few months ago (last August) we were totally unaware that there would be any windmills near our farm. Why were we never notified?"	There have been multiple notifications of the project in the community for several years as documented in the ESR and the REA Consultation Report.
Bingaman, Veronika & Timothy	"NPI did not comply with the minimum GEA requirements for Notice and Public Consultation. NPI failed to notify many landowners about its undertaking."	Obtaining a complete and accurate list of all landowners is difficult. Some government data bases have restrictions on their use. NPI, as a private proponent, did their best to obtain an accurate list of landowners in the study area. Yes, we are aware that some landowners did not receive an initial notification; NPI has added these individuals to their mailing list once they became aware of them.
Bell, Christopher	Concerned about the lack of information provided to the public and the fact that some turbines appear to be sited less than 550m from seasonal dwellings. Would like to see the location of all of the turbines, a map of proposed roads and transmission lines and environmental studies. Requested to visit the turbine sites and was refused.	The project layout was provided at the March 22 <sup>nd</sup> , 2010 Public Information Centre (PIC) and is included in the final REA package.
Jeffery, Roy	As a director of the Manitoulin Coalition for Safe Energy Alternatives (MCSEA) he notes that the group is	Consultation with First Nation communities has been ongoing for several years. NPI has received letters from UCCM

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<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
	concerned about a lack of consultation with First Nations.	regarding their concerns. NPI is continuing consultations with First Nation communities as the project continues.
Chief Shining Turtle, on behalf of the Chiefs of Minidoo Minissing	<p>“The Chiefs of the Manito Minissing are against the Northland Power project because of the failure of the Government of Ontario to consult with the First Nations about this project as required by the Supreme Court of Canada. This legal requirement has been ignored and continues to be ignored. As long as the Government of Ontario continues to ignore the First Nations, the Chiefs will remain opposed to the project.”</p> <p>“The Chiefs have set up a Consultation and Accommodation Framework table, and again invite interested parties and representatives to come to the table and settle all concerns and grievances.”</p>	
Bingaman, Veronika & Timothy	“NPI has not satisfied its duty to consult the three First Nations impacted by this undertaking. Two of those First Nations officially and strenuously oppose this development.”	
Anonymous (2)	“How has this project taken into full account the Treaty and Aboriginal Rights of First Nations? Please provide	

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<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
	<p>the written process used to account for our Treaty and Aboriginal Rights under (1836, 1862, and 1850)."</p> <p>"How will Northland respond to the message from the Chiefs of Manitoulin Island?"</p>	
Anonymous (1)	"Are there no negatives to this project? I think the public should be made aware of these. There is no project that is perfect. Your information is severely lacking".	Negative project impacts have been identified in the ESR and REA documents. Mitigation measures have been proposed to avoid and minimize the negative effects.
<b>Setbacks</b>		
Harfield, Nicolas Courtin, Gerard M Haney, Ron	Request setbacks of at least 2000m from any dwelling based on a "growing body of evidence" that suggests it is required to protect health, and considering that other areas of the world have such setbacks.	Please refer to the responses provided above in the health section of this table.
Jeffery, Cathy	"You have been unable to provide clinical studies to justify the short setbacks from receptors."	Please refer to the responses provided above in the health section of this table.
Ryan, Allan	Concerned that the following towers/locations have been placed closer than the setbacks allow (based on The Wind Farm Layout and Infrastructure Map 'Figure	NPI has confirmed that the final turbine layout meets all required REA setbacks.

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Stakeholder	Comment Received	Proponent Response
	2-1' submitted with the draft application): Tower #21 at Lot 19, Conc. 3. #25 at Lot 33, Conc. 3; and #17 at Lot 19, Conc. 5.	The MOE has provided clarification regarding the consideration of seasonal dwellings as noise sensitive receptors (MOE letters dated March 19 and 22, 2010).
Harfield, Nicolas	"I am unclear of the distinction Dillon Consulting makes between a recreational cottage and a hunt camp. Many consider hunting to be a recreational activity (though hunting for me is part of my Manitoulin lifestyle), therefore, making a hunt camp a recreational cottage. Also, many "hunt camps" are used year round for many forms of recreation including skiing, snowshoeing, wild crafting, maple syrup making, and hiking. Regardless of their uses, these camps are all considered dwellings and will require the Green Energy Act setback of 550m."	
Bell, Christopher	Concerned that some turbines have been sited less than 550m from seasonal dwellings.	
Weber, Emily	Requests larger setbacks and a new location map for the turbines given public concern, new building permits, and wishes to include existing hunt camps.	

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Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
Morphet, Blair Young, Joyce Courtin, Gerard Harfield, Nicolas Jeffery, Roy Wesno, Ina	Feel that the actions of one property owner should not be allowed to affect the use of an adjoining property by that owner. Concerned that because many of the turbines are located on single 100 acre lots, many adjacent landowners will be prevented from building on their own land in the future. The setback requirements for wind turbines should be the same for all non-participating properties regardless of whether there is a receptor on that property. Request that the wind turbines should be located a minimum of 550 metres from the lot line to allow property owners to subdivide their land or build new dwellings without being restricted by the 40 dBA noise range.	The wind turbines, once constructed, will not prevent landowners from constructing buildings in their vicinity. There are currently no by-laws preventing a landowner from doing this. NPI is siting its turbines a minimum of 550 m from sensitive noise receptors as required by provincial policy.
Raised in a generic letter sent by multiple people (April, 2010)	The project should be structured so that "2-2.5 km is the minimum distance between a turbine and any other dwelling such as a home, cottage or hunt camp."	Please refer to the responses provided above in the health section of this table.
Jeffery, Roy	As a director of the Manitoulin Coalition for Safe Energy Alternatives (MCSEA) he notes that the group is concerned that the "setbacks allowed by GEA are not adequate to protect human health" and that they are worried "that NPI will reduce setbacks even further." He notes that "The MOE and MOHLTC and Health Canada have indicated that the current guidelines [for setbacks]	NPI is obligated to meet provincially identified setbacks. The project layout meets these setbacks.

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
	are not evidence-based. I believe that as the evidence accumulates, a 2km setback will be implemented."	
Anonymous	Concerned about proximity to school	There is no school in the project area.
Group Concerns	A number of people are concerned about the calculated setbacks of turbines from their homes. These people include: Roy Jeffery, Tom Johnson, John & Angela Wellman, Raymond Beaudry, John Leeney.	NPI made efforts to identify all potential receptors in the study area. In the event that any receptors were missed, required changes to the layout will be made to maintain a minimum 550 m setback and meet applicable MOE noise guidelines.
Group Concerns	A number of people noted that they have taken out building permits on their properties and that the maps with turbine locations do not accurately reflect this. These people include: Raymond Beaudry and Patti Bond Beaudry, Nicolas Harfield, Michael and Jennifer Machum, and Tom, Connie, Ross and Eleanor Machum.	NPI has considered existing building permits as it is required to based on correspondence from the MOE (MOE letters dated March 19 and 22, 2010).
<b>Other Issues/Comments</b>		
Bell, Christopher	Concerned that the "construction period will be very disruptive" because "Highway 6 and Highway 540 are two-lane roads and too narrow and congested for	Equipment will be delivered to site following Hwy 6, across the swing bridge with the bulk of the deliveries proceeding along Hwy 6 and then turning west on Green Bush Rd to the

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
	<p>construction traffic". Also notes that the Little Current Swing Bridge will cause significant delays to road and boat traffic.</p>	<p>project site. Some deliveries will also be made traveling along Hwy 540 to Honora and exiting the highway to the east across a new road to be constructed across private lots. Both routes have been studied by the turbine supplier. During the project construction phase, truck traffic will increase along Highway 540, Hwy 6, as well as the local roads within the project area in order to deliver turbine parts and accessories to the project. There will also be an increase in regular vehicular traffic as construction workers drive to the construction site. Project related traffic volumes will be substantially reduced after all turbine components are on site. Any damaged roads will be repaired to their pre-construction condition or better at the expense of NPI. Once in operation, project-related traffic will be limited to maintenance staff.</p>
<p>Mason, Jonathan</p>	<p>Stated that ORC-managed lands are within the project area. "Negative impacts to this land holding such as the taking of developable parcels or the disruption of the current use of these lands should be avoided. The ORC is required to follow the Ministry of Energy and Infrastructure (MEI) Class Environmental Assessment. Please refer to the MEI Class EA Process document to determine whether or not the above undertaking has the potential to trigger the MEI Class EA."</p>	<p>The identified ORC property will not be directly affected by the project. NPI is in consultation with the ORC.</p>

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
Bell, Christopher	Requested that a moratorium be placed on the McLean's Mountain project based on many issues he and others have raised (which are recorded in other sections of this table).	Thank you for your comment. We have carefully reviewed the concerns raised by members of the general public, Aboriginal communities, and agencies/municipalities. All activities will meet MOE, MNR, and other agency requirements. Please see notes above on health studies. Given this information and considering that all safety and environmental requirements have been met, no moratorium will be placed on the project.
Jeffery, Cathy Jeffery, Roy	Concerned that the project will preclude any "safe, community-based green energy projects" by using up the current grid space or potential.	The NPI MMWF is tapping in directly to the provincial transmission grid. The project will not be utilizing the local electrical distribution system. As such, the project will have no impact on community-based green energy projects.
St. Onge, Jeremy	"I think that the driving forces [for a move away from fossil fuels] should stem from community and be complemented with a culture of energy conservation. There are better alternatives to wind development. Manitoulin Island has many barn, shed, and house roofs available for solar development. Micro-hydro installations are also possible in many locations."	NPI encourages the community to conserve energy and promote awareness of this issue. Furthermore, to meet greenhouse gas emission reduction targets a mix of energy sources and renewable technologies will need to be utilized and we encourage local participation in the FIT program. The wind development will not preclude community participation in employing solar, micro-hydro and other green energy initiatives.

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
Harfield, Nicolas	"The project area boundary should be extended 1 km in each cardinal direction, with special mention given to Little Current, to properly describe the level of human habitation in the vicinity of the project."	Existing conditions in the vicinity of the lands potentially affected by the turbines have been thoroughly described.
Morphet, Blair	"One would assume that the turbines and their bases will be erected/constructed according to some standard or code. Who is going to verify that such a standard or code is followed?"	The turbines will require a building permit from the municipality.
Courtin, Gerard M Strickland, John N. Machum, Michael and Jennifer Thoma, Heather Jeffery, Roy	Question who will be accountable and accept the financial responsibility for compensation in case of illness, loss of property value, health and safety, environmental damage, and wells running dry or developing an oil slick. Will the landowner be able to receive compensation from NPI, the MOE or the NEMI Town Council?	Project effects that would warrant compensation are not expected. Furthermore, there is no provincial requirement to have a compensation plan in place for wind farms.
de Laronde, Joe	Requested information on the submarine cable required to link the project to the mainland by crossing the North Channel. "The MNR is responsible for issuing approvals/permits for the use of Crown Lands of which the beds of Lake Huron and Georgian Bay are included."	The cable crossing design is being developed. Applicable permits are being sought from the MNR and Transport Canada. NEMI will be provided with the details once available.

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

Stakeholder	Comment Received	Proponent Response
Bingaman, Veronika & Timothy	"NPI has not conducted a federal EA on its submarine hydro cable crossing the navigable water of the North Channel."	
Young, Joyce	"NPI proposes to deliver the power the wind farm generates to the transformer station on Goat Island via a submarine cable under the North Channel. Hydro One has said that NPI cannot use the transmission towers that cross the North Channel. The North Channel is navigable water and that undertaking will be subject to a federal EA under CEAA."	
Labelle, Maurice	States that wind is "one of the most unpredictable and inconsistent sources of electricity".	A modern wind turbine produces electricity 70-85% of the time, but it generates different outputs dependent on wind speed. Over the course of a year, it will generate about 30% of the theoretical maximum output. This is known as its load factor. A modern wind turbine will generate enough electricity to meet the demands of more than a thousand homes over the course of a year. Furthermore a wind turbine produces enough clean electricity in 3 to 5 months to offset all of the greenhouse gas emissions emitted in its manufacture – and it will produce clean electricity for another 20-25 years. A modern wind turbine is designed to operate for more than 20
Macleod, Susan	Feels that turbines are inefficient, only averaging 28% efficiency and should come with battery storage.	

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
		years.
Jansen, Barbara	Questions why the turbines will have three blades rather than two because "European studies show less environmental damage, less noise and equal power with two blades."	All available modern turbines are designed with three blades which maximizes their efficiency and power generation abilities.
Lee, Lynda & Arthur Labelle, Maurice Salanki, Paul Wall, Petra Anonymous (2)	Noted that the project has created community unrest by dividing families and friends on issues of the wind farm, and has strained relationships between islanders and "torn apart families and friends".	Comment noted. NPI is committed to addressing any project impacts.
Abotossaway, Natasha Jansen, Barbara	Question why solar energy rather than wind energy can't be built on the island.	A mix of renewable energies will be needed to support the energy needs of Manitoulin and Ontario. Solar power can be used to produce some of this energy. However, currently the efficiency of solar modules is less than wind and with the quality of the wind resource on Manitoulin in order to produce the same amount of power as wind turbines a large percentage of the land on Manitoulin would have to be covered with solar panels, leading to a much greater environmental impact.

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
Labelle, Maurice	Does the McLean's Mountain project plan to expand to larger than the 77MW?	No expansion is planned. There are fewer turbines in the final layout than in what was proposed in 2005, when a 60 turbine, 100 MW project was being considered.
Raised in a generic letter sent by multiple people (April, 2010)	"Once the infrastructure is approved for this first project, the road is already paved for many more companies to follow."	Comment noted. NPI cannot be responsible for the decisions of future developers, businesses, or town council decisions.
Anonymous	Concerned that wind farms have failed elsewhere in the world, particularly in Europe.	Comment noted. Arguments that wind farms are failing are based on a limited number of poorly planned or financed farms. In general, the world wind market is very strong and continues to grow significantly.
Jones, Judith Anonymous Also raised in a generic letter sent by multiple people (April, 2010)	"There is no mention of how the turbines will be decommissioned or any impacts from the decommissioning. To suggest that NEMI can handle decommissioning takes advantage of a lack of expertise in a small town council."  "What happens when it comes time to decommission the turbines? Will Northland Power be here in 20 years to clean up any mess?"	A decommissioning plan has been prepared by NPI. The purpose of this plan is to identify the methodology that NPI will use to mitigate potential impacts resulting from the cessation of operation of the facility at the end of the Project's useful life. The decommissioning plan identifies the specific Project components that will be removed, the costs associated with the removal of the components and associated scrap value. NPI intends to see the project through to completion and be present at the time of decommissioning. The cost of decommissioning will be paid

**McLean's Mountain Wind Farm  
Summary of REA Comments and Responses**

<b>Stakeholder</b>	<b>Comment Received</b>	<b>Proponent Response</b>
	Concerned about who will pay to remove the turbines at the end of their lives.	by NPI.

Copies of the April 2010 generic letter, attached in Appendix B were signed and sent by:

- Abotossaway, Natasha
- Beaudry, Raymond
- Bichan, Dougal
- Casson, Ann
- Flouts, B. and MacGregor Bay Association
- Hamilton, Rebecca
- Jansen, Barbara
- Macleod, Susan
- Pascos, Harry
- Rapski, Joan & Albert
- Weber, Emily
- Young, Judy

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**APPENDIX A**  
Aboriginal Consultation

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## **FOR IMMEDIATE RELEASE**

### **CONTACT:**

#### **UCCMM:**

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416-642-7906, [iroberts@webershandwick.com](mailto:iroberts@webershandwick.com)

#### **Northland Power:**

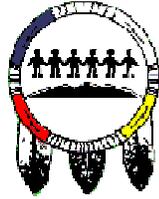
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## **Mnidoo Mnising Power and Northland Power Enter Equal Partnership on Northern Ontario Wind Project**

**SUDBURY, ON** (February 10, 2011) – Mnidoo Mnising Power ("MMP"), a company formed by the United Chiefs and Councils of Mnidoo Mnising First Nations ("UCCMM"), has entered into a 50/50 partnership with Northland Power Inc. ("Northland") (TSX:NPI) to develop the McLean's Mountain 60 megawatt Wind Farm Project, located on Manitoulin Island in Lake Huron.

"The United Chiefs and Councils of Mnidoo Mnising are committed to the thoughtful and responsible development of our natural resources, where our families' needs are addressed and that provides a better future for our young people," said UCCMM Tribal Chair Chief Shining Turtle. "Our shared ownership with Northland Power is an important model of how First Nations can work closely with the private sector and government on something that both benefits our people and supports the Province of Ontario's leadership in renewable energy."

"Northland is proud to continue to expand its relationships with First Nations," said Northland CEO John Brace. "We see First Nations and community partnerships as central to our growing portfolio of clean and renewable energy projects. McLean's Mountain and future projects will provide energy to Ontario and resources to strengthen UCCMM communities, while respecting our environment."



#### **ABOUT MMP**

Mnídoo Mnising Power is a corporation established by the United Chiefs and Councils of Mnídoo Mnising (UCCMM) a tribal council based on and around Manitoulin Island in Ontario, Canada. Its members include M'Chigeeng First Nation; Sheguiandah First Nation; Sheshegwaning First Nation; Aundeck-Omni-Kaning First Nation; Whitefish River First Nation; and Zhiibaahaasing First Nation. UCCMM formed Mnídoo Mnising Power to lead renewable energy projects on Manitoulin Island in order to protect First Nations' rights, heritage and ensure the future for First Nations' youth. The 50/50 partnership with Northland Power starts with the McLean's Mountain Wind Farm Project but includes all future renewable energy projects on the UCCMM First Nations' traditional territory, and down the road may include solar, hydro, gas or electrical infrastructure projects.

#### **ABOUT NORTHLAND POWER INC.**

Northland owns or has an economic interest in nine power projects totalling over 1,050 MW (net 815 MW). Northland's assets comprise natural-gas-fired plants which efficiently and cleanly produce electricity and steam, as well as facilities generating renewable energy from wind, solar and biomass. Northland's plants are located in Canada, the United States and Germany. In addition, Northland has the 86 MW Spy Hill project, 260 MW North Battleford project and 100 MW Mont Louis wind farm in construction, and 216 MW of wind, solar and run-of-river hydro projects awarded under the Ontario Power Authority's feed-in-tariff program in advanced stages of development. In December 2010, Northland was awarded a 20-year power purchase agreement for a 24 MW wind farm in Frampton, Quebec. Northland also has a diverse development portfolio of high-quality 'Clean and Green' energy projects, including wind, solar, natural gas, and hydro assets to support its strategy of sustainable growth.

Northland's common shares, preferred shares and two series of convertible debentures, which trade on the Toronto Stock Exchange under the symbols NPI, NPI.PR.A, NPI.DB and NPI.DB.A, respectively, are qualified investments for RRSPs, RRIAs and DPSPs under the Canadian Income Tax Act. Northland has in place a dividend re-investment plan that allows common shareholders who are residents of Canada to automatically have their monthly cash dividends reinvested in additional common shares. Participants do not pay any costs associated with the plan, including brokerage commissions. For further information or to join the plan, contact your financial advisor or broker.

## **Aboriginal Communications Log**

**Aboriginal (First Nation & Métis) Communications Log:  
McLean's Mountain Wind Farm Project**

Last Updated:  
**July 2011**

<u>Respective First Nation or Métis community</u>	<u>Acronym</u>	<u>Other</u>	<u>Acronym</u>
AUNDECK OMNIKANING FIRST NATION	AOK	CHIEFS OF ONTARIO	CO
M'CHIGEENG FIRST NATION – AKA WEST BAY	M'CHFEN	MÉTIS NATION OF ONTARIO	MNO
SAGAMOK FIRST NATION	SAGFN	ONTARIO NATIVE WOMEN'S ASSOCIATION	ONMA
SERPENT RIVER FIRST NATION	SRIVFN	UNION OF ONTARIO INDIANS	UOI
SHEGUIANDAH FIRST NATION	SHEGFN	UNITED CHIEFS AND COUNCILS OF MANITOULIN	UCCM
SHESHEGWANING FIRST NATION	SHESHFN	Ministry of Energy and Infrastructure	MEI
WHITEFISH RIVER FIRST NATION	WFRFN	Indian and Northern Affairs Canada	INAC
WIKWEMIKONG FIRST NATION	WIKFN	Economic Development Officer	EDO
ZHIIBAHAASING FIRST NATION	ZIHBFN	Ministry of Aboriginal Affairs	MAA
		Northland Power Inc.	NPI
		Dillon Consulting Limited	Dillon

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
1.	July 2004	<b>AUNDECK OMNIKANING FIRST NATION</b>	Patrick Madahbee	Chief	13 Hill St. R.R. #1, Box 21 Little Current, ON, P0P 1K0 Phone: (705) 368-2228 Fax: (705) 368-3563	<ul style="list-style-type: none"> <li>• NPI meets with the Chief and Council to discuss project type and design</li> <li>• NPI also develops a working relationship with the Aundeck Omnikaning First Nation's construction company. The Aundeck Omnikaning First Nations provides NPI with water and snow removal equipment when a team came to drill core samples for a preliminary geotechnical study on 3 locations of the proposed project.</li> <li>• NPI discusses the employment opportunities during the construction phases of the proposed project.</li> <li>• NPI plans follow-up</li> </ul>	Need response from AOK regarding a follow up meeting.

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
						meetings to focus community's questions, comments, and aboriginal and treaty concerns.	
2.	June 2006	<b>WIKWEMIKONG FIRST NATION</b>			Wikwemikong Unceded Indian Reserve 19a Complex Drive P.O. Box 112 POP2J0 Tel: 705-859-3122. Fax: 705-859-3851	<ul style="list-style-type: none"> <li>NPI meets to discuss Power development and their activities going forward.</li> </ul>	Not required
3.	July – October 2006	<b>WIKWEMIKONG FIRST NATION</b>	Roger Peltier  Rolland Pangowish	Power Development  Land Claims Negotiator	Wikwemikong Unceded Indian Reserve 19a Complex Drive P.O. Box 112 POP2J0 Tel: 705-859-3122. Fax: 705-859-3851	<ul style="list-style-type: none"> <li>Several visits by NPI to Wikwemikong band office to discuss treaty <i>versus</i> non treaty items.</li> </ul>	Not required
4.	December 2006	<b>WIKWEMIKONG FIRST NATION</b>	Roger Peltier	Power Development	Wikwemikong Unceded Indian Reserve 19a Complex Drive P.O. Box 112 POP2J0 Tel: 705-859-3122. Fax: 705-859-3851	<ul style="list-style-type: none"> <li>NPI Meets to discuss community's project progress and their concerns about local distribution line capacity.</li> </ul>	Not required
5.	February 2007	<b>WIKWEMIKONG FIRST NATION</b>			Wikwemikong Unceded Indian Reserve 19a Complex Drive P.O. Box 112	<ul style="list-style-type: none"> <li>NPI attends Casino Rama "First Nations Energy Alliance" Conference as per invitation by</li> </ul>	Not required

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
					POP2J0 Tel: 705-859-3122. Fax: 705-859-3851	Wikwemikong.	
6.	April 2007	<b>WIKWEMIKONG FIRST NATION</b>			Wikwemikong Unceded Indian Reserve 19a Complex Drive P.O. Box 112 POP2J0 Tel: 705-859-3122. Fax: 705-859-3851	<ul style="list-style-type: none"> <li>NPI meets to discuss the availability of the local distribution system capacity when NPI was considering the development of "Standard Offer Projects" that all three parties were trying to develop.</li> </ul>	Not required
7.	April 2007	<b>M'CHIGEENG FIRST NATION</b>	Joe Hare	Chief	53 Hwy 551 P.O. Box 2 West Bay, Ontario POP 1GO	<ul style="list-style-type: none"> <li>NPI meets to discuss the availability of the local distribution system capacity when NPI was considering the development of "Standard Offer Projects" that all three parties were trying to develop.</li> </ul>	Not required
8.	May 2007	<b>M'CHIGEENG FIRST NATION</b>			53 Hwy 551 P.O. Box 2 West Bay, Ontario POP 1GO	<ul style="list-style-type: none"> <li>NPI visits the Minister of Energy's office with Chief Corbiere to appeal for local distribution line upgrades.</li> </ul>	Not required
9.	May 2008	<b>WIKWEMIKONG FIRST NATION</b>			Wikwemikong Unceded Indian Reserve 19a Complex Drive	<ul style="list-style-type: none"> <li>NPI meets to discuss the First Nation's concerns with Nape's bidding a wind</li> </ul>	Not required

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
					P.O. Box 112 POP2J0 Tel: 705-859-3122. Fax: 705-859-3851	farm SOC project.	
10	June 2008	<b>SHEGUIANDAH FIRST NATION</b>	Georgina Thompson  Vicky Corbiere  Audrey Bone	Chief  Band Manager (former)  Band Manager (present)	Sheguiandah First Nation SHEGUIANDAH, ON POP 1W0 Ph: (705) 368-2781 Fax: (705) 368-3697	<ul style="list-style-type: none"> <li>The members of the Sheguiandah First Nation express support for the proposed McLean's Wind Farm project. In agreement with a recommendation of the Chief, NPI considers employing young members of the Sheguiandah First Nation in the construction of the proposed project.</li> <li>Agreement on a meeting in the form of a community forum. NPI awaits a mutually agreed upon date to do this.</li> <li>NPI holds discussions regarding usage of Sheguiandah ceremonial lands to erect wind turbines.</li> </ul>	Need response from SHEGFN regarding a follow up meeting.
11	July 2008	<b>SHEGUIANDAH FIRST NATION</b>	Audrey Bone	Band Manager (present)	Sheguiandah First Nation SHEGUIANDAH, ON POP 1W0	<ul style="list-style-type: none"> <li>NPI meets with Band Manager Audry Bone and one councillor to discuss</li> </ul>	Not required

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
					Ph: (705) 368-2781 Fax: (705) 368-3697	further the use of Sheguiandah lands and introduce the group to an informal layout for turbines and roads.	
12.	July 2008	<b>AUNDECK OMNIKANING FIRST NATION (AOK)</b>	Patrick Madahbee	Chief	13 Hill St. R.R. #1, Box 21 Little Current, ON, POP 1K0 Phone: (705) 368-2228 Fax: (705) 368-3563	<ul style="list-style-type: none"> <li>NPI meets to discuss project layout and to confirm the First Nation's interest in providing services to the project.</li> </ul>	Not required
13.	July – August 2008	<b>WIKWEMIKONG FIRST NATION</b>			Wikwemikong Unceded Indian Reserve 19a Complex Drive P.O. Box 112 POP2J0 Tel: 705-859-3122. Fax: 705-859-3851	<ul style="list-style-type: none"> <li>Further discussions with Wikwemikong regarding the distribution lines.</li> </ul>	Not required
14.	August 2008	<b>SHEGUIANDAH FIRST NATION</b>	Audrey Bone	Band Manager (present)	Sheguiandah First Nation SHEGUIANDAH, ON POP 1W0 Ph: (705) 368-2781 Fax: (705) 368-3697	<ul style="list-style-type: none"> <li>NPI attends Can WEA "Wind and Aboriginal Lands" Conference in Ottawa and meets with Audrey Bone of Sheguiandah.</li> </ul>	Not required
15.	August 2008	<b>M'CHIGEENG FIRST NATION</b>	Grant Taibossgai	EDO	53 Hwy 551 P.O. Box 2 West Bay, Ontario POP 1G0	<ul style="list-style-type: none"> <li>NPI meets the economic development officer of the M'Chigeeng First Nation at a conference in Toronto.</li> </ul>	Not required

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
16	October 2008	<b>SHEGUIANDAH FIRST NATION</b>	Georgina Thompson, Chief		Sheguiandah First Nation SHEGUIANDAH, ON POP 1W0 Ph: (705) 368-2781 Fax: (705) 368-3697	<ul style="list-style-type: none"> <li>NPI informs Sheguiandah of the plan to complete Stage 1 Archaeological Study and invites their attendance and review.</li> </ul>	Not required
17	October 2008	<b>AUNDECK OMNIKANING FIRST NATION (AOK)</b>	Patrick Madahbee	Chief	13 Hill St. R.R. #1, Box 21 Little Current, ON, POP 1K0 Phone: (705) 368-2228 Fax: (705) 368-3563	<ul style="list-style-type: none"> <li>Preliminary meeting to discuss the project.</li> </ul>	Not required
18	October 2008	<b>WIKWEMIKONG FIRST NATION</b>	Roger Peltier  Rolland Pangowish	Power Development  Land Claims Negotiator	Wikwemikong Unceded Indian Reserve 19a Complex Drive P.O. Box 112 POP2J0 Tel: 705-859-3122. Fax: 705-859-3851	<ul style="list-style-type: none"> <li>NPI meets to discuss shared use of lines agreement (discussing NPI's usage of transmission not distribution)</li> </ul>	Not required
19	June 1 <sup>st</sup> , 2009	<b>UNITED CHIEFS AND COUNCILS OF MANITOULIN (UCCM)</b>	Art Jacko	Manager of Lands and Resources	1110 Highway 551 P.O. Box 275 M'Chigeeng, Ontario POP 1G0	<ul style="list-style-type: none"> <li>UCCM confirmed meeting scheduled for June 4<sup>th</sup>, 2009 with NPI. Indicated that the scheduled meeting with the UCCM Board (Chiefs and councils) is for information purposes only and does not constitute consultations with UCCM First Nations regarding the proposed project.</li> </ul>	Not required
20		<b>UCCM</b> <ul style="list-style-type: none"> <li>Métis</li> </ul>				<ul style="list-style-type: none"> <li>NPI sends Notice and Letter of Project Restart</li> </ul>	Not required

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
		Nation of Ontario <ul style="list-style-type: none"> <li>• Ontario Native Women's Association</li> <li>• Aundeck Omni Kaning First Nation</li> <li>• Sheguiandah First Nation</li> <li>• Wikwemikong Unceded First Nation</li> <li>• Sheshegwaning First Nation</li> <li>• Zhiibaahaasing First Nation</li> <li>• M'Chigeeng First Nation</li> </ul>				and PIC	
21.						•	

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
22						•	
23						•	
24	June 8 <sup>th</sup> , 2009	<b>MÉTIS NATION OF ONTARIO</b>	Métis Consultation Unit		Métis Nation of Ontario 500 Old St. Patrick St, Unit 3 Ottawa, ON K1N 9G4 T: 613-798-1488 TF: 800-263-4889 F: 613-722-4225	• NPI sends Notice and Letter of Project Restart and PIC	Not required
25	June 8 <sup>th</sup> , 2009	<b>ONTARIO NATIVE WOMEN'S ASSOCIATION</b>			Ontario Native Women's Association 212 East Miles Street Thunder Bay, Ontario P7C 1J6  Phone: (807) 623-3442 Toll Free: 1-800-667-0816 Fax: (807) 623-1104	• NPI sends Notice and Letter of Project Restart and PIC	Not required
26	June 9 <sup>th</sup> , 2009	<b>UNITED CHIEFS AND COUNCILS OF MANITOULIN (UCCM)</b>			1110 Highway 551 P.O. Box 275 M'Chigeeng, Ontario POP 1G0	• NPI meets with UCCM where the following items are discussed: <ul style="list-style-type: none"> <li>○ UCCM is creating a protocol for all First Nations of the UCCM to follow for engagement with developers;</li> <li>○ That it is NPI's</li> </ul>	Not required

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
						<p>intention to complete permitting and FN consultations to ensure that the project can begin construction as soon as conditions (economic and other) are favourable;</p> <ul style="list-style-type: none"> <li>○ Chief Franklin Paibomsai mentioned that as the Aundeck Omni Kaning and Sheguiandah were the nearest FN's and that these FN would likely have the greatest interest in this project;</li> <li>○ NPI advised that a public meeting would be held June 25, 2009 that the UCCM and the individual FN would be invited and encouraged to</li> </ul>	

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
						<p>come, but that NPI are willing to meet separately with them later; and</p> <ul style="list-style-type: none"> <li>o UCCM indicated that that want the project to create jobs for FN members.</li> </ul>	
27	June 10 <sup>th</sup> , 2009	<b>AUNDECK OMNIKANING FIRST NATION (AOK)</b>	Craig Abotossaway	Chief	13 Hill St. R.R. #1, Box 21 Little Current, ON, POP 1K0 Phone: (705) 368-2228 Fax: (705) 368-3563	<ul style="list-style-type: none"> <li>• NPI sends a letter advising of the project restart, an offer to meet with the communities to discuss their concerns and interests, and an invitation to the June 25, 2009 PIC.</li> </ul>	Not required
28	June 10 <sup>th</sup> , 2009	<b>SHEGUIANDAH FIRST NATION</b>	Georgina Thompson, Chief		Sheguiandah First Nation SHEGUIANDAH, ON POP 1W0 Ph: (705) 368-2781 Fax: (705) 368-3697	<ul style="list-style-type: none"> <li>• NPI sends a letter advising of the project restart, an offer to meet with the communities to discuss their concerns and interests, and an invitation to the June 25, 2009 PIC.</li> </ul>	Not required
29	June 10 <sup>th</sup> , 2009	<b>M'CHIGEENG FIRST NATION</b>	Isadora Bebamash Art Jacko	Chief  Manager of Lands and Resources	53 Hwy 551 P.O. Box 2 West Bay, Ontario POP 1G0	<ul style="list-style-type: none"> <li>• NPI sends a letter advising of the project restart, an offer to meet with the communities to discuss their concerns and interests, and an invitation</li> </ul>	Not required

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
						to the June 25, 2009 PIC.	
30	June 10 <sup>th</sup> , 2009	<b>SHEHEGWANING FIRST NATION</b>	Elizabeth Lafrod	Chief	Sheshegwaning First Nation P.O. Box 1 Sheshegwaning ON POP 1Y0 Phone: (705) 283-3292 Fax: (705) 283-3481	<ul style="list-style-type: none"> <li>NPI sends a letter advising of the project restart, an offer to meet with the communities to discuss their concerns and interests, and an invitation to the June 25, 2009 PIC.</li> </ul>	Not required
31	June 10 <sup>th</sup> , 2009	<b>UNION OF ONTARIO INDIANS</b>			Head Office Nipissing First Nation P.O. Box 711 North Bay, ON P1B 8J8 Phone:(705)497-9127 Toll Free: (877)702-5200 Fax:(705)497-9135	<ul style="list-style-type: none"> <li>NPI sends a letter advising of the project restart, an offer to meet with the communities to discuss their concerns and interests, and an invitation to the June 25, 2009 PIC.</li> </ul>	Not required
32	June 10 <sup>th</sup> , 2009	<b>UNITED CHIEFS AND COUNCILS OF MANITOULIN</b>			1110 Highway 551 P.O. Box 275 M'Chigeeng, Ontario POP 1G0	<ul style="list-style-type: none"> <li>NPI sends a letter advising of the project restart, an offer to meet with the communities to discuss their concerns and interests, and an invitation to the June 25, 2009 PIC.</li> </ul>	Not required
33	June 10 <sup>th</sup> , 2009	<b>WHITEFISH RIVER FIRST NATION</b>	Franklin Paibomsai	Chief	46 Bay of Islands Road Birch Island, Ontario POP 1A0 Tel: 705-285-4335/4334 Fax: 705-285-4532	<ul style="list-style-type: none"> <li>NPI sends a letter advising of the project restart, an offer to meet with the communities to discuss their concerns and</li> </ul>	Not required

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
						interests, and an invitation to the June 25, 2009 PIC.	
34.	June 10 <sup>th</sup> , 2009	<b>WIKWEMIKONG FIRST NATION</b>	Hazel Fox-Recollet, Chief		Wikwemikong Unceded Indian Reserve 19a Complex Drive P.O. Box 112 POP2J0 Tel: 705-859-3122. Fax: 705-859-3851	<ul style="list-style-type: none"> <li>• NPI sends a letter advising of the project restart, an offer to meet with the communities to discuss their concerns and interests, and an invitation to the June 25, 2009 PIC.</li> </ul>	Not required
35.	June 10 <sup>th</sup> , 2009	<b>ZHIIBAHAASING FIRST NATION</b>	Irene Sagon Kells, Chief		Zhiibaahaasing First Nation (Cockburn) General Delivery SILVERWATER, ON POP 1Y0, Tel: (705) 283-3963 Fax: (705) 283-3964	<ul style="list-style-type: none"> <li>• NPI sends a letter advising of the project restart, an offer to meet with the communities to discuss their concerns and interests, and an invitation to the June 25, 2009 PIC.</li> </ul>	Not required
36.	June 19 <sup>th</sup> , 2009	<b>UNITED CHIEFS AND COUNCILS OF MANITOULIN</b>	Art Jacko	Manager of Lands and Resources	1110 Highway 551 P.O. Box 275 M'Chigeeng, Ontario POP 1G0	<ul style="list-style-type: none"> <li>• Requested that NPI provide the following information to UCCM: <ul style="list-style-type: none"> <li>○ Map of turbine location</li> <li>○ All studies conducted as a result of the project</li> <li>○ Environmental Health and Impact Studies</li> <li>○ Contract and Employment</li> </ul> </li> </ul>	This request was discussed at the June 4 <sup>th</sup> , 2009 meeting.

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
						<ul style="list-style-type: none"> <li>○ Standards</li> <li>○ Timeline /Schedule</li> </ul>	
37	July 9 <sup>th</sup> , 2009	<b>INDIAN AND NORTHERN AFFAIRS CANADA</b>	Joelle Montminy	Director General, Negotiations – Central, Assessment and Historical Research		<ul style="list-style-type: none"> <li>• Confirmed that there are no comprehensive or special land claims to the proposed wind farm project. Suggested to contact Specific Claims Branch</li> </ul>	Contacted June 12, 2009
38	July 15 <sup>th</sup> , 2009	<b>AUNDECK OMNIKANING FIRST NATION (AOK)</b>	Craig Abotossaway	Chief	13 Hill St. R.R. #1, Box 21 Little Current, ON, P0P 1K0 Phone: (705) 368-2228 Fax: (705) 368-3563	<ul style="list-style-type: none"> <li>• NPI sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 15<sup>th</sup>, 2009.</li> </ul>	Not required
39	July 15 <sup>th</sup> , 2009	<b>CHIEFS OF ONTARIO</b>			111 Peter Street, Suite 804 Toronto, ON M5V 2H1 Toll Free: 1-877-517-6527 Phone: (416) 597-1266 Fax: (416) 597-8365	<ul style="list-style-type: none"> <li>• NPI sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 15<sup>th</sup>, 2009.</li> </ul>	Not required
40	July 15 <sup>th</sup> , 2009	<b>M'CHIGEENG FIRST NATION</b>	Chief and Council		53 Hwy 551 P.O. Box 2 West Bay, Ontario POP 1G0	<ul style="list-style-type: none"> <li>• NPI sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 15<sup>th</sup>, 2009.</li> </ul>	Not required
41	July 15, 2009	<b>SHEGUIANDAH FIRST NATION</b>	Georgina Thompson, Chief		Sheguiandah First Nation SHEGUIANDAH, ON POP 1W0 Ph: (705) 368-2781	<ul style="list-style-type: none"> <li>• NPI sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July</li> </ul>	Not required

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
					Fax: (705) 368-3697	15 <sup>th</sup> , 2009.	
42.	July 15, 2009	<b>SHESHEGWANING FIRST NATION</b>	Chief and Council			<ul style="list-style-type: none"> <li>NPI sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 15<sup>th</sup>, 2009.</li> </ul>	Not required
43.	July 15, 2009	<b>ONTARIO NATIVE WOMEN'S ASSOCIATION</b>			Ontario Native Women's Association 212 East Miles Street Thunder Bay, Ontario P7C 1J6  Phone: (807) 623-3442 Toll Free: 1-800-667-0816 Fax: (807) 623-1104	<ul style="list-style-type: none"> <li>NPI sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 15<sup>th</sup>, 2009.</li> </ul>	Not required
44.	July 15, 2009	<b>UNION OF ONTARIO INDIANS</b>			Head Office Nipissing First Nation P.O. Box 711 North Bay, ON P1B 8J8 Phone:(705)497-9127 Toll Free: (877)702-5200 Fax:(705)497-9135	<ul style="list-style-type: none"> <li>NPI sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 15<sup>th</sup>, 2009.</li> </ul>	Not required
45.	July 15, 2009	<b>UNITED CHIEFS AND COUNCILS OF MANITOULIN</b>			1110 Highway 551 P.O. Box 275 M'Chigeeng, Ontario POP 1G0	<ul style="list-style-type: none"> <li>NPI sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 15<sup>th</sup>, 2009.</li> </ul>	Not required

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
46	July 15 <sup>th</sup> , 2009	<b>WIKWEMIKONG FIRST NATION</b>			Wikwemikong Unceded Indian Reserve 19a Complex Drive P.O. Box 112 POP2J0 Tel: 705-859-3122. Fax: 705-859-3851	<ul style="list-style-type: none"> <li>NPI sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 15<sup>th</sup>, 2009.</li> </ul>	
47	July 17, 2009	<b>UNITED CHIEFS AND COUNCILS OF MANITOULIN</b>	Art Jacko  Franklin Paimbossai	Lands and Resources Officer  Chief, Tribal Chair	1110 Highway 551 P.O. Box 275 M'Chigeeng, Ontario POP 1G0	<ul style="list-style-type: none"> <li>NPI receives a letter from UCCM advising that the UCCM will only consult with the Crown in regards to the proposed project.</li> </ul>	Not required
48	July 21, 2009	<b>ONTARIO MINISTRY OF ABORIGINAL AFFAIRS</b>	Martin Rukavina	Aboriginal and Ministry Relationships Branch		<ul style="list-style-type: none"> <li>OMAA advised that in addition to the First Nations and Aboriginal organizations that were already contacted by NPI i.e., the following First Nations also be contacted by NPI: <ul style="list-style-type: none"> <li>✓ Sagamok First Nation</li> <li>✓ Serpent River First Nation</li> </ul> </li> <li>Advised that the following Métis organizations be consulted: <ul style="list-style-type: none"> <li>✓ Ms. Pauline Sulnier, Métis Nation of Ontario.</li> <li>✓ Métis Consultation Unit, Métis Nations of Ontario</li> </ul> </li> </ul>	Contacted.
49	July 22,	<b>UNITED CHIEFS AND</b>			1110 Highway 551	<ul style="list-style-type: none"> <li>Letter to the UCCM in</li> </ul>	Addressed in September

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	2009	<b>COUNCILS OF MANITOULIN</b>			P.O. Box 275 M'Chigeeng, Ontario POP 1G0	response to the July 17, 2009 letter sent to several Ontario Ministers regarding the proposed Northland Power Inc. (NPI) McLean's Mountain Wind farm to be located south of the Aundeck Omni Kaning First Nation and to the south-west of the community of Little Current.	23 <sup>rd</sup> , 2009 letter.
50	July 24 <sup>th</sup> , 2009	<b>MÉTIS NATION OF ONTARIO</b>	Ms. Pauline Saulnier	PCMNO Region 7 Councillor Métis Nation of Ontario & Métis Consultation Unit	Métis Nation of Ontario 500 Old St. Patrick St, Unit 3 Ottawa, ON K1N 9G4 T: 613-798-1488 TF: 800-263-4889 F: 613-722-4225	<ul style="list-style-type: none"> <li>NPI sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 24, 2009.</li> </ul>	Not required
51	July 24 <sup>th</sup> , 2009	<b>SAGAMOK FIRST NATION</b>	Chief and Council		Sagamok Anishnawbek P.O. Box 610 Massey On. POP 1P0 Tel: (705) 865-2421 Fax: (705) 865-3307	<ul style="list-style-type: none"> <li>NPI sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 24, 2009.</li> </ul>	Not required
52	July 24 <sup>th</sup> , 2009	<b>SERPENT RIVER FIRST NATION</b>	Chief and Council		49 Village Rd Cutler, ON PO Box 16	<ul style="list-style-type: none"> <li>NPI sends letter advising of planned posting of Notice of Study Completion and</li> </ul>	Not required

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
					Cutler, ON P0P 1B0 705-844-2009	release of final ESR on July 24, 2009.	
53	July 24 <sup>th</sup> , 2009	<b>WHITEFISH RIVER FIRST NATION</b>			46 Bay of Islands Road Birch Island, Ontario P0P 1A0 Tel: 705-285-4335/4334 Fax: 705-285-4532	<ul style="list-style-type: none"> <li>NPI sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 24<sup>th</sup>, 2009.</li> <li></li> </ul>	Not required
54	July 24 <sup>th</sup> , 2009	<b>ZHIIBAHAASING FIRST NATION</b>			Zhiibaahaasing First Nation (Cockburn) General Delivery SILVERWATER, ON P0P 1Y0, Tel: (705) 283-3963 Fax: (705) 283-3964	<ul style="list-style-type: none"> <li>NPI sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 24<sup>th</sup>, 2009.</li> </ul>	Not required
55	August 20, 2009	<b>WIKWEMIKONG FIRST NATION</b>	Roger Peltier	Power Development	Wikwemikong Unceded Indian Reserve 19a Complex Drive P.O. Box 112 POP2J0 Tel: 705-859-3122. Fax: 705-859-3851	<ul style="list-style-type: none"> <li>Invitation to NPI to participate in the partnership offer.</li> </ul>	Not required
56	August 21 <sup>st</sup> , 2009	<b>MÉTIS NATION OF ONTARIO</b>	Melanie Paradis	Director – Métis Nation Consultation Group	Métis Nation of Ontario 500 Old St. Patrick St, Unit 3 Ottawa, ON K1N 9G4 T: 613-798-1488 TF: 800-263-4889 F: 613-722-4225	<ul style="list-style-type: none"> <li>NPI calls to arrange for a meeting to discuss possible effects of the proposed project on the Métis rights including Traditional Ecological Knowledge.</li> </ul>	MNO to arrange meeting place and time.
57	August 25 <sup>th</sup> , 2009	<b>UNITED CHIEFS AND COUNCILS OF</b>	Lynn Corbiere	Executive Liaison	Anishinabek Nation Head Office	<ul style="list-style-type: none"> <li>Indicated that the discussions that took place</li> </ul>	Need response from UCCM regarding consultation

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
		<b>MANITOULIN , ANISHINABEK NATION POLITICAL OFFICE</b>	Partick Wedaseh Madahbee	Officer  Grand Council Chief	Nippising First Nation P.O. Box 711 North Bay, ON P1B 8J8	with NPI were informal in nature and that he did not mandate to confirm any arrangement with NPI without full consultation with his Council and the community. Indicated that it is imperative that proper consultation and accommodation of the First Nations on Manitoulin. Island take place.	protocol.
58	September 23, 2009	<b>UNITED CHIEFS AND COUNCILS OF MANITOULIN</b>  <b>MINISTRY OF ENERGY AND INFRASTRUCTURE</b>  <b>MINISTRY OF ABORIGINAL AFFAIRS</b>  <b>MINISTRY OF NATURAL RESOURCES</b>	Ogimaa Shining Turtle and all the UCCM chiefs  Honourable George Smitherman  The Honourable Brad Duguid	Chief and Tribal Chair	UCCM 1110 Highway 551 P.O. Box 275 M'Chigeeng, Ontario POP 1G0  Hearst Bolck, 4 <sup>th</sup> Floor 900 Bay Street, Toronto ON M7A 2 E1  160 Bloor Street East, 4 <sup>th</sup> Floor Toronto, ON M7G 2E1  Whitney Block 6 <sup>th</sup> Floor Room 6630, 99 Wellesley	<ul style="list-style-type: none"> <li>Northland Power Inc (NPI) acknowledged project request for elevation and request to discuss issues related to the Crown Duty to Consult. Indicated that NPI wishes to make every effort to demonstrate its desire to consult with First Nations, their Chiefs, Councils and members. NPI asked to discuss arrangements for a meeting with the UCCM. NPI</li> <li>Correspondence forwarded</li> </ul>	Not required

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
		<b>ONTARIO MINISTRY OF ENVIRONMENT</b>	The Honourable Donna Cansfield  The Honourable John Gerresten		Street West, Toronto ON, M7A 1W3  12 <sup>th</sup> Floor, 135 St Clair Avenue West, Toronto ON M4V 1P5	to MEI, MAA, MNR, MOE and all the chiefs of the UCCM via facsimile.	
59.	September 25 <sup>th</sup> , 2009	<b>UNITED CHIEFS AND COUNCILS OF MANITOULIN</b>	Ogimaa Shining Turtle	Chief and Tribal Chair	UCCM 1110 Highway 551 P.O. Box 275 M'Chigeeng, Ontario POP 1G0	<ul style="list-style-type: none"> <li>NPI (John Brace) Called the Chief (Shining Turtle) to go back to the UCCM and asking for another meeting with the UCCM.</li> </ul>	Not required
60.	September 29 <sup>th</sup> , 2009	<b>MÉTIS NATION OF ONTARIO</b>	Melanie Paradis	Director of Lands, Resources and Consultation		<ul style="list-style-type: none"> <li>NPI expressed further interest subsequent to discussions with MNO to meet with the representatives of MNO to discuss the project.</li> </ul>	Need response from UCCM regarding preferred date for a meeting.
61.	October 9 <sup>th</sup> , 2009	<b>UNITED CHIEFS AND COUNCILS OF MANITOULIN</b>	Franklin Paimbosai	Chief Whitefish River First Nation/Sheguandah First Nation and Auneck Omni Kaning First Nation	Via facsimile	<ul style="list-style-type: none"> <li>NPI informs Chief of the opening of the new NPI office located at 23A Vankoughnet Street East, Little Current, On, POP 1K0, and invites Chief to the office.</li> </ul>	Not required

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62	November 12, 2009	<b>SHEGUIANDAH FIRST NATION</b>				<ul style="list-style-type: none"> <li>NPI met with Chief Aguonie of Sheguiandah to review information presented at the June public meeting as well as to plan a community information session on the proposed project.</li> </ul>	Need response from SHEFN regarding preferred date for a community meeting/presentation.
63	November 16, 2009	Environmental Assessment and Approvals Branch Ministry of the Environment	Sandra Guido	Senior Program Support Coordinator Renewable Energy Team	2 St. Clair Ave West, Floor 12A, Toronto ON M4V 1L5 Tel: 416.314.6802 Fax: 416.314.8452 <a href="mailto:sandra.guido@ontario.ca">sandra.guido@ontario.ca</a>	<ul style="list-style-type: none"> <li>E-mail to Sandra Guido (MOE) list of Aboriginal Communities that NPI has communicated with to date regarding their proposed McLean's Mountain Wind Farm as well as summary of Aboriginal consultation activities carried out by NPI to date.</li> </ul>	Not required
64	December 7, 2009	Environmental Assessment and Approvals Branch Ministry of the Environment	Sandra Guido	Senior Program Support Coordinator Renewable Energy Team	2 St. Clair Ave West, Floor 12A, Toronto ON M4V 1L5 Tel: 416.314.6802 Fax: 416.314.8452 <a href="mailto:sandra.guido@ontario.ca">sandra.guido@ontario.ca</a>	E-mail to Sandra Guido from Rick Martin (NPI) to Sandra Guido (MOE) providing copies of letters sent to the identified First Nations and Métis communities and agencies. Letters describe NPI's fulfillments of the REA requirements and ask for specific information in regards to potential adverse effects that the project could have on	Not required

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
						the constitutional and/or treaty rights of the above noted First Nations.	
65	December 4 <sup>th</sup> , 2009	<b>AUNDECK OMNIKANING FIRST NATION</b>	Abotossaway	Chief		<ul style="list-style-type: none"> <li>NPI emailed Chief Abotossaway indicating that light of the changes that have occurred recently with the Renewable Energy Act and the increased local opposition to the project that we NPI would like to have the opportunity to meet with the AOK to discuss the project.</li> </ul>	Not required
66	December 1, 2009	<b>AUNDECK OMNIKANING FIRST NATION</b>  <b>M'CHIGEENG FIRST NATION</b>  <b>SHEGUIANDAH FIRST NATION</b>  <b>WIKWEMIKONG FIRST NATION</b>	Chief and Council  Chief and Council  Chief and Council  Chief and Council			<ul style="list-style-type: none"> <li>NPI sent letters to the local identified First Nation communities advising of the proposed project as well as of the new approval process under Ontario Regulation 359/09 – Renewable Energy Approval (REA) under the <i>Green Energy Act</i>. This letter provided a summary of each of the “REA Reports” that are to be</li> </ul>	Not required

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		<b>UNITED CHIEFS AND COUNCILS OF MANITOULIN</b>  <b>MÉTIS NATION OF ONTARIO</b>				<p>released and requested that the identified First Nation communities provide in writing any information available to their communities that in their opinion, should be considered in preparing the "REA Reports" and in particular, any information their communities may have about the adverse impacts that the project may have on constitutionally protected aboriginal or treaty rights and any measures for mitigating those adverse impacts.</p>	
67	January 18, 2010	<b>AUNDECK OMNIKANING FIRST NATION</b>  <b>M'CHIGEENG FIRST NATION</b>  <b>SHEGUIANDAH FIRST NATION</b>	Chief and Council  Chief and Council  Chief and Council			<ul style="list-style-type: none"> <li>NPI sent the Renewable Energy Approval (REA) Draft submission package for review and comment. The documentation included in the REA Draft submission package supplements the information included in the McLean's Mountain Wind</li> </ul>	Not required

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
		<b>WIKWEMIKONG FIRST NATION</b>  <b>UNITED CHIEFS AND COUNCILS OF MANITOULIN</b>  <b>MÉTIS NATION OF ONTARIO</b>	Chief and Council			Farm Environmental Screening Report/Environmental Impact Statement (ESR) provided earlier (July 2009).	
68	March 2, 2010	<b>WIKWEMIKONG FIRST NATION</b>	Roger Peltier	Power Development	53 Hwy 551 P.O. Box 2 West Bay, Ontario POP 1GO	<ul style="list-style-type: none"> <li>E-mail to Gordon Potts (NPI). Indicated that Chief Hare has confirmed that M'Chigeeng has applied for a 4 MW project under the FIT program. Asked that Chief Hare be informed of any options/discussion to secure their project and/or find a solution to meet the needs required. Indicated that a meeting with the OPA and MEI would be timely.</li> </ul>	Not required
69	March 4, 2010	<b>WIKWEMIKONG FIRST NATION</b>	Roger Peltier	Power Development	53 Hwy 551 P.O. Box 2	<ul style="list-style-type: none"> <li>E-mail to John Brace (NPI). Indicated that</li> </ul>	E-mail to John Brace (NPI). Indicated that Rick Martin

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
					West Bay, Ontario POP 1GO	<p>Wikwemikong would like to formalize a consultation and accommodation agreement with Northland Power. Indicated that Wikwemikong has a significant interest on Manitoulin Island and in the development of renewable energy in the short term and long term. Indicated that Wikwemikong would like to work cooperatively with you to achieve mutual benefits. Indicated that in addition to the environmental impacts, Wikwemikong need to understand the socio-economic impacts of the proposed project its impacts. Asked that NPI is prepared to undertake a consultation and accommodation agreement with Wikwemikong and work with Wikwemikong to seek a mutually beneficial solution here on Manitoulin Island.</p>	<p>(NPI) confirmed a meeting with Wikwemikong for Monday, March 8th at 1:00 pm. Indicated that contacting the office of Chief Hazel Fox-Recollect to confirm her availability. Also indicated that a meeting with OPA and Hydro One be arranged as soon as possible to clarify the limits and possible solutions to move our respective projects forward.</p>

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70	March 8, 2010	<b>WHITEFISH RIVER FIRST NATION</b>	Chief Franklin Paibomsai			<ul style="list-style-type: none"> <li>E-mail message: indicated that the Whitefish River First Nation is not in support of the proposed project.</li> </ul>	E-mail message: Rick Martin (NPI) indicated that NPI is trying to follow the requirements of appropriate Aboriginal consultation and asked for a mutually accepted process to fulfil the Duty to Consult. Asked to speak to Chief
71	March 18, 2010	<b>WIKWEMIKONG FIRST NATION</b>	Roger Peltier	Power Development	Wikwemikong Unceded Indian Reserve 19a Complex Drive P.O. Box 112 POP2J0 Tel: 705-859-3122. Fax: 705-859-3851	<ul style="list-style-type: none"> <li>E-mail message: responded to Rick Martin's (NPI) telephone call (March 17, 2010) asking that a meeting be arranged to discuss various issues involving the McLean's Mountain project and the Manitoulin transmission capacity situation and possible solutions.</li> <li>Indicated that Wikwemikong was preparing a letter to NPI in response to NPI's request for comments and our previous discussions.</li> <li></li> </ul>	NPI met with Brian Hay of the Ontario Power Authority.

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
72	March 17, 2010	<b>WIKWEMIKONG FIRST NATION</b>	Roger Peltier	Power Development	Wikwemikong Unceded Indian Reserve 19a Complex Drive P.O. Box 112 POP2J0 Tel: 705-859-3122. Fax: 705-859-3851	<ul style="list-style-type: none"> <li>• E-mail message: Indicated that               <ul style="list-style-type: none"> <li>○ Wikwemikong and the First Nations on the island are not opposed to renewable energy. Indicate that there are legitimate concerns with the current scale and impacts of the McLean's Mountain project an that the First Nations need to ensure their interests are respected.</li> <li>○ Indicated that Rick Martin (NPI) was to arrange a meeting with the Ministry of Energy and the OPA regarding the capacity issues which affect the development of the Northland Power project on Manitoulin as well as the Wikwemikong project.</li> <li>○ Indicated that Wikwemikong First Nation was interested</li> </ul> </li> </ul>	Not required

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
						<p>in seeking a solution that would allow Wikwemikong to develop an initial community power project.</p> <ul style="list-style-type: none"> <li>○ Indicated that Wikwemikong met with representatives of the United Chiefs and Councils of Manitoulin (UCCM) on March 12th in Whitefish River and that a statement from the Anishinabek of Mnido Mnissing would be forwarded to NPI and the Crown requesting that a consultation framework be established.</li> </ul>	
73.	March 19, 2010	<b>MINISTRY OF ENVIRONMENT ENVIRONMENTAL ASSESSMENT AND APPROVALS BRANCH</b>	Doris Dumais	Director	2 St. Clair Ave West, Floor 12A, Toronto ON M4V 1L5 Tel: 416.314.8001	<ul style="list-style-type: none"> <li>• Letter to Rick Martin (NPI) from Doris Dumais (MOE EAAB) copy to NEMI regarding noise receptors and vacant lots</li> </ul>	Not required
74.	March 23, 2010	<b>UNITED CHIEFS AND COUNCILS OF MANITOULIN</b>	Art Jacko	Manager of Lands & Resources	United Chiefs and Councils of Manitoulin P.O. Box 275	<ul style="list-style-type: none"> <li>• E-mail message to rick Martin (NPI) re: "Manitoulin Island Chiefs</li> </ul>	Not required

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
					M'Chigeeng, Ontario POP 1G0 Ph 705-377-5307, ext 207 Fax 705=377-5309	Position on Northland Power Wind Farm". Letter attached from all Chiefs of Manitoulin Island regarding the proposed project. Letter addressed to Minister of Ministry of Energy and Infrastructure regarding the Province's (Ontario) position on Duty to Consult.	
75	March 25, 2010	<b>WIKWEMIKONG FIRST NATION</b>	Roger Pelletier	Power Development	Wikwemikong Unceded Indian Reserve 19a Complex Drive P.O. Box 112 POP2J0 Tel: 705-859-3122. Fax: 705-859-3851	<ul style="list-style-type: none"> <li>Email request to Brian Hay (Director, First Nations and Métis Relations, Ontario Power Authority) to arrange a meeting between the OPA/Hydro One and Ministry of Energy. The purpose of the proposed meeting: to discuss a solution to the First Nation's issues of consultation and accommodation and the Manitoulin grid capacity.</li> <li>E-mail message: Rick Martin confirms Northland Power Inc's (NPI) interest in a mutually acceptable way of moving forward.</li> </ul>	Not required

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
						Indicates that NPI continue to have a very cooperative relationship with Wikwemikong Unceded First Nation. Asked for a meeting to discuss the items related to transmission and distribution allocation.	
76.	March 26, 2010	<b>WIKWEMIKONG FIRST NATION</b>	Roger Pelletier	Power Development	Wikwemikong Unceded Indian Reserve 19a Complex Drive P.O. Box 112 POP2J0 Tel: 705-859-3122. Fax: 705-859-3851	<ul style="list-style-type: none"> <li>Email request to Brian Hay (Director, First Nations and Métis Relations, Ontario Power Authority) continued to arrange a meeting between the OPA/Hydro One and Ministry of Energy. Indicated that the meeting can be considered as part of the consultation and accommodation process and an important component of the longer term "Manitoulin Enabler" transmission initiative.</li> </ul>	Not required
77.	April 12, 2010	<b>WIKWEMIKONG FIRST NATION</b>		Chief and Council	Wikwemikong Unceded Indian Reserve 19a Complex Drive P.O. Box 112	<ul style="list-style-type: none"> <li>NPI met to discuss grid issues and NPI's position.</li> </ul>	Not required

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
					POP2J0 Tel: 705-859-3122. Fax: 705-859-3851		
78.	April 15, 2010	<b>MINISTRY OF ENVIRONMENT, ENVIRONMENTAL APPROVALS AND ASSESSMENT BRANCH</b>	Doris Dumais	Director	2 St. Clair Avenue West Floor 12A, Toronto ON M4V 1L5	<ul style="list-style-type: none"> <li>MOE Provides Director's Aboriginal Communities List under REA.</li> </ul>	NPI to notify all of the Aboriginal communities and organizations listed by the Director.
79.	April 15, 2010	<b>WHITEFISH RIVER FIRST NATION</b>	Ogimaa Shining Turtle	Chief	46 Bay of Islands Road, Birch Island, Ontario P0P 1A0	<ul style="list-style-type: none"> <li>Letter to Rick Martin (NPI) regarding adverse health effects and industrial wind turbines as well as regarding Aboriginal Treaty Rights.</li> </ul>	April 16 <sup>th</sup> , 2010 Rick Martin provides a written (letter) acknowledging the receipt of Chief Shining Turtle's letter of April 15 <sup>th</sup> , 2010. Indicates that NPI (Rick Martin and John Brace) wish to meet with the Chief to address the stated issues and concerns. NPI provides a written response to the potential health effects associated with the proposed McLean's Mountain Wind Farm.
80.	April 15, 2010	<b>CHIEFS OF ONTARIO</b>	Hazel Recollet, CEO and all Chiefs		111 Peter Street Suite 804 Toronto, Ontario M5V 2H1	<ul style="list-style-type: none"> <li>Letter from John Brace (NPI CEO) to: <ul style="list-style-type: none"> <li>Follow up on NPIs correspondence of</li> </ul> </li> </ul>	

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
						<p>April 7<sup>th</sup>, 2010</p> <ul style="list-style-type: none"> <li>○ Advise that NPI has had positive discussions with Wikwemikong First Nations regarding NPIs support on grid connection issues</li> <li>○ To seek indication of UCCMs interest in developing wind, water and solar power projects and the UCCM's preferred locations and obstacles to advancing them.</li> </ul>	
81.	May 6, 2010	<b>WHITEFISH RIVER FIRST NATION</b>	Ogimaa Shining Turtle	Chief	46 Bay of Islands Road, Birch Island, Ontario P0P 1A0	<ul style="list-style-type: none"> <li>• Letter to John Brace and Rick Martin regarding meeting with Whitefish River First Nation Chief and Council. Indicates that the next available meeting time would be in October 2010. Asked that NPI provide information on the scope of the duty to consult and accommodate</li> </ul>	NPI is developing a response.

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
						Whitefish River First Nation that the Province of Ontario has delegated to NPI.	
82	May 7, 2010	<b>WIKWEMIKONG FIRST NATION</b>		Chief and Council	Wikwemikong Unceded Indian Reserve 19a Complex Drive P.O. Box 112 POP2J0 Tel: 705-859-3122. Fax: 705-859-3851	<ul style="list-style-type: none"> <li>NPI met to discuss NPI's partnership offer.</li> </ul>	Not required
83	May 11, 2010	<b>CHIEFS OF ONTARIO</b>  <b>UNION OF ONTARIO INDIANS</b>			111 Peter Street Suite 804 Toronto, Ontario M5V 2H1  Head Office Nipissing First Nation P.O. Box 711 North Bay, ON P1B 8J8	<ul style="list-style-type: none"> <li>NPI sends a letter advising of project and process as per MOE's list of Aboriginal Communities to be consulted (April 15<sup>th</sup>, 2010). NPI notifies of submission of the Final REA Application to the MOE scheduled for early May 2010 and asks that information be provided regarding potential adverse impacts of the project on constitutionally protected aboriginal or treaty rights and recommendations for measures to mitigate these adverse impacts.</li> </ul>	Not required
84	May 11,	<b>North Channel</b>	Larry Foltz, President	President	57 Causley Street	<ul style="list-style-type: none"> <li>NPI sends a letter advising</li> </ul>	Not required

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
	2010	<b>Métis Council</b>			P.O. Box 1408 Blindriver, Ontario P0R 1B0	of project and process as per MOE's list of Aboriginal Communities to be consulted (April 15 <sup>th</sup> , 2010). NPI notifies of submission of the Final REA Application to the MOE scheduled for early May 2010 and asks that information be provided regarding potential adverse impacts of the project on constitutionally protected aboriginal or treaty rights and recommendations for measures to mitigate these adverse impacts.	
		<b>Sudbury Métis Council</b>	Richard Sarrazin,	President	260 Alder Street, Upstairs Sudbury, ON P3C 5P4		
		<b>Whitefish Lake First Nation</b>	Arthur Petahtegoose	Chief	25 Reserve Road P.O. Box 39 Naughton, ON P0M 2M0		
85	May 11, 2010	<b>Sheshegwaning First Nation</b>		Chief and Council	General Delivery Sheshegwaning, Ontario P0P 1X0	<ul style="list-style-type: none"> <li>NPI sends a letter advising of project and process as per MOE's list of Aboriginal Communities to be consulted (April 15<sup>th</sup>, 2010). NPI notifies of submission of the Final REA Application to the MOE scheduled for early May 2010 and asks that information be provided regarding potential</li> </ul>	Not required
		<b>Zhiibaahaasing First Nation</b>		Chief and Council	Cockburn Island General Delivery Silver Water, Ontario P0P 1Y0		
		<b>Sagamok Anishnawbek First</b>		Chief and	Spanish River		

Item Number	Date	Organization / Department	Contact Name(s)	Title	Contact Information	Notes	Action
		<b>Nation</b>  <b>Serpent River First Nation</b>		Council  Chief and Council	PO Box 610 Massey, Ontario POP 1P0  P.O. Box 14 48 Village Road Cutler, Ontario POP 1B0	adverse impacts of the project on constitutionally protected aboriginal or treaty rights and recommendations for measures to mitigate these adverse impacts.	
86	July 13 <sup>th</sup> , 2010	<b>Union of Ontario Indians (UOI)</b>	Lynn Corbiere	Executive Liaison to Grand Council Chief Patrick Madahbee	Nippising First Nation PO Box 711 North Bay ON P1B 8J8	<ul style="list-style-type: none"> <li>On June 30<sup>th</sup>, 2010 MOE (Kristina Rudzki) advised that NPI follow up with the UOI, as one of the additional identified Aboriginal groups by the MOE, to confirm whether they have any interests in the proposed project</li> </ul>	<ul style="list-style-type: none"> <li>On July 13, 2010 Dillon (Beatrice Ashby) on behalf of NPI (Rick Martin) e-mailed Lynn Corbiere asking to advise whether your organization has any interests in the proposed McLean's Mountain Wind Farm Project. The letter of May 11, 2010 from NPI was attached.</li> </ul>
87	July 13 <sup>th</sup> , 2010	<b>Chiefs of Ontario</b>	Margaret Carpenter	Administrative Assistant	111 Peter Street, Suite 804, Toronto, ON M5V 2H1	<ul style="list-style-type: none"> <li>On June 30<sup>th</sup>, 2010 MOE (Kristina Rudzki) advised that NPI follow up with the Chiefs of Ontario, as one of the additional identified Aboriginal groups by the MOE, to confirm whether they have any interests in the proposed project</li> </ul>	<ul style="list-style-type: none"> <li>On July 13, 2010 Dillon (Beatrice Ashby) on behalf of NPI (Rick Martin) telephoned the Chiefs of Ontario office and left a voicemail for Ms. Carpenter</li> </ul>

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
88	July 13 <sup>th</sup> , 2010	<b>Whitefish Lake First Nation</b>		Director of Operations	Whitefish Lake 6 25 Reserve Road POP Box 39, Naughton ON POM 2M0	<ul style="list-style-type: none"> <li>On June 30<sup>th</sup>, 2010 MOE (Kristina Rudzki) advised that NPI follow up with the Whitefish Lake First Nation, as one of the additional identified Aboriginal groups by the MOE, to confirm whether they have any interests in the proposed project</li> </ul>	<ul style="list-style-type: none"> <li>On July 13, 2010 Dillon (Beatrice Ashby) on behalf of NPI (Rick Martin) telephoned the band office and confirmed that the Chief and Council had received on May 14<sup>th</sup>, 2010 the Letter from NPI dated May 11, 2010. Beatrice had left a voicemail for the Director of Operations asking if the Sagamok Anishnawbek First could confirm whether they have any interests in the proposed project as per letter of May 11, 2010 from NPI.</li> </ul>
89	July 14 <sup>th</sup> , 2010	<b>Ontario Women's Association (OWA)</b>			212 East Miles Street, Thunder Bay, ON P7C 1J6	<ul style="list-style-type: none"> <li>On June 30<sup>th</sup>, 2010 MOE (Kristina Rudzki) advised that NPI follow up with the Ontario Women's Association, as one of the additional identified Aboriginal groups by the MOE, to confirm whether they have any interests in the proposed project</li> </ul>	<ul style="list-style-type: none"> <li>On July 14, 2010 Dillon (Beatrice Ashby) on behalf of NPI (Rick Martin) telephoned the OWA's office and left a voicemail.</li> </ul>

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
90	July 15 <sup>th</sup> , 2010	<b>Métis Nation of Ontario</b>	Brian Tucker		500 Old St. Patrick Street Unit 13, Ottawa, ON K1N 9G4	<ul style="list-style-type: none"> <li>On June 30<sup>th</sup>, 2010 MOE (Kristina Rudzki) advised that NPI follow up with the MNO, as one of the additional identified Aboriginal groups by the MOE, to confirm whether they have any interests in the proposed project</li> </ul>	<ul style="list-style-type: none"> <li>On July 15, 2010 Dillon (Beatrice Ashby) on behalf of NPI (Rick Martin) telephoned Brian Tucker and left a voicemail.</li> </ul>
91	July 15 <sup>th</sup> , 2010	<b>Sagamok Anishnawbek First Nation</b>	Paul Eshkakogan	Chief	Spanish River PO Box 610 Massey, Ontario POP 1P0	<ul style="list-style-type: none"> <li>On June 30<sup>th</sup>, 2010 MOE (Kristina Rudzki) advised that NPI follow up with the Sagamok Anishnawbek First Nation, as one of the additional identified Aboriginal groups by the MOE, to confirm whether they have any interests in the proposed project</li> </ul>	<ul style="list-style-type: none"> <li>On July 13, 2010 Dillon (Beatrice Ashby) on behalf of NPI (Rick Martin) telephoned the band office and on July 15, 2010 sent a facsimile transmission to Paul Eshkakogan asking the Sagamok Anishnawbek First Nation to confirm whether they have any interests in the proposed project. A copy of the May 11, 2010 letter from NPI was enclosed.</li> </ul>
92	July 15 <sup>th</sup> , 2010	<b>Serpent River First Nation</b>	Isadore Day	Chief	P.O. Box 14 195 Village Road	<ul style="list-style-type: none"> <li>On June 30<sup>th</sup>, 2010 MOE (Kristina Rudzki) advised</li> </ul>	<ul style="list-style-type: none"> <li>On July 13, 2010 Dillon (Beatrice Ashby) on</li> </ul>

Item Number	Date	Organization / Department	Contact Name(s)	Title	Contact Information	Notes	Action
					Cutler, Ontario POP 1B0	that NPI follow up with the Serpent River First Nation, as one of the additional identified Aboriginal groups by the MOE, to confirm whether they have any interests in the proposed project	behalf of NPI (Rick Martin) telephoned the band office and on July 15, 2010 sent a facsimile transmission to Chief Isadore Day asking the Serpent River First Nation to confirm whether they have any interests in the proposed project. A copy of the May 11, 2010 letter from NPI was enclosed.
93	July 24 <sup>th</sup> , 2010	<b>Chiefs of Ontario</b>			111 Peter Street, Suite 804, Toronto, ON M5V 2H1	<ul style="list-style-type: none"> <li>NPI sent a letter to the Chiefs of Ontario with a copy of the Project Description Report asking whether the Chiefs of Ontario have any interests in the proposed project.</li> </ul>	<p>On July 27<sup>th</sup>, 2010 Dillon followed up via telephone. It was indicated that the letter of May 11, 2010 was forwarded to Sue Chibou, Environment Coordinator (home office number: 705-942-3100).</p> <p>Dillon telephoned Ms. Chibbou and she indicated that unless the individual first nations contact her directly then The Chiefs of Ontario have no interest in the project and they will</p>

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
							not get involved unless asked to do so by the individual community.
94.	July 24 <sup>th</sup> , 2010	<b>Union of Ontario Indians</b>	Lynn Corbiere	Executive Liaison to Grand Council Chief Patrick Madahbee	Nippising First Nation PO Box 711 North Bay ON P1B 8J8	<ul style="list-style-type: none"> <li>NPI sent a letter to the ONWA with a copy of the Project Description Report asking whether the North ONWA have any interests in the proposed project.</li> </ul>	On July 27 <sup>th</sup> , 2010 Dillon followed up via telephone. Lynn Corbiere the Executive Liaison to the grand chief indicated that she passed along the May 11 <sup>th</sup> , 2010 letter to Jason Larond (phone extension 2263), the Lands and Resources Manager. Ms. Corbiere indicated that the UOI as the Union, have no interest in the project themselves but that they would consult with local first nations if requested/required.
95.	July 24 <sup>th</sup> , 2010	<b>Ontario Native Women Association (ONWA)</b>			212 East Miles Street, Thunder Bay, ON P7C 1J6	<ul style="list-style-type: none"> <li>NPI sent a letter to the ONWA with a copy of the Project Description Report asking whether the North ONWA have any interests in the proposed project.</li> </ul>	On July 27 <sup>th</sup> , 2010 Dillon followed up via telephone. The executive director and her assistant (Cindy) were unavailable.
96.	July 24 <sup>th</sup> , 2010	<b>Sudbury Métis Council</b>	Richard Sarrazin,	President	260 Alder Street, Upstairs Sudbury, ON P3C 5P4	<ul style="list-style-type: none"> <li>NPI sent a letter to the Sudbury Métis Council with a copy of the Project Description Report asking</li> </ul>	

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
						whether the Sudbury Métis Council have any interests in the proposed project.	
97	July 24 <sup>th</sup> , 2010	<b>North Channel Métis Council</b>	Larry Foltz, President	President	57 Causley Street P.O. Box 1408 Blindriver, Ontario P0R 1B0	<ul style="list-style-type: none"> <li>NPI sent a letter to the North Channel Métis Council with a copy of the Project Description Report asking whether the North Channel Métis Council have any interests in the proposed project.</li> </ul>	
98	July 24 <sup>th</sup> , 2010	<b>Sagamok Anishnawbek First Nation</b>	Paul Eshkakogan	Chief	Spanish River P0 Box 610 Massey, Ontario P0P 1P0	<ul style="list-style-type: none"> <li>NPI sent a letter to the Sagamok Anishnawbek First Nation with a copy of the Project Description Report asking whether the Sagamok Anishnawbek First Nation have any interests in the proposed project.</li> </ul>	<p>On July 27<sup>th</sup>, 2010 Dillon followed up via telephone. It was indicated that the appropriate contact is Ms. Nikki Manitowabi with Saulteaux Enterprises (the Sagamok's Economic Development Corporation). Phone number: 705-865-1134. I</p> <p>Dillon contacted spoke with Ms. Manitowabi who indicated she is not aware of the correspondence form NPI. She provided her email address: <a href="mailto:gm@saulteauxenterprises.com">gm@saulteauxenterprises.com</a>.</p>

Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
							ca and Dillon forwarded a copy of the May 11th letter and the PDR.
99	July 24 <sup>th</sup> , 2010	<b>Serpent River First Nation</b>	Isadore Day	Chief	P.O. Box 14 195 Village Road Cutler, Ontario POP 1B0	<ul style="list-style-type: none"> <li>NPI sent a letter to the Serpent River First Nation with a copy of the Project Description Report asking whether the Serpent River First Nation have any interests in the proposed project.</li> </ul>	On July 27 <sup>th</sup> , 2010 Dillon followed up via telephone. It was indicated that both the chief and assistant were not available. It was confirmed that the Serpent River First Nation office received the letter and that the letter was passed on to the chief. It was indicated that the Chief would contact us if there are any questions.
10	July 24 <sup>th</sup> , 2010	<b>Sheshegwaning First Nation</b>		Chief and Council	General Delivery Sheshegwaning, Ontario POP 1X0	<ul style="list-style-type: none"> <li>Member of UCCM, NPI continues discussions with UCCM</li> </ul>	NPI sent a letter to the Sheshegwaning First Nation with a copy of the Project Description Report asking whether the Sheshegwaning River First Nation have any interests in the proposed project.
10	July 24 <sup>th</sup> , 2010	<b>Whitefish Lake First Nation</b>		Director of Operations	Whitefish Lake 6 25 Reserve Road POP Box 39, Naughton ON POM 2M0	<ul style="list-style-type: none"> <li>NPI sent a letter to the Whitefish Lake First Nation with a copy of the Project Description Report asking whether the Whitefish</li> </ul>	On July 27 <sup>th</sup> , 2010 Dillon followed up via telephone and left another voice message for Craig asking to confirm whether

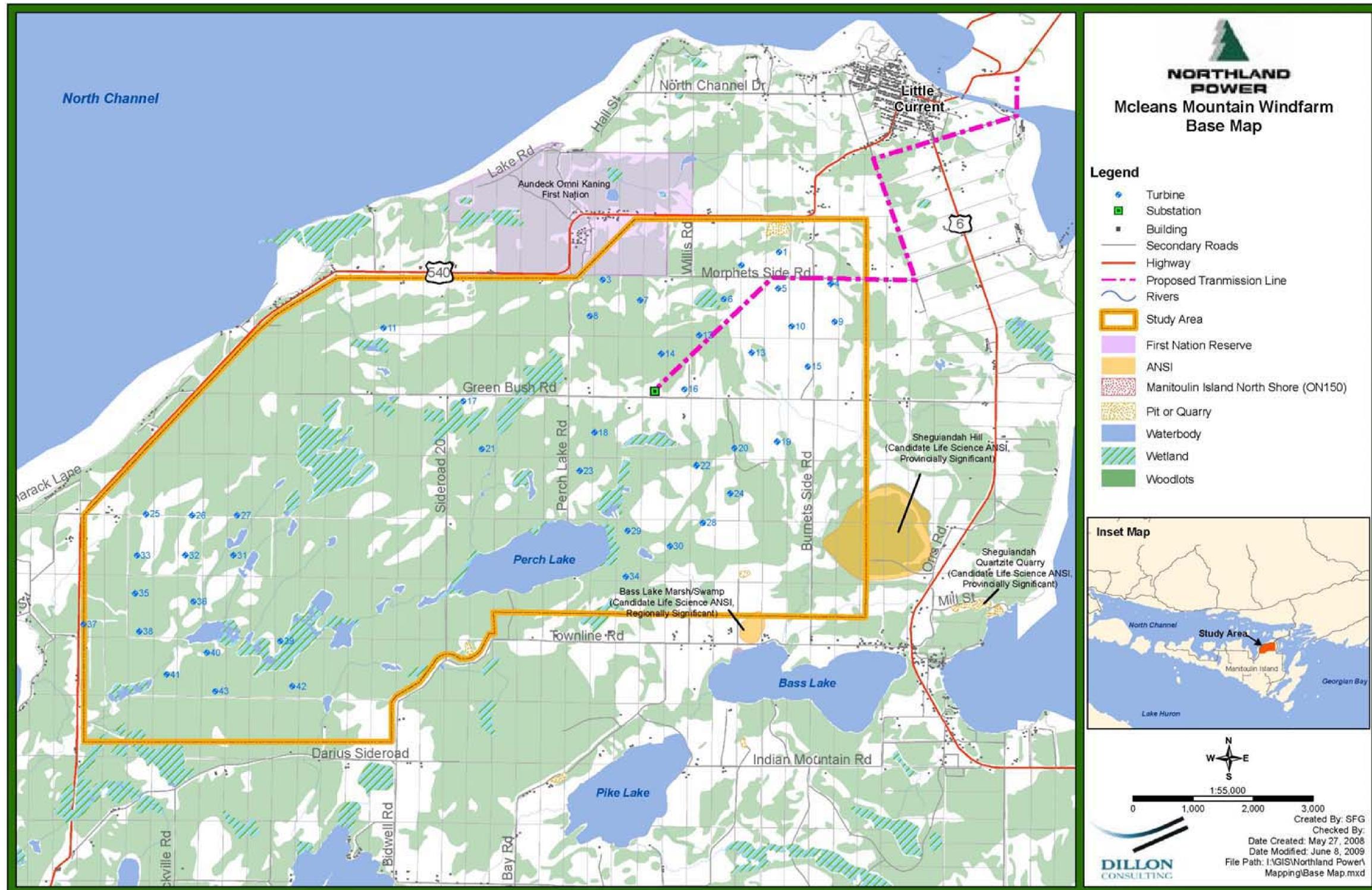
Item Number	Date	Organization/ Department	Contact Name(s)	Title	Contact Information	Notes	Action
						Lake First Nation have any interests in the proposed project.	Whitefish Lake First Nation has any interest, questions or concerns about the project or if they would like to set up a meeting.
101	July 24 <sup>th</sup> , 2010	<b>Zhiibaahaasing First Nation</b>		Chief and Council	Cockburn Island General Delivery Silver Water, Ontario POP 1Y0	<ul style="list-style-type: none"> <li>NPI sent a letter to the Zhiibaahaasing First Nation with a copy of the Project Description Report asking whether the Zhiibaahaasing First Nation have any interests in the proposed project.</li> </ul>	
101	July 24 <sup>th</sup> , 2010	<b>Métis Nation of Ontario</b>	Brian Tucker		500 Old St. Patrick Street Unit 13, Ottawa, ON K1N 9G4	<ul style="list-style-type: none"> <li>Second follow up the May 11, 2010 Letter</li> </ul>	On July 27 <sup>th</sup> , 2010 Dillon followed up via telephone and left another voice message for Mr. Tucker asking to confirm whether MNO has any interest, questions or concerns about the project or if they would like to set up a meeting.

This Consultation Log includes all Aboriginal Consultation to the point where NPI began negotiations with UCCM to become project partners. Between August 2010 and February 2011 negotiations between UCCM and NPI which resulted in the 50/50 partnership to develop the McLean's Mountain Wind Farm.

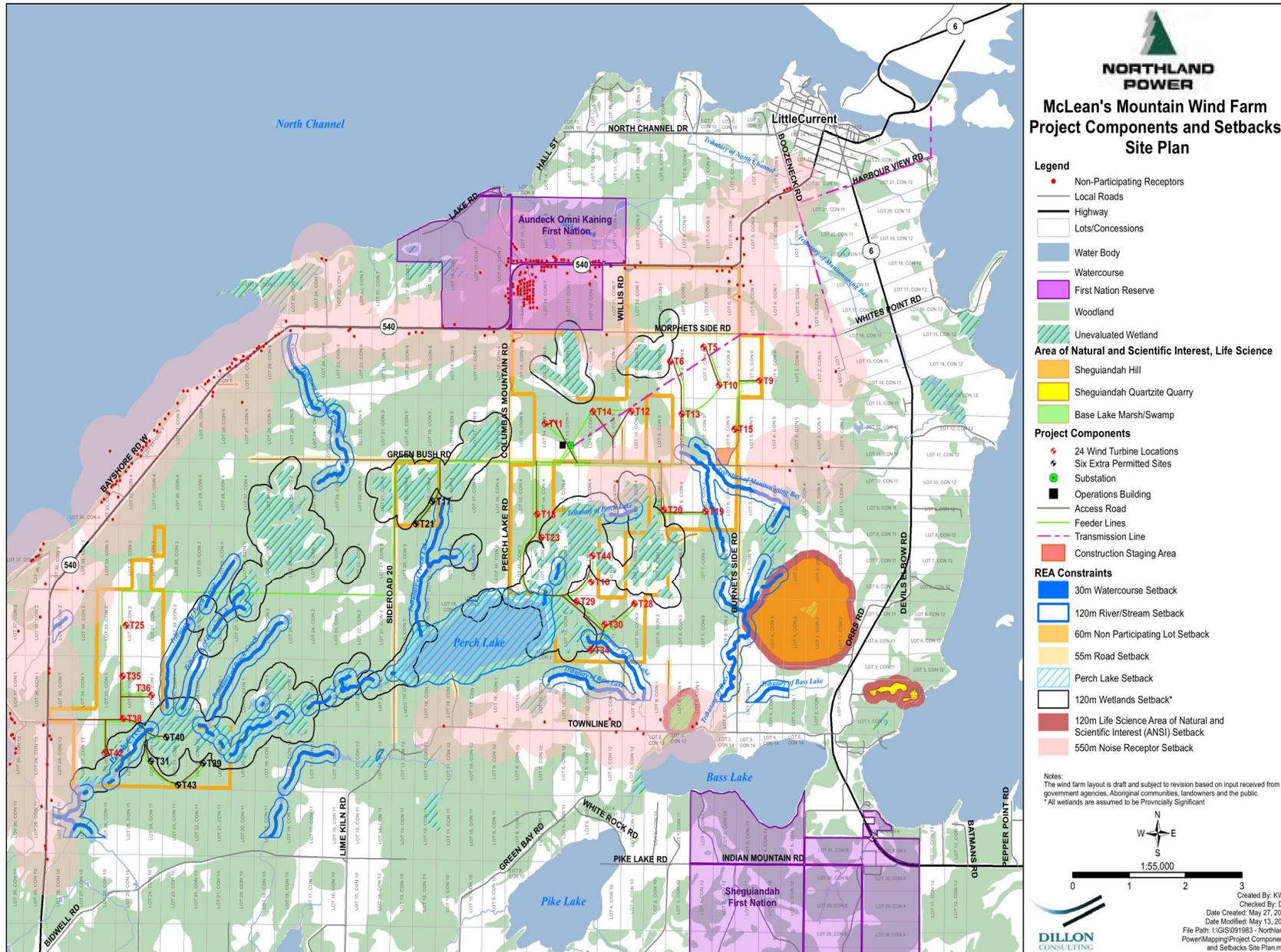
**McLean's Mountain Wind Limited Partnership**  
**Exhibit H**  
**Tab 1**  
**Schedule 3**

**COMMUNITY AND STAKEHOLDER CONSULTATION: MAPS ILLUSTRATING  
PROPOSED ROUTING AND LOCATION OF TRANSMISSION FACILITIES**

# Project Area & Layout



# Project Layout



### McLean's Mountain Wind Farm REA Constraints

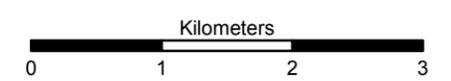
**Legend**

-  Turbine
-  Residence
-  Substation
-  Building
-  Unknown Large Stick Nest
-  Secondary Roads
-  Highway
-  Proposed Transmission Line (115kv)
-  Watercourse
-  Lots
-  ANSI
-  Pit or Quarry
-  Waterbody
-  Wetland
-  Woodlots

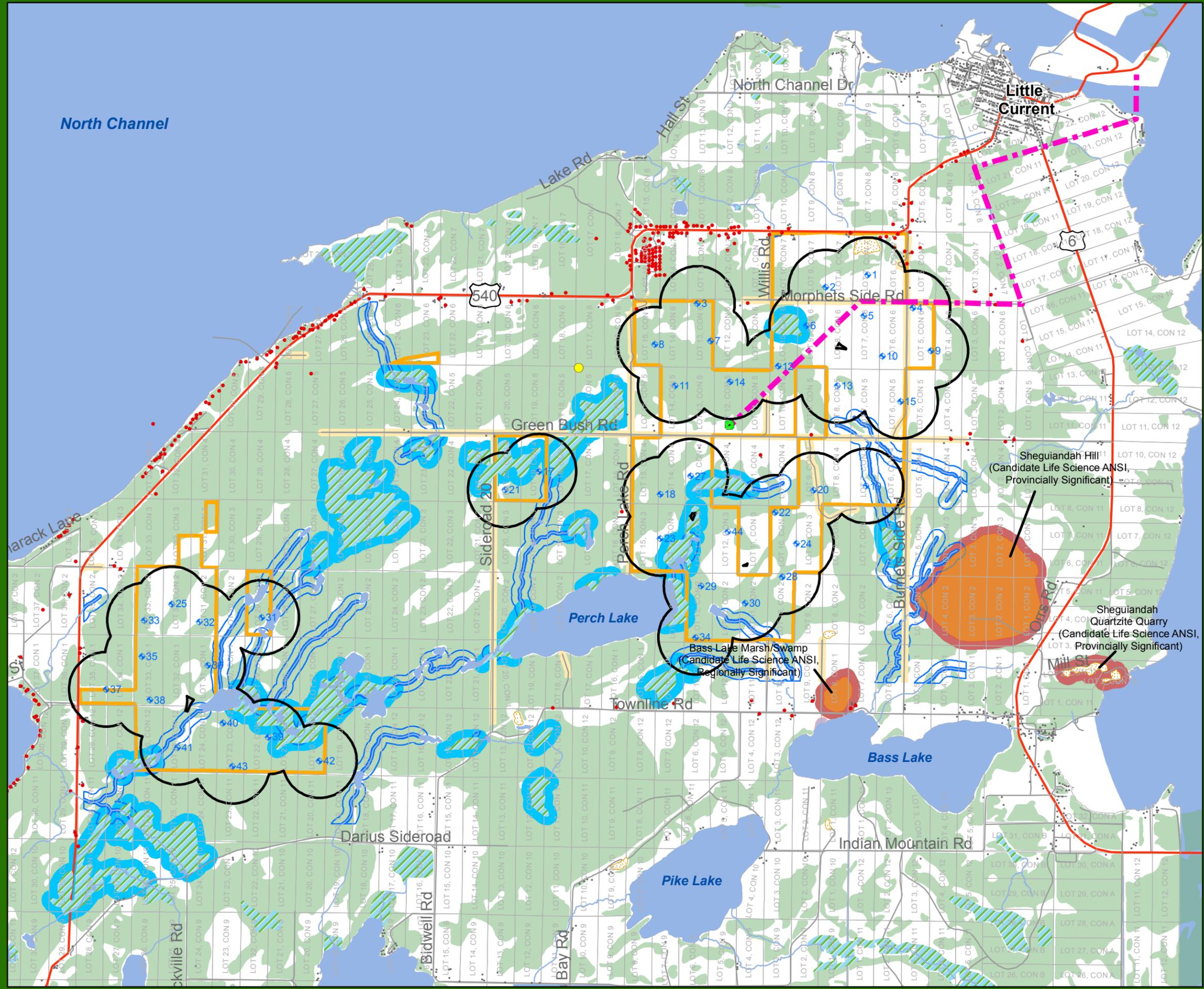
**REA Constraints**

-  30m Watercourse Setback
-  120m River/Stream Setback
-  55m Non Participating Lot Setback
-  55m Road Setback
-  120m Wetlands Setback\*
-  120m Life Science Area of Natural and Scientific Interest (ANSI) Setback
-  550m Noise Receptor Setback

**Notes:**  
 The wind farm layout is draft and subject to revision based on input received from government agencies, Aboriginal communities, landowners and the public.  
 \* All wetlands are assumed to be Provincially Significant



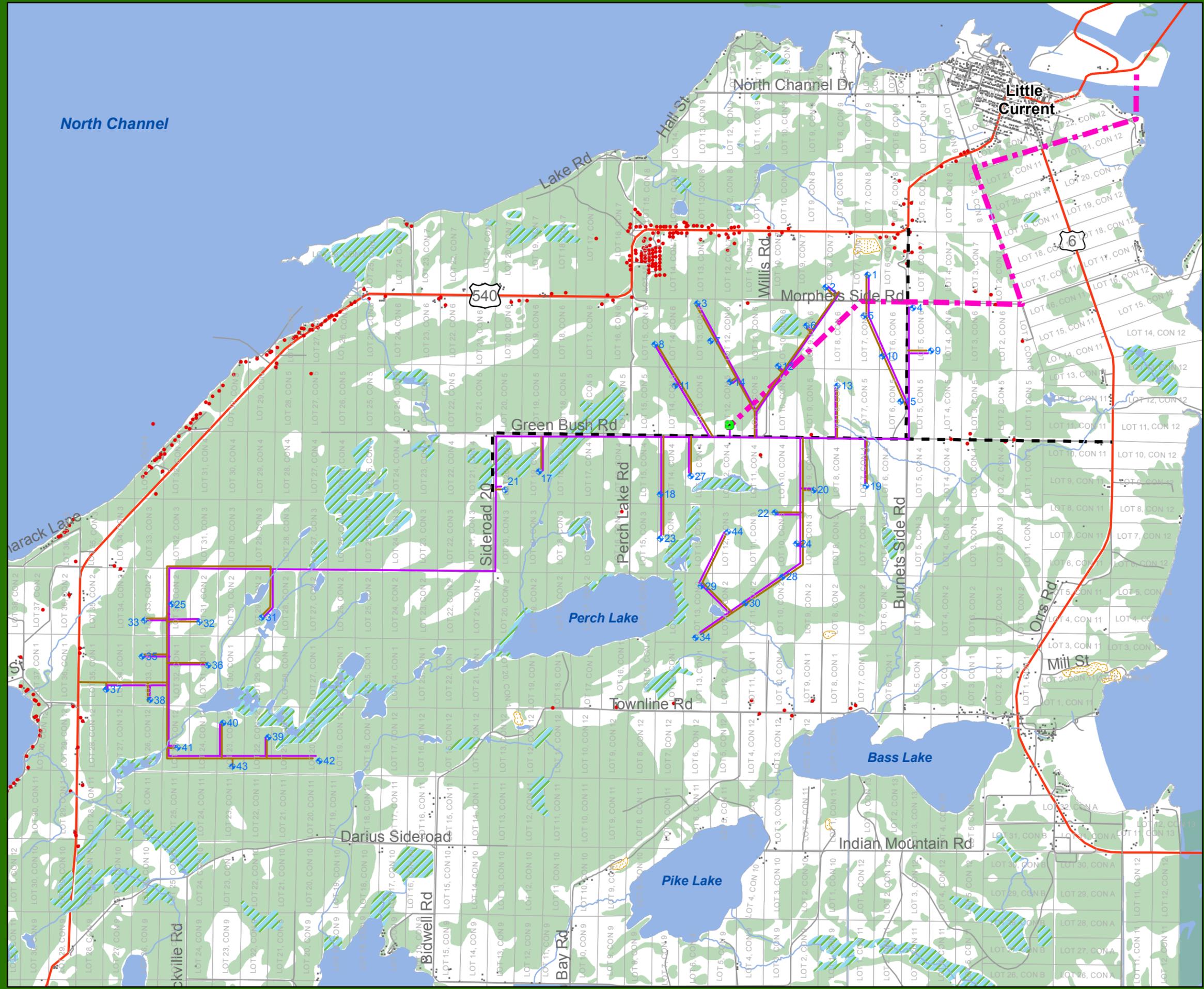
Created By: SFG  
 Checked By: DM  
 Date Created: May 27, 2008  
 Date Modified: March 19, 2010  
 File Path: I:\GIS\091983 - Northland Power\Mapping\REA Constraints.mxd



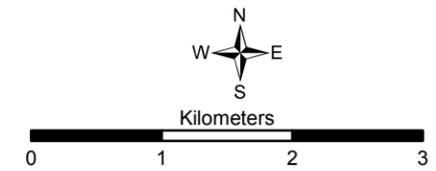
### McLean's Mountain Wind Farm Turbine Locations

**Legend**

-  Turbine
-  Residence
-  Substation
-  Building
-  Feeder Lines
-  Access Roads
-  Upgraded Roads
-  Secondary Roads
-  Highway
-  Proposed Transmission Line (115kv)
-  Watercourse
-  Lots
-  Pit or Quarry
-  Waterbody
-  Wetland
-  Woodlots



**Notes:**  
 The wind farm layout is draft and subject to revision based on input received from government agencies, Aboriginal communities, landowners and the public.  
 \* All wetlands are assumed to be Provincially Significant



**INTERCONNECTION-OVERVIEW**

On January 25, 2011, the Applicant submitted a Renewable Energy Generation Facility Application to Request a Connection Assessment to the IESO and HONI ("Connection Application"). A copy of the Connection Application is included in **Exhibit I, Tab 1, Schedule 2**.

On October 27, 2010 the IESO issued a "System Impact Assessment Report (Final Report)" ("SIA") indicating that the proposed connection of the MMWF Project to the IESO-controlled grid, via the proposed Transmission Line, was acceptable. A copy of the SIA is provided in **Exhibit I, Tab 1, Schedule 3**.

As part of the connection process, HONI completed a Customer Impact Assessment ("CIA") for the MMWF Project in October 2010. In this CIA, HONI concluded that no adverse impact on voltage performance to the customers in the area would be expected. The study indicated insignificant increase in short circuit levels at the 115kV level. However, connecting the MMWF Project would increase the short circuit levels on Martindale 44kV feeder. Since the short circuit levels on the Martindale TS are already above the TSC limit, mitigation measures would be required to be put in place prior to connecting the wind farm and MMWF Project will be required to contribute towards the mitigation cost if they wish to continue with their connection. A copy of the CIA is provided in **Exhibit I, Tab 1, Schedule 4**.

An updated and joint System Impact Assessment ("**SIA Addendum**") and Customer Impact Assessment ("**CIA Addendum**") application was requested by the Applicant in January 2011. The SIA Addendum and CIA Addendum were required in order to reflect a decision by the Applicant to change the type of turbines used at the MMWF Project. In March 2011, the IESO and HONI released SIA Addendum and CIA Addendum. Based on these reports, the IESO has granted the Applicant conditional approval to connect to the provincial transmission grid. A copy of the SIA Addendum, CIA Addendum, and Notice of Conditional Approval are provided in **Exhibit I, Tab 1, Schedules 5-7**, respectively.

**McLean's Mountain Wind Limited Partnership**  
**Exhibit I**  
**Tab 1**  
**Schedule 2**

**INTERCONNECTION: CONNECTION APPLICATION**

## Renewable Energy Generation Facility Application to Request a Connection Assessment

THIS IS AN APPLICATION TO THE INDEPENDENT ELECTRICITY SYSTEM OPERATOR (“*IESO*”) AND TO YOUR TRANSMITTER (“*HYDRO ONE*”) REQUESTING A CONNECTION ASSESSMENT FOR YOUR PROPOSED NEW OR MODIFIED CONNECTION TO THE *IESO*-CONTROLLED GRID. THIS IS NOT AN APPLICATION FOR AN LDC CONNECTION IMPACT ASSESSMENT.

**This *application* streamlines the connection assessment process for renewable energy generation facilities. It is considered complete when:**

- The *IESO* is in receipt of your **System Impact Assessment (“*SIA*”)** and **Customer Impact Assessment (“*CIA*”)** questionnaires, attached hereto, completed with all necessary data;
- The *IESO* and *Hydro One* are in receipt of your impact assessment payments;
- The *IESO* is in receipt of your executed *SIA* agreement which will be provided to you within two business days of the *IESO* receiving this application;
- If you are an electricity LDC applying on behalf of a generator, your LDC connection impact assessment report has been received by the *IESO*; and
- If you have retained a consultant to perform the *SIA* studies on your behalf, the consultant’s studies have been received by the *IESO* in their final form and satisfactory to the *IESO*.

**Note:** Did you retain a consultant to perform the *SIA* studies? Yes  No

**Upon completing this *application* form, please send it to the *IESO*:**

**By Email to:** [connection.assessments@ieso.ca](mailto:connection.assessments@ieso.ca)  
**By Courier to:** Independent Electricity System Operator  
655 Bay Street, Suite 410 P.O. Box 1  
Toronto ON M5G 2K4  
Attn: Connection Assessments  
**By Fax to:** (905) 855-6319

### About Your Connection Assessment

Your connection assessment will consist of a system impact assessment to be performed by the *IESO* in accordance with the *IESO’s market rules* and a customer impact assessment to be performed by *Hydro One* in accordance with the Ontario Energy Board’s Transmission System Code.

The *IESO* will provide you with the final connection assessment for your proposed new or modified renewable generation facility (the “*project*”) within 150 days of receiving your completed *application*. The *IESO* will promptly advise you of the date on which your *application* is considered to be “complete”.

**To ensure that your connection assessment is carried out within the prescribed time, the *IESO* and *Hydro One* intend to work closely with you.**

## SIA and CIA Questionnaires

The SIA and CIA questionnaires included in this *application* form identify the specific pieces of data that the *IESO* and *Hydro One* consider essential (and those that are considered not essential) prior to undertaking the connection assessment for your *project*. Your *application* will not be considered complete until all essential data pertaining to your *project* is provided.

If, at the time you file your *application*, you do not have the actual values for your *project* for the pieces of data that are considered not essential, the *IESO* or *Hydro One*, as applicable, will use typical (and generally conservative) values as a proxy. In such instances, it will be your responsibility to ensure that the *project* (and, specifically, the equipment that is eventually installed) meets or exceeds the typical values.

## Use of Information

The information that you submit with this *application* will be used by the *IESO* and *Hydro One* in support of their obligations under the *Electricity Act, 1998*, the *Ontario Energy Board Act, 1998*, the *IESO's market rules*, the *Transmission System Code* and their respective licenses. Your information will be treated in accordance with the standards, procedures, and confidentiality policies of the *IESO* and *Hydro One*.

By submitting this *application*, you consent to the sharing of your information between the *IESO* and *Hydro One* and agree to the posting of such information on the *IESO's* website in accordance with the *market rules*.

## Next Steps

The *IESO* and *Hydro One* intend to work closely with you. Please take note of the following key next steps in your connection assessment process.

- i. Within two business days from receiving your *application*, the *IESO* will provide you with an *SIA* agreement (you can find the template of the *SIA* agreement on the FIT page of the *IESO* web site - [www.ieso.ca/fir](http://www.ieso.ca/fir)). You will be required to execute the *SIA* agreement and promptly return it to the *IESO*.
- ii. Your *application* will be reviewed by the *IESO* and *Hydro One* for completeness. Within ten days of having received your *application*, the *IESO* will contact you to confirm whether it is complete or incomplete. If it is considered incomplete, the *IESO* will also provide you with the details of the incomplete piece(s) of data. If significant data is missing, the *IESO* may require that you submit a new *SIA* and *CIA* questionnaire(s) containing all of the essential information. **In the event that you submit new or modified data subsequent to the filing of your *application*, your *application* will be deemed complete effective as of the date that the last relevant document or material change is received by the *IESO*.**
- iii. Within 75 days from having received your complete *application*, the *IESO* will provide a list of *SIA* requirements to *Hydro One*, who shall then be in a position to proceed with the *CIA*. You will be required to have an executed *CIA* Agreement with *Hydro One* in place as of that date.

**PART 1 – GENERAL INFORMATION**

<b>Provide the following information about the connection assessment <i>applicant</i>:</b>
Applicant's Full Legal Name: McLean's Mountain Wind L.P.
Applicant's Short Name: (Maximum 12 keystrokes) MMLP
Name of the Renewable Generation Facility (the " <i>Project</i> "): 60 MW McLean's Mountain Wind Farm
OPA Reference Number: Contract No: F-000520-WIN-130-601; FIT Reference No: FIT-FBN77QW and Incremental Contract No: F-000522-WIN-130-601; FIT Reference No: FIT-FA8YIXK
Location of the <i>Project</i> : Manitoulin Island

<b>Provide the following information about the individual authorized to apply and transact on behalf of the <i>applicant</i>:</b>	
Full Name of Authorized Representative: John W. Brace	
Position/Title: President/CEO	
Company: McLean's Mountain Wind L.P.	
Address: 30 St. Clair Ave. West, Suite 1700	
City/Town: Toronto	
Province/State: Ontario	
Postal/Zip Code: M4V 3A1	Country: Canada
Telephone No.: 647 288 1036	Fax No.: 416 962 6266
Email Address: John.Brace@northlandpower.ca	
<i>Hydro One</i> Account Number: (Only for existing customers intending to install generation for load displacement.)	

<b>Provide the following information about the <i>applicant's</i> technical representative (for example, this may be an employee or a consultant*):</b>	
Name: Christopher L. Rytel	
Position/Title: Electrical Engineer, P.Eng.,	
Company: Northland Power Inc.	
Address: 30 St. Clair Ave. West, Suite 1700	
City/Town: Toronto	
Province/State: Ontario	
Postal/Zip Code: M4V 3A1	Country: Canada
Telephone No.: 647 288 1284	Fax No.: 416 962 6266
E-mail Address: crtrel@northlandpower.ca	

**PART 2 – PAYMENT OF APPLICABLE DEPOSIT (\$30,000 FOR TRANSMISSION CONNECTED FACILITY OR \$20,000 FOR EMBEDDED GENERATION FACILITY) TO IESO FOR SYSTEM IMPACT ASSESSMENT (SIA)**

**Method of Payment (choose one)**

- |   |   |
|---|---|
| <input type="checkbox"/> Certified cheque payable to the <i>IESO</i>    | <input type="checkbox"/> Attached         |
| <input type="checkbox"/> Deposit to <i>IESO</i> Account                 | <input type="checkbox"/> Receipt Attached |
| <input type="checkbox"/> Electronic Wire Payment to <i>IESO</i> Account | <input type="checkbox"/> Receipt Attached |

**Purchase Order #** (if applicable) TBA

For direct deposit or electronic wire payments, reference the following *IESO* account:

**TD Bank, Institution ID # 0004, Transit # 10202, Account # 0690-0429444**

**PART 3 – PAYMENT OF \$15,000 (PLUS HST) FEE TO HYDRO ONE FOR CUSTOMER IMPACT ASSESSMENT (CIA)**

**Method of Payment (choose one)**

- |   |   |
|---|---|
| <input type="checkbox"/> Certified cheque payable to <i>Hydro One Networks Inc.</i> | <input type="checkbox"/> Attached         |
| <input type="checkbox"/> Deposit to <i>Hydro One</i> Account                        | <input type="checkbox"/> Receipt Attached |
| <input type="checkbox"/> Electronic Wire Payment to <i>Hydro One</i> Account        | <input type="checkbox"/> Receipt Attached |

**Purchase Order #** (if applicable) TBA

For direct deposit or electronic wire payments, reference the following *Hydro One* account:

**TD Bank, Toronto, Institution ID # 0004, Transit # 10202, Account # 0690-5202411, SWIFT code TDOMCATTOR**

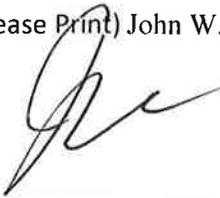
**PART 4 – CERTIFICATION**

The *applicant* has read, understands and agrees with the foregoing and hereby declares that the information submitted in this *application* is complete and accurate to the best of the *applicant's* knowledge. By signing below, the undersigned represents having the authority to make this *application* on behalf of the *applicant*.

Name (Please Print) John W. Brace

Title President/CEO

Signature



Date January 25, 2011

**PART 5 – FOR IESO USE ONLY**

Received by: \_\_\_\_\_ Date Received: \_\_\_\_\_

Payment Received with *Application* (Y/N): \_\_\_\_\_ CAA ID Number: \_\_\_\_\_

# Generic Information

<b><i>Bold-Italic</i></b>	Essential
<b>Bold</b>	Essential for <i>Hydro One</i> - to be provided prior to Connection
	Typical values will be assumed if data not provided
	Only required upon request

<b>Facility Type</b>	<i>Specify if generation facility will be registered as self-scheduled, intermittent or dispatchable.</i>	Intermittent
<b>Intent of Generation</b>	<i>Specify if the facility will be used as load displacement or for sale of electricity.</i>	Sale of Electricity
<b>Project Dates</b>	<i>Start of construction</i>	June 1, 2011
	<i>Electrical backfeed (energized stations)</i>	September 1, 2011
	<i>In-service dates (first synchronization of each unit)</i>	September 7, 2011
	<i>Commercial in-service date</i>	November 1, 2011
<b>Protection System Description</b>	<i>An overview of the protective relaying schemes to be employed together with an explanation of the manner in which they are to be deployed.  A simplified tripping matrix as per schedule E, exhibit E-2 of the Transmission System Code (TSC), appendix 1 for generator customers.</i>	Appendix A
<b>Operating Philosophy</b>	<i>An overview explaining how the facility will be operated outlining possible operating modes. Include details on start-up and maintenance outages.</i>	Appendix B
<b>Detailed Single-Line Diagram(s)</b>	<i>A detailed single-line diagram showing the equipment and the protection and telemetry points. The locations of the proposed connections on to existing lines, or into existing transformer/switching stations, are also to be included.  Details are to be included of any existing facilities that are to be replaced or removed from service. Out-of-service dates are to be provided whenever these do not coincide with the in-service dates for the new facilities.  Provide details of LDCs between the generator and the transmission system.</i>	E-03 Rev 0
<b>Geographic Map including GPS Coordinates</b>	<i>A large-scale map or drawing showing the location of the exact point of the proposed interconnection with Hydro One facilities (or other transmitters including lot number and concession number for the project).  Attachments for wind farm projects must include the configuration and grouping of individual units, including GPS coordinates of each turbine, physical dimensions and turbine nomenclature.</i>	Appendix C
<b>Collector System</b>	<i>a. Does your project require you to establish joint use on Hydro One poles? (i.e. generator's collector lines attached to Hydro One poles on municipal right of way, to the PCC)?  b. If you answer No to "a" above, is your project going to own poles + wires on municipal right of way?</i>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>  Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>Control Schemes</b>	<i>Describe any control schemes that are to be used to automatically change the tap positions for any of the transformers, or to automatically switch into-service or out-of-service any reactive compensation devices.</i>	Appendix E

All files and diagrams provided as attachments are to be signed and sealed by a Professional Engineer.

# Generation Facilities

<b>Bold-Italic</b>	Essential
<b>Bold</b>	Essential for <i>Hydro One</i> - to be provided prior to Connection
	Typical values will be assumed if data not provided
	Only required upon request

Unit Data  Complete one table for each different type of generator	<b>Number and identifier of identical units (e.g., 3 units - G1, G2, G3)</b>						WTG1 - WTG24	
	Manufacturer						GE	
	<b>Type (e.g. salient pole, round rotor, induction, inverter based, e.g. solar)</b>						GE 2.5 MW - 103	
	<b>Frequency (Hz)</b>						60	
	Speed (RPM)						NA	
	<b>Machine base (MVA)</b>						2.5 see Appendix D	
	<b>Rated voltage (kV)</b>						0.69	
	<b>Power Factor</b>						+/- 0.9	
	<b>Maximum Continuous Rating (MCR)</b>				<b>(MW) - summer at 35°C<sup>1</sup></b>		2.5	
					<b>(MW) - winter at 10°C</b>		2.5	
	Capability above MCR (MW), sustainability per event (hrs)							
	NERC Unit type			Refer to the link on next page			WT	
	NERC Status							
	NERC Cooling Water Source							
	NERC Fuel Type (primary, alternate)			Refer to the link on next page			Wind	
	NERC Fuel Transportation (primary, alternate)							
	NERC primary fuel heat rate at full load (BTU/kWh)							
	<b>Unsaturated reactances in pu based on machine base (Xo required only if unit transformer provides a zero sequence path)</b>							
	<b>Xd</b>		<b>X'd</b>		<b>X''d</b>		<b>Xq</b>	
	<b>Open circuit time constants (s)</b>							
	<b>T'do</b>		<b>T''do</b>		<b>T'qo</b>		<b>T''qo</b>	
	<b>Station load (MW, Mvar)</b>						0.25	
	Minimum power (MW)							
	Normal loading and unloading ramp rates (MW/min)							
	Emergency loading and unloading ramp rates (MW/min)							
	<b>Armature (Ra) and field resistance (Rfd<sup>2</sup>) (Ohms)</b>							
	<b>Total rotational inertia of generator and turbine(s)</b>							
	<b>Saturation at rated voltage (S1.0) and 20% above (S1.2)</b>							
Damping								
<b>Base field current (A)</b>								
<b>Base field voltage (volts)</b>								
Losses at 1.0 and 0.9 power factor (MW)								
Characteristics  (must be provided for each different type of generator)	<b>Open circuit saturation curve</b>						Appendix D	
	<b>Short circuit curve</b>						Appendix D	
	V curves						Appendix D	
	<b>Capability curve</b>						Appendix D	

All files and diagrams provided as attachments are to be signed and sealed by a Professional Engineer.

<sup>1</sup> If the location of the *project* is north of the City of Barrie, then provide summer ratings based on 30°C and 0 to 4 km/hr wind speed

<sup>2</sup> Field resistance should be specified at 75°C for hydro-electric units and at 100°C for thermal units.

## Generation Facilities (continued)

<b><i>Bold-Italic</i></b>	Essential
<b>Bold</b>	Essential for Hydro One - to be provided prior to Connection
	Typical values will be assumed if data not provided
	Only required upon request

### EXCITATION SYSTEM MODEL

***A block diagram\* suitable for stability studies or an IEEE standard model type with all in-service parameter values for the exciter. Models for stabilizers, under-excitation limiters and over-excitation limiters shall be provided where applicable.***

Generation facility directly connected to the IESO-controlled grid

### GOVERNOR AND PRIME MOVER SYSTEM MODEL

***A block diagram\* suitable for stability studies or an IEEE standard model type with all in service parameters values for the governor and prime mover (turbine). More detailed models would be required if off-nominal frequency or shaft torsional studies are required.***

Generation facility directly connected to the IESO-controlled grid, generation facility greater than 50 MW, or generation unit greater than 10 MW

### FACILITY MODEL - EQUIVALENT

***An equivalent model representing the proposed facility as being connected to the low voltage bus of the transmission connection facility, operated at the nominal voltage level of the low voltage bus, to be used by IESO and Hydro One for steady state and transient simulations (attach files).***

For generation facilities comprised of multiple small size units (such as wind farms, solar PV) and distribution connected generation

LINK TO NERC UNIT TYPE, STATUS, FUEL TYPE AND FUEL TRANSPORTATION TABLE:

[http://www.ieso.ca/imoweb/pubs/marketEntry/me\\_f1111\\_NERC\\_Fields.doc](http://www.ieso.ca/imoweb/pubs/marketEntry/me_f1111_NERC_Fields.doc)

\* The block diagram must be compatible with PSS/E model libraries. Please check with the IESO regarding the software version currently in use.

# Connection (Transmission) Facilities

<b><i>Bold-Italic</i></b>	Essential
<b>Bold</b>	Essential for <i>Hydro One</i> - to be provided prior to Connection
	Typical values will be assumed if data not provided
	Only required upon request

If the connection from the generator to the transmitter consists of different sections, then the applicant must complete a table for each overhead circuit section and for each underground circuit section.  
Provide a detailed single line diagram of the connection facilities.

<b>Transmission connection</b>	<b><i>Point of connection to IESO controlled grid:</i></b> <b><i>- circuit operating nomenclature or terminal station name</i></b>	S2B		
	<b><i>- circuit section</i></b>	Monitoulin TS entrance		
	<b><i>- tower number</i></b>	see SLD		
	<b><i>- GPS coordinates</i></b>	45.983297 - 81.903813		
<b>Overhead circuit section</b> Complete one table for each overhead circuit section	<b><i>Identifier (to be provided on drawing)</i></b>			
	<b><i>Voltage (kV)</i></b>	115		
	<b><i>Length (km)</i></b>	10		
	Phase conductor size (kcmil)	TBD		
	Phase conductor type (ASC, ACSR, ACSS, ACCR, etc) <sup>3</sup>	ACSR		
	Phase conductor stranding (# of Al strands/ # of Steel strands)	336 kcmil		
	Phase conductors per bundle, spacing if more than one (mm)	one		
	Geometry of all phase and sky wires for each tower type (m)			
	Ground resistivity (ohm-meters)			
	Skywire size (kcmil)			
	Skywire type (Alumoweld, EHS, HS) <sup>4</sup>			
	Skywire stranding (# of Al strands/ # of Steel strands)			
	Skywire number if more than one			
	<b><i>Positive sequence impedance</i></b> <i>R, X in ohms and B in mhos</i> <i>if in per unit specify bases</i>	<b>R in ohms</b>	<b>X in ohms</b>	<b>B in mhos</b>
		see SLD	see SLD	see SLD
		<b>R in pu</b>	<b>X in pu</b>	<b>B in pu</b>
	<b><i>Zero sequence impedance</i></b> <i>Ro, Xo in ohms and Bo in mhos</i> <i>if in per unit specify bases</i>	<b>Ro in ohms</b>	<b>Xo in ohms</b>	<b>Bo in mhos</b>
<b>Ro in pu</b>		<b>Xo in pu</b>	<b>Bo in pu</b>	
<b><i>Mutual Impedance (parallel circuit identifier)</i></b> <i>Rm, Xm in ohms and Bo in mhos</i> <i>if in per unit specify bases</i>	<b>Rm in ohms</b>	<b>Xm in ohms</b>	<b>Bm in mhos</b>	
	<b>Rm in pu</b>	<b>Xm in pu</b>	<b>Bm in pu</b>	
	<b>Base Voltage <math>V_B</math></b> (Applicable to positive & zero sequences and mutual impedances) <b>All values in per km</b>	118.05 kV		
	<b>Base MVA<sub>B</sub></b> (Applicable to positive & zero sequences and mutual impedances) <b>All values in per km</b>	100 MVA		

<sup>3</sup> If the conductor type is new then additional information may be required.

<sup>4</sup> If the conductor type is new then additional information may be required.

## Connection (Transmission) Facilities (continued)

<b><i>Bold-Italic</i></b>	Essential
<b>Bold</b>	Essential for <i>Hydro One</i> - to be provided prior to Connection
	Typical values will be assumed if data not provided
	Only required upon request

<p>Overhead circuit section cont'd</p> <p>Complete one table for each overhead circuit section</p>	<p><b><i>Winter thermal ratings: Continuous, Long-term, Short-term (A)</i></b> <i>(see table below for rating assumptions)</i></p> <p><b><i>Summer thermal ratings: Continuous, Long-term, Short-term (A)</i></b> <i>(see table below for rating assumptions)</i></p>
--	---

Overhead Transmission Lines - Rating Assumptions for System Impact Assessment studies				
Rating	Conductor Temperature	Pre-load	Ambient Temp	Wind Speed
Continuous	93°C (or sag temperature if lower)	N/A	<b>Summer</b> 35°C South of Barrie & 30°C North of Barrie	0 to 4 km/hr  15 km/hr within 50 km of wind farm
Long-Term Emergency (Limited to 50 hr/year on all conductors)	127°C (or sag temperature if lower)	N/A		
Short-Term Emergency (15-minute limited-time rating)	150°C (or sag temperature if lower) (Limited to 127°C for High Aluminum Content (HAC) conductors)	Continuous Rating at 93°C	<b>Winter</b> 10°C	

## Connection (Transmission) Facilities (cont)

<b><i>Bold-Italic</i></b>	Essential
<b>Bold</b>	Essential for <i>Hydro One</i> - to be provided prior to Connection
	Typical values will be assumed if data not provided
	Only required upon request

<b>Underground Circuit Section</b> Complete one table for each underground circuit section	<b>Identifier (to be provided on drawing)</b>		NA		
	<b>Voltage (kV)</b>				
	<b>Length (km)</b>				
	BIL rating				
	Phase conductor size (kcmil)				
	Distance from the "from" terminal (km)				
	Maximum operating temperature (°C)				
	Phase conductor type <sup>5</sup>				
	Insulation type				
	Semiconductor shield type				
	Shield grounding				
	Metallic sheath type				
	External layer type				
	Geometry of all phases				
	Ground resistivity (ohms-meters)				
	Cable construction				
	<b>Installation type (e.g. direct buried, in duct, etc.)</b>				
	<b>Positive sequence impedance (R, X in ohms, B in mhos or if in per unit specify bases)</b>				
	<b>Zero sequence impedance (Ro, Xo in ohms, Bo in mhos or if in per unit specify bases)</b>				
	<b>Continuous, 15-Minute and 24-Hour thermal ratings (A)</b>		<b>Winter</b>		
<b>Summer</b>					
<b>Main Buses</b> Complete one table for each bus	<b>Identifier (to be provided on drawing)</b>		NA		
	Station				
	<b>Voltage (kV)</b>				
	<b>Summer continuous (A)</b>				
	<b>Winter continuous (A)</b>				
	Maximum operating temperature (°C)				
	Conductor size (kcmil)				
	Conductor type (ASC, ASCR, Al tube)				
<b>Surge Arresters</b>	Identifier		LA		
	Station				
	Manufacturer		TBA		
	Serial number				
	Voltage rating (kV)		115 Class		
	Type (e.g. ZnO, SiC)				
	Class (e.g. secondary, distribution, intermediate, station)		Station		

<sup>5</sup> If the conductor type is new then additional information may be required

# Connection (Transmission) Facilities (cont)

<b><i>Bold-Italic</i></b>	Essential
<b>Bold</b>	Essential for <i>Hydro One</i> - to be provided prior to Connection
	Typical values will be assumed if data not provided
	Only required upon request

Transformers Complete one table for each transformer	<b>Number and Identifier of identical units (e.g., 3 units - T1, T2, T3)</b>		T1			
	<b>Station</b>		60 MW McLean's Mountain TS			
	<b>Serial Number (must be provided prior to Connection)</b>		TBA			
	<b>Manufacturer</b>		TBA			
	<b>Configuration (e.g. 3 phase unit or three single phase units)</b>		3 phase			
	<b>Phase Location if single phase (e.g. R, W, B)</b>					
	<b>Cooling types (e.g. ONAN, ONAF, OFAF)</b>		ONAN	ONAF1	ONAF2	
	<b>Associated Thermal Rating for each cooling type (MVA)</b>		37	50	66	
	Winter (10°C) continuous, 10-DAY and 15-MIN thermal ratings	(A)				
		(MVA)				
	Summer (35°C) continuous, 10-DAY and 15-MIN thermal ratings <sup>6</sup>	(A)				
		(MVA)				
	<b>Connection for each winding H, X, Y (e.g. wye, delta, zig-zag)</b>		Wye g	Delta		
	<b>Rated voltage for each winding, e.g. HV, LV, tertiary (kV)</b>		115	34.5		
	<b>Rated capability for tertiary winding, if applicable (A, MVA)</b>		NA			
	<b>Impedance to ground for each winding H, X, Y (ohms) (U – Ungrounded; R – Resistance; X – Reactance, e.g. 16 R)</b>					
<b>Off-load taps (kV)</b>		119	122	125	128 131	
<b>In-service off-load tap position (kV)</b>		125				
<b>Under-load taps: max tap (kV), min tap (kV), number of steps</b>						
Positive Sequence Impedance	(see IEEE C57.12.90 for measurement techniques)	<b>Positive Sequence Impedance (%)</b>	HX	HY	XY	
		R				
		X	10%			
		Base MVA	37			
Zero Sequence Impedance (only required for transformers with 1 or 2 external neutrals)	H winding energized all others open	Closed Tertiary	H	X	HX	XH
		R				
		X				
		Base MVA				
	H winding energized X winding shorted	Open Tertiary	H	X	HX	XH
		R				
		X				
		Base MVA				

<sup>6</sup> If the location of the project is north of the City of Barrie, then provide summer ratings based on 30°C and 0 to 4 km/hr wind speed

## Connection (Transmission) Facilities (cont)

<b><i>Bold-Italic</i></b>	Essential
<b>Bold</b>	Essential for <i>Hydro One</i> - to be provided prior to Connection
	Typical values will be assumed if data not provided
	Only required upon request

<b>Shunt Capacitors</b> Complete one table for each type of shunt capacitor	<b><i>Identifier</i></b>	
	<b><i>Station</i></b>	
	Manufacturer	
	<b>Serial number (must be provided prior to Connection)</b>	
	<b><i>Rated voltage (kV)</i></b>	34.5
	<b><i>Rated capability (Mvar)</i></b>	to be determined by SIA
	<b><i>Discharge time (ms)</i></b>	
	Current limiting reactor (mH or $\Omega$ )	
	Bank arrangement (e.g. delta, wye, double-wye, etc)	
	<b><i>Surge capacitor (<math>\mu F</math>)</i></b>	
	Description of automatic switching	
	Anticipated switching restrictions	
<b>Shunt Reactors</b> Complete one table for each type of shunt reactor	<b><i>Identifier</i></b>	
	<b><i>Station</i></b>	
	Manufacturer	
	<b>Serial number (must be provided prior to Connection)</b>	
	<b><i>Rated voltage (kV)</i></b>	
	<b><i>Rated capability (Mvar)</i></b>	
	Winding configuration (e.g. delta, wye)	
	Description of automatic switching	
<b><i>Description of anticipated switching restrictions</i></b>		

All files and diagrams provided as attachments are to be signed and sealed by a Professional Engineer.

# Connection (Transmission) Facilities (cont)

<b><i>Bold-Italic</i></b>	Essential
<b>Bold</b>	Essential for <i>Hydro One</i> - to be provided prior to Connection
	Typical values will be assumed if data not provided
	Only required upon request

<b>Circuit Breakers</b> Complete one table for each type of circuit breaker	<b><i>Identifier</i></b>	52-L1
	<b><i>Station</i></b>	connection point
	Manufacturer	
	<b><i>Serial number (must be provided prior to Connection)</i></b>	
	<b><i>Maximum continuous rated voltage (kV)</i></b>	132
	Interrupting time (ms)	3 cycles
	<b><i>Interrupting media (e.g. air, oil, SF<sub>6</sub>)</i></b>	SF6
	<b><i>Rated continuous current (A)</i></b>	1200
<b><i>Rated symmetrical and asymmetrical short circuit capability (3 second rating in kA)</i></b>	50	
<b>Circuit Switchers</b> Complete one table for each type of circuit switcher	<b><i>Identifier</i></b>	NA
	<b><i>Station</i></b>	
	Manufacturer	
	<b><i>Serial number (must be provided prior to Connection)</i></b>	
	<b><i>Maximum continuous rated voltage (kV)</i></b>	
	<b><i>Interrupting time (ms)</i></b>	
	<b><i>Interrupting media (e.g. air, oil, SF<sub>6</sub>)</i></b>	
	<b><i>Rated continuous current (A)</i></b>	
<b><i>Rated symmetrical short circuit capability (3 sec rating in kA)</i></b>		
<b>Disconnect Switches</b> Complete one table for each type of disconnect switch	<b><i>Identifier</i></b>	89-LH1
	<b><i>Station</i></b>	connection point
	Manufacturer	
	<b><i>Serial number (must be provided prior to Connection)</i></b>	
	<b><i>Maximum continuous rated voltage (kV)</i></b>	132
	<b><i>Continuous current rating (amps) (Non-Ground Switches only)</i></b>	1200
<b><i>Rated symmetrical short circuit capability (3 sec rating in kA)</i></b>	50	
<b>Wavetraps</b>	Identifier	NA
	Station	
	Manufacturer	
	<b><i>Serial number (must be provided prior to Connection)</i></b>	
	Continuous current rating (amps)	
<b>DC Lines</b>	<b><i>Identifier</i></b>	NA
	<b><i>Complete steady state (loadflow) parameters and dynamic</i></b>	
<b>FACTS Devices</b> (e.g., dynamic reactive devices, series compensation, etc.)	<b><i>Identifier</i></b>	NA
	<b><i>Complete steady state (loadflow) parameters and dynamic parameters</i></b>	

# LDC Facilities for Embedded Generation

<b><i>Bold-Italic</i></b>
<b>Bold</b>

Essential  
 Essential for *Hydro One* - to be provided prior to Connection  
 Typical values will be assumed if data not provided  
 Only required upon request

Provide the following information for each LDC existing between the new facility point of connection and the transmitter facilities.  
 Provide a detailed single line diagram of the connection facilities.

<b>Transmission connection</b>	<b><i>Point of connection to Transmitter:</i></b>			
	- <b><i>circuit operating nomenclature or terminal station name</i></b>			
	- <b><i>tower number</i></b>			
	- <b><i>GPS coordinates</i></b>			
<b>Overhead circuit section</b> Complete one table for each section	<b><i>Identifier (to be provided on drawing)</i></b>			
	<b><i>Voltage (kV)</i></b>			
	<b><i>Length (km)</i></b>			
	<b><i>Positive sequence impedance (R, X, B) (R, X in ohms, B in mhos or if in per unit specify bases)</i></b>			
	<b><i>Zero sequence impedance (Ro, Xo, Bo) (Ro, Xo in ohms, Bo in mhos or if in per unit specify bases)</i></b>			
	<b><i>Mutual Impedance (parallel circuit identifier, Rm, Xm in ohms or if in per unit specify bases)</i></b>			
<b>Underground Circuit Section</b> Complete one table for each underground circuit section	<b><i>Identifier (to be provided on drawing)</i></b>			
	<b><i>Voltage (kV)</i></b>			
	<b><i>Length (km)</i></b>			
	BIL rating			
	Phase conductor size (kcmil)			
	Distance from the "from" terminal (km)			
	Maximum operating temperature ( °C)			
	Phase conductor type <sup>7</sup>			
	Insulation type			
	Semiconductor shield type			
	Shield grounding			
	Metallic sheath type			
	External layer type			
	Geometry of all phase			
	Ground resistivity (ohms)			
	Cable construction			
	<b><i>Installation type (e.g. direct buried, in duct, etc.)</i></b>			
	<b><i>Positive sequence impedance (R, X, B) (R, X in ohms, B in mhos or if in per unit specify bases)</i></b>			
	<b><i>Zero sequence impedance (Ro, Xo, Bo) (Ro, Xo in ohms, Bo in mhos or if in per unit specify bases)</i></b>			
	<b><i>Continuous, 15-Minute and 24-Hour thermal ratings (A)</i></b>	<b><i>Winter</i></b>		
<b><i>Summer</i></b>				

<sup>7</sup> If the conductor type is new then additional information may be required.

# LDC Facilities for Embedded Generation

<b><i>Bold-Italic</i></b>	Essential
<b>Bold</b>	Essential for <i>Hydro One</i> - to be provided prior to Connection
	Typical values will be assumed if data not provided
	Only required upon request

Transformers Complete one table for each transformer	<b><i>Number and Identifier of identical units (e.g., 3 units - T1, T2, T3)</i></b>					
	<b><i>Station</i></b>					
	<b><i>Serial Number (must be provided prior to Connection)</i></b>					
	<b><i>Manufacturer</i></b>					
	<b><i>Configuration (e.g. 3 phase unit or three single phase units)</i></b>					
	<b><i>Phase Location if single phase (e.g. R, W, B)</i></b>					
	<b><i>Cooling types ( e.g. ONAN, ONAF, OFAF)</i></b>					
	<b><i>Associated Thermal Rating for each cooling type (MVA)</i></b>					
	Winter (10°C) continuous, 10-Day and 15-Minute thermal ratings	(A)				
		(MVA)				
	Summer (35°C) continuous, 10-Day and 15-Minute thermal ratings <sup>8</sup>	(A)				
		(MVA)				
	<b><i>Connection for each winding H, X, Y (e.g. wye, delta, zig-zag)</i></b>					
	<b><i>Rated voltage for each winding, e.g. HV, LV, tertiary (kV)</i></b>					
	<b><i>Rated capability for tertiary winding, if applicable (A, MVA)</i></b>					
<b><i>Impedance to ground for each winding H, X, Y (ohms)</i></b>						
<b><i>Off-load taps (kV)</i></b>						
<b><i>In-service off-load tap position (kV)</i></b>						
<b><i>Under-load taps: max tap (kV), min tap (kV), number of steps</i></b>						
Positive Sequence Impedance	(see IEEE C57.12.90 for measurement techniques)	<b><i>Positive Sequence Impedance (%)</i></b>	<b><i>HX</i></b>	<b><i>HY</i></b>	<b><i>XY</i></b>	
		<b><i>R</i></b>				
		<b><i>X</i></b>				
		<b><i>Base MVA</i></b>				
Zero Sequence Impedance (only required for transformers with 1 or 2 external neutrals)	H winding energized all others open	Closed Tertiary	H	X	HX	XH
		<b><i>R</i></b>				
		<b><i>X</i></b>				
		<b><i>Base MVA</i></b>				
	H winding energized X winding shorted	Open Tertiary	H	X	HX	XH
		<b><i>R</i></b>				
		<b><i>X</i></b>				
		<b><i>Base MVA</i></b>				

<sup>8</sup> If the location of the *project* is north of the City of Barrie, then provide summer ratings based on 30°C and 0 to 4 km/hr wind speed

**McLean's Mountain Wind Limited Partnership**

**Exhibit I**

**Tab 1**

**Schedule 3**

**INTERCONNECTION: SYSTEM IMPACT ASSESSMENT REPORT (FINAL REPORT)**



Power to Ontario.  
On Demand.

**REPORT**

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**System Impact  
Assessment  
Report**

**McLean's Mountain Wind Farm**

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**CONNECTION ASSESSMENT &  
APPROVAL PROCESS**

**Final Report**

***CAA ID 2010-386***

*Applicant: McLean's Mountain Wind Farm L.P.*

Market Facilitation Department

October 27, 2010

# System Impact Assessment Report

<b>Document ID</b>	IESO_REP_0661
<b>Document Name</b>	System Impact Assessment Report
<b>Issue</b>	Issue 1.0
<b>Reason for Issue</b>	Final Report
<b>Effective Date</b>	October 27, 2010

## **System Impact Assessment Report**

McLean's Mountain Wind Farm

### **Acknowledgement**

The IESO wishes to acknowledge the assistance of Hydro One in completing this assessment.

### **Disclaimers**

#### **IESO**

This report has been prepared solely for the purpose of assessing whether the connection applicant's proposed connection with the IESO-controlled grid would have an adverse impact on the reliability of the integrated power system and whether the IESO should issue a notice of approval or disapproval of the proposed connection under Chapter 4, section 6 of the Market Rules.

Approval of the proposed connection is based on information provided to the IESO by the connection applicant and the transmitter(s) at the time the assessment was carried out. The IESO assumes no responsibility for the accuracy or completeness of such information, including the results of studies carried out by the transmitter(s) at the request of the IESO. Furthermore, the connection approval is subject to further consideration due to changes to this information, or to additional information that may become available after the approval has been granted. Approval of the proposed connection means that there are no significant reliability issues or concerns that would prevent connection of the proposed facility to the IESO-controlled grid. However, connection approval does not ensure that a project will meet all connection requirements. In addition, further issues or concerns may be identified by the transmitter(s) during the detailed design phase that may require changes to equipment characteristics and/or configuration to ensure compliance with physical or equipment limitations, or with the Transmission System Code, before connection can be made.

This report has not been prepared for any other purpose and should not be used or relied upon by any person for another purpose. This report has been prepared solely for use by the connection applicant and the IESO in accordance with Chapter 4, section 6 of the Market Rules. The IESO assumes no responsibility to any third party for any use, which it makes of this report. Any liability which the IESO may have to the connection applicant in respect of this report is governed by Chapter 1, section 13 of the Market Rules. In the event that the IESO provides a draft of this report to the connection applicant, you must be aware that the IESO may revise drafts of this report at any time in its sole discretion without notice to you. Although the IESO will use its best efforts to advise you of any such changes, it is the responsibility of the connection applicant to ensure that it is using the most recent version of this report.

#### **HYDRO ONE**

#### **Special Notes and Limitations of Study Results**

The results reported in this study are based on the information available to Hydro One, at the time of the study, suitable for a System Impact Assessment of a new generation or load connection proposal.

## System Impact Assessment Report

The short circuit and thermal loading levels have been computed based on the information available at the time of the study. These levels may be higher or lower if the connection information changes as a result of, but not limited to, subsequent design modifications or when more accurate test measurement data is available.

This study does not assess the short circuit or thermal loading impact of the proposed connection on facilities owned by other load and generation (including OPG) customers.

In this study, short circuit adequacy is assessed only for Hydro One breakers and does not include other Hydro One facilities. The short circuit results are only for the purpose of assessing the capabilities of existing Hydro One breakers and identifying upgrades required to incorporate the proposed connection. These results should not be used in the design and engineering of new facilities for the proposed connection. The necessary data will be provided by Hydro One and discussed with the connection proponent upon request.

The ampacity ratings of Hydro One facilities are established based on assumptions used in Hydro One for power system planning studies. The actual ampacity ratings during operations may be determined in real-time and are based on actual system conditions, including ambient temperature, wind speed and facility loading, and may be higher or lower than those stated in this study.

The additional facilities or upgrades which are required to incorporate the proposed connection have been identified to the extent permitted by a System Impact Assessment under the current IESO Connection Assessment and Approval process. Additional facility studies may be necessary to confirm constructability and the time required for construction. Further studies at more advanced stages of the project development may identify additional facilities that need to be provided or that require upgrading.

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# Executive Summary

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## Description

McLean's Mountain Wind L.P is developing a new 59.4 MW wind power generation farm in Manitoulin Island, Ontario. The project was awarded a contract under the government FIT program, and is expected to start commercial operation in July 2011.

This assessment examined the impact of injecting 59.4 MW of wind power generation to the provincial grid via 115 kV circuits S2B on the reliability of the IESO-controlled grid.

## Findings

The following conclusions are achieved based on this assessment:

- (1) The proposed wind farm does not have a material adverse impact on the reliability of the IESO-controlled grid.
- (2) The increase in fault levels, due to the proposed McLean's Mountain, will not exceed the interrupting capabilities of the existing breakers on the IESO-controlled grid.

Under normal S2B operating conditions, the asymmetrical fault level at Martindale 115 kV for a LG fault is 97% of the interrupting capability and under conditions where S2B is supplied entirely by Martindale 115 kV, the asymmetrical fault level at Martindale 115 kV for a LG fault is 99% of the interrupting capability.

- (3) As the amount of load is typically greater than the amount of generation on the 115 kV circuit S2B, the loss of the McLean's wind farm will result in increased flows on S2B. Under high loads along S2B and under conditions where McLean's wind farm and Manitoulin TS are transferred to Algoma 115 kV, the loss of McLean's wind farm may result in S2B line section flows being near or at long term emergency ratings.
- (4) Without the McLean's Mountain wind farm in-service, the pre-contingency voltage at Manitoulin can be as low as 110 kV under 2013 peak load conditions when Manitoulin TS is supplied from Algoma 115 kV and 112 kV under 2013 peak load conditions when Manitoulin TS is supplied from Martindale. In both cases, this voltage is below the minimum acceptable pre-contingency voltage of 113 kV as per the IESO Transmission Assessment Criteria. It was determined that a 7 MX capacitor installed at Manitoulin TS would help increase voltages to above 113 kV.
- (5) Under normal S2B operating conditions, for all contingency cases tested with the proposed McLean's Mountain wind farm, all voltage declines are within the 10% pre and post-ULTC action limit.

Under conditions where McLean's Mountain and Manitoulin are transferred to Algoma 115 kV supply, the loss of McLean's wind farm, could exceed 10% at McLean's Mountain 115 kV, Manitoulin 44 kV and Manitoulin 115 kV buses under peak system conditions and maximum wind farm active power

injection. Under this configuration the pre-contingency reactive injection at the 115 kV point of connection may need to be limited to about 4.7 Mvar to ensure voltage declines are within 10% for the loss of the wind farm.

Sensitivity studies show that under the same system conditions, with a 7 MX capacitor at Manitoulin in-service, the wind farm reactive injection at the point of connection must be limited to about 4.5 Mvar in order for voltage declines for the loss of McLean's Mountain to be within IESO criteria.

- (6) None of the recognized contingencies cause any material adverse impact to the transient performance of the IESO-controlled grid.
- (7) The new wind farm is not required to be part of any special protection scheme.
- (8) The reactive capability of the wind farm facility and the connection impedance between the wind turbine generators and the IESO-controlled grid results in a reactive power deficiency at the connection point.
- (9) The wind farm consists of Vestas V90 machines which operate at unity power factor. A device is needed to be installed to compensate for the lack of dynamic reactive capability.
- (10) Based on the information provided by the applicant, the fault ride through capability of the wind turbines is adequate.
- (11) The new generating facility will result in the need for protection and settings revision at Martindale TS and Algoma TS and addition of new telecommunication links between McLean's Mountain and the terminal stations of circuit S2B.

Zone 1 coverage on S2B at Martindale and Algoma will be slightly decreased as a result of the incorporation of McLean's Mountain. Studies show that there is no adverse impact with this reduction.

- (12) The applicant has indicated it will implement a voltage control process whereby a reactive compensation device will control the PCC voltage to a reference value; capacitors to be automatically controlled/switched according to WF active power output, while the WF main transformer ULTC is to be automatically adjusted to regulate the collector bus voltage such that it is within normal range.

Once the reactive power management system description document is provided, the IESO will assess if the voltage control philosophy is acceptable.

## Other Findings

- (1) During the assessment of McLean's Mountain, it has been identified that a 7 MX capacitor at the Manitoulin LV bus may be needed to ensure that pre-contingency voltages at Manitoulin TS are within continuous voltage requirements when McLean's wind farm is out of service. A mitigation plan to address potential voltage issues should be implemented as soon as possible. Accordingly, Hydro One should assess and submit a mitigation plan and schedule as soon as practical. Connection to the grid of McLean's wind farm is not dependent on the in-service of this capacitor.

## IESO Requirements for Connection Transmitter Requirements

The following requirements are applicable for Hydro One for the incorporation of McLean's Wind Farm:

- (1) The transmitter changes the relay settings of S2B terminal stations to account for the effect of the wind farm.

Modifications to protection relays after this SIA is finalized must be submitted to IESO as soon as possible or at least six (6) months before any modifications are to be implemented. If those modifications result in adverse impacts, the connection applicant and the transmitter must develop mitigation solutions.

## Connection Applicant Requirements

**Specific Requirements:** The following *specific* requirements are applicable to the applicant for the incorporation of McLean's Mountain Wind Farm. Specific requirements pertain to the level of reactive compensation required, operation restrictions, Special Protection System requirements, upgrading of equipment and any items not covered in the *general* requirements:

- (1) The wind farm is required to have the capability to inject or withdraw reactive power continuously (i.e. dynamically) at a connection point up to 33% of its rated active power at all levels of active power output. Based on the equivalent parameters for the WF provided by the connection applicant, the IESO's simulations resulted in the following:

### *Option 1:*

- A dynamic reactive power device with a capability of - 21 / +29 Mvar has to be installed at the collector bus to compensate for the dynamic reactive power capability of the facility.
- A static compensation device of 7 Mvar has to be installed at the collector bus to compensate for the losses within the wind farm. The capacitors will need to be auto-switched via the reactive power management scheme. The capacitor bank is required to have two steps of 3.5 Mvar each in order to observe the system voltage change requirements on shunt switching.

### *Option 2:*

- A dynamic reactive power device with a capability of -21/+35 Mvar has to be installed at the collector bus to compensate for the dynamic reactive power capability of the facility and to compensate for the losses within the facility.

The connection applicant has the obligation to ensure that ensure that the WF has the capability to meet the MR requirement at the connection point and be able to confirm this capability during the commission tests.

- (2) The applicant is required to provide a model of the actual dynamic reactive power device to be implemented at McLean's Wind Farm to the IESO as soon as possible or at least seven months before energization to the IESO-controlled grid
- (3) The applicant is required to provide a copy of the functionalities of the Wind Farm Management System (WFMS) to the IESO.

- (4) The applicant will need to indicate to the IESO whether an inertia emulation control function will be part of its wind farm management system. The IESO reserves the right to ask the applicant to install this function in the future when the function is available for the proposed type of WTG.

**General Requirements:** The proposed connection must comply with all the applicable requirements from the Transmission System Code (TSC), IESO Market Rules and standards and criteria. The most relevant requirements are summarized below and presented in more detail in Section 2 of this report.

- (1) The new generator must satisfy the Generator Facility Requirements in Appendix 4.2 of the Market Rules
- (2) As this facility is in northern Ontario, all new 115 kV equipment must have a maximum continuous voltage rating and the ability to interrupt fault current at a voltage of at least 132 kV.
- (3) Any revenue metering equipment that is installed must comply with Chapter 6 of the Market Rules
- (4) Equipment must sustain increase fault levels due to future system enhancements. Should future system enhancements result in fault levels exceeding equipment capability, the applicant is required to replace equipment at its own expense with higher rated equipment, up to 50 kA as per the Transmission System Code for 115 kV systems.
- (5) The 115 kV breakers must meet the required interrupting time of less than or equal to 5 cycles as per the Transmission System Code.
- (6) The connection equipment must be designed such that adverse effects due to failure are mitigated on the IESO controlled grid.
- (7) The connection equipment must be designed for full operability in all reasonably foreseeable ambient temperature conditions.
- (8) The facility must satisfy telemetry requirements as per Appendices 4.15 and 4.19 of the Market Rules. The determination of telemetry quantities and telemetry testing will be conducted during the IESO Facility Registration/Market entry process.
- (9) Protection systems must satisfy requirements of the Transmission system code and specific requirements from the transmitter. New protection systems must be coordinated with existing protection systems.
- (10) Protective relaying must be configured to ensure transmission equipment remains in service for voltages between 94% of minimum continuous and 105% of maximum continuous values as per Market Rules, Appendix 4.1.
- (11) Although the SIA has found that a Special Protection Scheme (SPS) is not required for McLean's Mountain, provisions must be made in the design of the protections and controls at the facility to allow for the installation of Special Protection Scheme equipment and participation, if an SPS will be required in the future.

- (12) Protection systems within the generation facility must only trip appropriate equipment required to isolate the fault.
- (13) The autoreclosure of the new 115 kV breaker(s) at the connection point must be blocked. Upon its opening for a contingency, it must be closed only after the IESO approval is granted. The IESO will require reduction of power generation prior to the closure of the breaker(s) followed by gradual increase of power to avoid a power surge.
- (14) The generator must operate in voltage control mode. The generation facility shall regulate automatically voltage at a point whose impedance (based on rated apparent power and rated voltage) is not more than 13% from the highest voltage terminal based within  $\pm 0.5\%$  of any set point within  $\pm 5\%$  of rated voltage. If the AVR target voltage is a function of reactive output, the slope  $\Delta V / \Delta Q_{\max}$  shall be adjustable to 0.5%.
- (15) A disturbance monitoring device must be installed. The applicant is required to provide disturbance data to the IESO upon request.
- (16) Models and data, including any controls that would be operational, must be provided to the IESO through the IESO Facility Registration/Market Entry process at least seven months before energization to the IESO-controlled grid.
- (17) During the commissioning period, a set of IESO specified tests must be performed. The commissioning report must be submitted to the IESO within 30 days of the conclusion of commissioning. Field test results should be verifiable using the PSS/E models used for this SIA.
- (18) The registration of the new facilities will need to be completed through the IESO's Market Entry process before any part of the facility can be placed in-service. If the data or assumptions supplied for the registration of the facilities materially differ from those that were used for the assessment, then some of the analysis might need to be repeated.
- (19) The proposed facility must be compliant with applicable reliability standards set by the North American Electric Reliability Corporation (NERC) and the North East Power Coordinating Council (NPCC) prior to energization to the IESO controlled grid.
- (20) The applicant may need to meet restoration participant criteria as per the NERC standard EOP-005. Further details can be found in section 3 of Market Manual 7.8 (Ontario Power System Restoration Plan)

## Notification of Conditional Approval

From the information provided, our review concludes that the proposed connection of McLean's Mountain Wind Farm, subject to the requirements specified in this report, will not result in a material adverse effect on the reliability of the IESO-controlled grid.

It is recommended that a Notification of *Conditional Approval for Connection* be issued for McLean's Mountain Wind Farm subject to the implementation of the requirements listed in this report.

# 1. Project Description

---

McLean's Mountain Wind L.P has proposed to develop a 59.4 MW wind farm located in Manitoulin, Ontario, known as McLean's Mountain Wind Farm which has been awarded a Power Purchase Agreement under the Feed-In Tariff (FIT) program with Ontario Power Authority. It is expected that commercial operation will start July 17, 2011.

The facility will be tapped to the IESO controlled grid, the 115 kV circuit S2B, via a newly built 11.5 km, 115 kV circuit consisting of an overhead line and underwater cable. The tap point is located about 700 m from the Hydro One station, Mantoulin TS. The McLean's Mountain generation will be collected into a new 115 kV 37/50/60 MVA interconnection substation. The new substation will consist of one 115/34.5kV transformer, two 115 kV circuit breakers and associated switchgears, one 34.5 kV bus, and 3 collector line breakers. The 34.5 kV bus is connected to the step-up transformer via a motorized disconnect switch.

The development will consist of a total of 33 Vestas V90 VCUS 60 Hz wind turbine generators with a rated power output of 1.8 MW each. Each generator is connected to the Vestas Converter Unity System (VCUS) through a slip ring system and is connected to one of three collector circuits C1, C2, C3 via a 0.69/34.5 kV (0.075 pu reactance on 1.85 MVA) transformer. The Vestas V90 VCUS operates at unity power factor and is unable to provide any dynamic reactive capability.

Each collector circuit will have the following number of generators:

Vestas V90 VCUS (2 MVA, 1.8 MW each)				
Circuit ID	C1	C2	C3	Total
Number of generators	11	11	11	33
Maximum MW	19.8	19.8	19.8	59.4
Maximum Mvar	0	0	0	0
Minimum. Mvar	0	0	0	0

– End of Section –

## 2. General Requirements

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### *Generators*

The proposed facility must satisfy the generation facility requirements in Appendix 4.2 of Market Rules.
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The generation facility requirements for a wind farm primarily include:

- the generation facility shall have the capability to operate continuously between 59.4Hz and 60.6Hz and for a limited period of time in the region above straight lines on a log-linear scale defined by the points (0.0s, 57.0Hz), (3.3s, 57.0Hz), and (300s, 59.0Hz);
- the generation facility shall respond to frequency increase by reducing the active power with an average droop based on maximum active power adjustable between 3% and 7% and set at 4% . Regulation deadband shall not be wider than  $\pm 0.06\%$ . A sustained 10% change of rated active power after 10 s in response to a constant rate of change of frequency of 0.1%/s during interconnected operation shall be achievable;
- the generation facility shall respond to frequency decline by temporarily boosting their active power output for a limited time (i.e. 10s) by recovering energy from the rotating blades. It is not required for wind facilities to “spill” wind to provide a sustained response to frequency decline;
- the generation facility shall be able to ride through routine switching events and design criteria contingencies assuming standard fault detection, auxiliary relaying, communication, and rated breaker interrupting times unless disconnected by configuration;
- the generation facility directly connecting to the IESO-controlled grid shall have the minimum capability to supply continuously all levels of active power output for 5% deviations in terminal voltage. Rated active power is the smaller output at either rated ambient conditions (e.g. temperature, head, wind speed, solar radiation) or 90% of rated apparent power. To satisfy steady-state reactive power requirements, active power reductions to rated active power are permitted;
- the generation facility must have the capability to inject or withdraw reactive power continuously (i.e. dynamically) at a connection point up to 33% of its rated active power at all levels of active power output except where a lesser continually available capability is permitted by the *IESO*. If necessary, shunt capacitors must be installed to offset the reactive power losses within the facility in excess of the maximum allowable losses. If generators do not have dynamic reactive power capabilities as described above, dynamic reactive compensation devices must be installed to make up the deficient reactive power;
- the generation facility shall regulate automatically voltage at a point whose impedance (based on rated apparent power and rated voltage) is not more than 13% from the highest voltage terminal based within  $\pm 0.5\%$  of any set point within  $\pm 5\%$  of rated voltage. If the AVR target voltage is a function of reactive output, the slope  $\Delta V / \Delta Q_{\max}$  shall be adjustable to 0.5%. The equivalent time constants shall not be longer than 20 ms for voltage sensing and 10 ms for the forward path to the regulator output.

### *Connection Equipment (Breakers, Disconnects, Transformers, Buses)*

Appendix 4.1, reference 2 of the Market Rules states that under normal conditions voltages are maintained

within the range of 113 kV to 132 kV.

The 115 kV equipment in the facility must have a maximum continuous voltage rating of at least 132 kV. Fault interrupting devices must be able to interrupt fault current at the maximum continuous voltage of 132 kV.

If revenue metering equipment is being installed as part of this project, please be aware that revenue metering installations must comply with Chapter 6 of the IESO Market Rules for the Ontario electricity market. For more details the *connection applicant* is encouraged to seek advice from their Metering Service Provider (MSP) or from the IESO metering group.

The Transmission System Code (TSC), Appendix 2 establishes maximum fault levels for the transmission system. For the 115 kV system, the maximum 3 phase symmetrical fault level is 50 kA and the single line to ground (SLG) symmetrical fault level is 50 kA.

The TSC requires that new equipment be designed to sustain the fault levels in the area where the equipment is installed. If any future system enhancement results in an increased fault level higher than the equipment's capability, the *connection applicant* is required to replace the equipment at their own expense with higher rated equipment capable of sustaining the increased fault level, up to the TSC's maximum fault level of 50 kA for the 115 kV system.

The Transmission System Code (TSC), Appendix 2 states that the maximum rated interrupting time for 115 kV breakers must be 5 cycles or less. The *connection applicant* shall ensure that the new breakers meet the required interrupting time as specified in the TSC.

The connection equipment must be designed so that the adverse effects of failure on the IESO-controlled grid are mitigated. This includes ensuring that all circuit breakers fail in the open position.

The connection equipment must be designed so that it will be fully operational in all reasonably foreseeable ambient temperature conditions.

#### *IESO Monitoring and Telemetry Data*

In accordance with the telemetry requirements for a generation facility (see Appendices 4.15 and 4.19 of the Market Rules) the *connection applicant* must install equipment at this project with specific performance standards to provide telemetry data to the IESO. The data is to consist of certain equipment status and operating quantities which will be identified during the IESO Market Entry Process.

As part of the IESO Facility Registration/Market Entry process, the *connection applicant* must also complete end to end testing of all necessary telemetry points with the IESO to ensure that standards are met and that sign conventions are understood. All found anomalies must be corrected before IESO final approval to connect any phase of *the project* is granted.

#### *Protection Systems*

Protection systems must be designed to satisfy all the requirements of the Transmission System Code as specified in Schedules E, F and G of Appendix 1 (version B) and any additional requirements identified by the transmitter. New protection systems must be coordinated with existing protection systems.

Protective relaying must be set to ensure that transmission equipment remains in-service for voltages between 94% of the minimum continuous and 105% of the maximum continuous values in the Market Rules, Appendix 4.1.

The *connection applicant* is required to have adequate provision in the design of protections and controls at the facility to allow for installation of Special Protection Scheme (SPS). Should a future SPS be installed to improve the transfer capability in the area or to accommodate transmission reinforcement projects, *the project* will be required to participate in the SPS system and to install the necessary protection and control facilities to affect the required actions.

Any modifications made to protection relays by the transmitter after this SIA is finalized must be submitted to the IESO as soon as possible or at least six (6) months before any modifications are to be implemented on the existing protection systems. If those modifications result in adverse impacts, the *connection applicant* and the transmitter must develop mitigation solutions. Send documentation for protection modifications triggered by new or modified primary equipment (i.e. new or replacement relays) to [connection.assessments@ieso.ca](mailto:connection.assessments@ieso.ca).

Protection systems within the generation facility must only trip the appropriate equipment required to isolate the fault. After the facility begins commercial operation, if an improper trip of the 115 kV circuit S2B occurs due to events within the facility, the facility may be required to be disconnected from the IESO-controlled grid until the problem is resolved.

The autoreclosure of the new 115 kV breakers at the connection point must be blocked. Upon its opening for a contingency, it must be closed only after the IESO approval is granted. The IESO will require reduction of power generation prior to the closure of the breaker followed by gradual increase of power to avoid a power surge.

### *Miscellaneous*

*Connection applicant* is required to install at the facility a disturbance recording device with clock synchronization that meets the technical specifications provided by Hydro One. The device will be used to monitor and record the response of the facility to disturbances on the 115 kV system in order to verify the dynamic response of generators. The quantities to be recorded, the sampling rate and the trigger settings will be provided by the transmitter.

### *Facility Registration/Market Entry Requirements*

Models and data, including any controls that would be operational, must be provided to the IESO through the IESO Facility Registration/Market Entry process at least seven months before energization to the IESO-controlled grid.

The registration of the new facilities will need to be completed through the IESO's Market Entry process before IESO final approval for connection is granted and any part of the facility can be placed in-service. If the data or assumptions supplied for the registration of the facilities materially differ from those that were used for the assessment, then some of the analysis might need to be repeated.

As part of the IESO Facility Registration/Market Entry process, the *connection applicant* must provide evidence to the IESO confirming that the equipment installed meets the Market Rules requirements and matches or exceeds the performance predicted in this assessment. Until this evidence is provided and found acceptable to the IESO, the Facility Registration/Market Entry process will not be considered complete and the *connection applicant* must accept any restrictions the IESO may impose upon this project's participation in the IESO administered market or connection to the IESO-controlled grid. Failure to provide evidence may result in disconnection from the IESO-controlled grid.

During the commissioning period, a set of IESO specified tests must be performed. The commissioning report must be submitted to the IESO within 30 days of the conclusion of commissioning. Field test results should be verifiable using the PSS/E models used for this SIA.

### *Reliability Standards*

Prior to connecting to the IESO controlled grid, the proposed facility must be compliant with the applicable reliability standards set by the North American Electric Reliability Corporation (NERC) and the North East Power Coordinating Council (NPCC).

A list of applicable standards, based on the proponent's/connection applicant's market role/OEB licence can be found here:

<http://www.ieso.ca/imoweb/ircp/reliabilityStandards.asp>

In support of the NERC standard EOP-005, the *connection applicant* may need to meet the restoration participant criteria. Please refer to section 3 of Market Manual 7.8 (Ontario Power System Restoration Plan) to determine its applicability to the proposed facility.

The IESO monitors and assesses market participant compliance with these standards as part of the IESO Reliability Compliance Program. To find out more about this program, visit the webpage referenced above or write to [ircp@ieso.ca](mailto:ircp@ieso.ca).

Also, to obtain a better understanding of the applicable reliability obligations and find out how to engage in the standards development process, we recommend that the *connection applicant* join the IESO's Reliability Standards Standing Committee (RSSC) or at least subscribe to their mailing list at [rssc@ieso.ca](mailto:rssc@ieso.ca). The RSSC webpage is located at: [http://www.ieso.ca/imoweb/consult/consult\\_rssc.asp](http://www.ieso.ca/imoweb/consult/consult_rssc.asp).

### 3. Review of Connection Proposal

#### 3.1 Proposed Connection Arrangement

The proposed connection arrangement is shown in Figure 1.

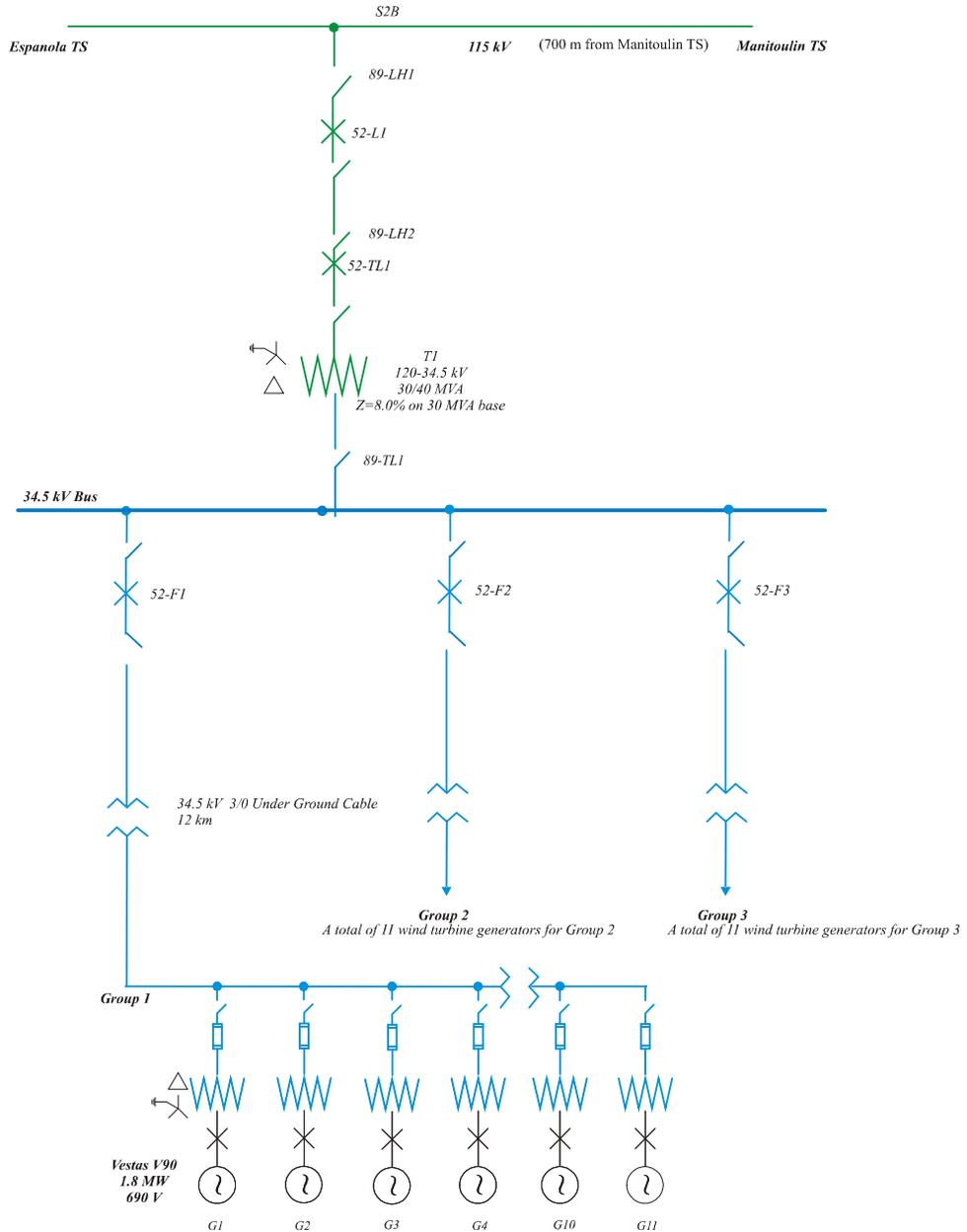


Figure 1: Proposed Connection Arrangement

## 3.2 Existing System

McLean's Mountain Wind Farm has proposed to connect to the existing Hydro One 115 kV circuit S2B between Espanola TS and Manitoulin TS. Under normal operating conditions, S2B is opened at the following points:

- At Creighton Junction
- Between Baldwin Junction and Espanola Junction
- Between the taps to Manitoulin TS and Domtar Espanola
- Between Espanola Junction and Domtar Espanola.
- Between Blind River TS Junction and Blind River TS

As shown in **Figure 2**, this configuration results in one half of S2B being supplied from Martindale and the other half being supplied from Algoma TS. Manitoulin TS is normally supplied from Martindale TS 115 kV, while Espanola TS and Domtar Espanola are normally supplied from Algoma TS 115 kV. Depending on outage conditions, these normally operating points may operate closed and other open points along S2B may be introduced, resulting in loads normally supplied from Martindale being temporarily supplied from Algoma and vice versa.

To avoid possible excessive post-contingency voltage declines and thermal overloads, under all operating conditions, an open point along S2B is always maintained, such that the circuit is never operated in parallel with the 230 kV circuits X27A and S22A .

Historical data consisting of hourly average samples between Jan 1 to Dec 31, 2009 were obtained from IESO real-time data for the following quantities:

- Active Power flow on S2B@ Martindale, S2B@Algoma
- Voltages at Martindale 115 kV, Algoma 115 kV
- Loads at Domtar Espanola, Manitoulin and Espanola (MW, Mvar)

Graphs for these quantities are shown in Figures 3 to 12. Note, for active and reactive power flows, positive values represent flow out of the station.

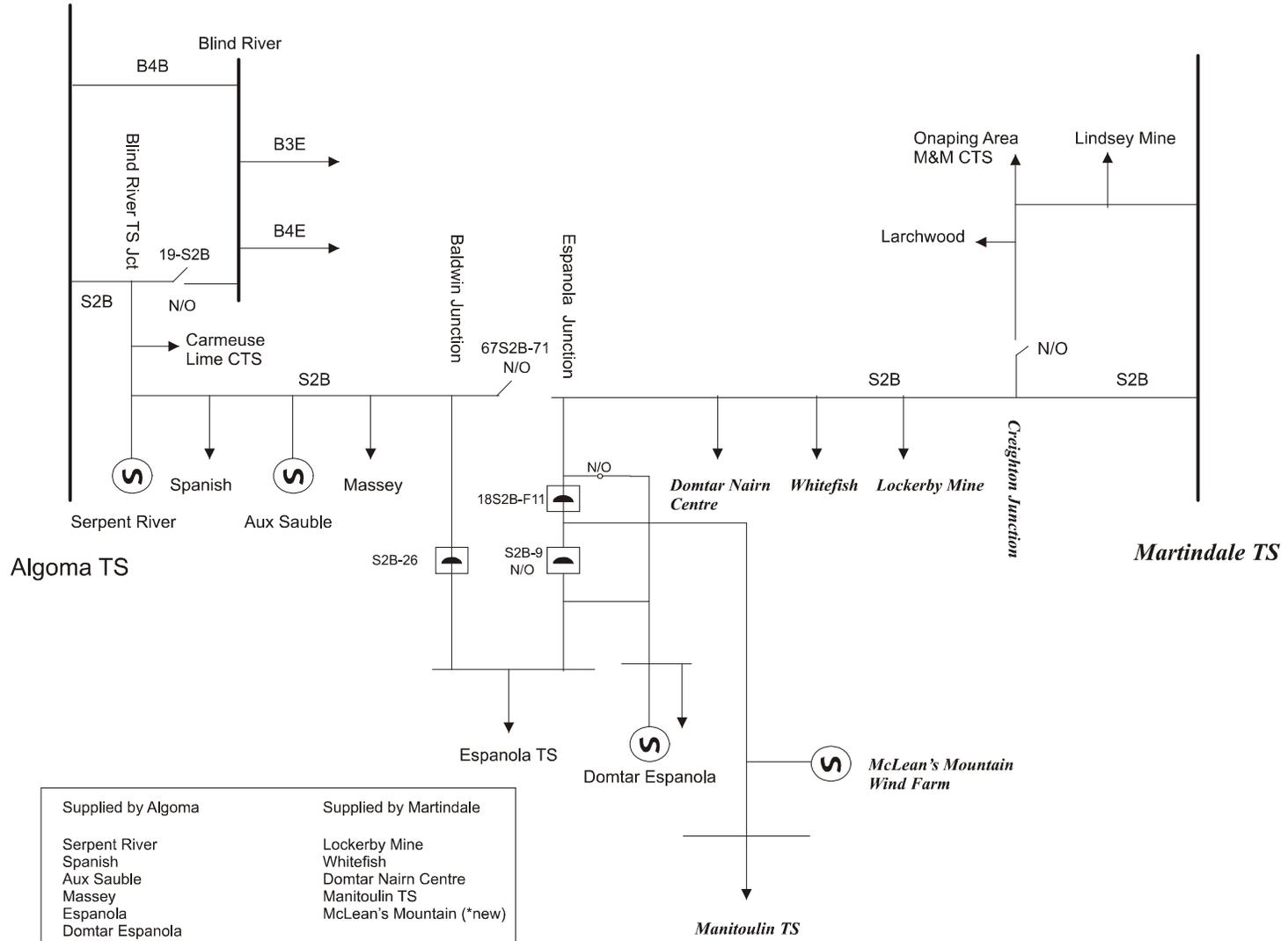


Figure 2: Overview of S2B Configuration

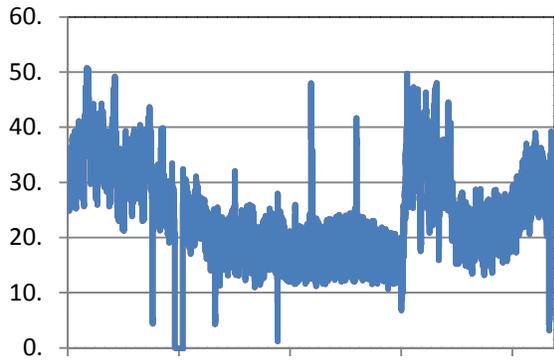


Figure 3: MW flow on S2B at Martindale

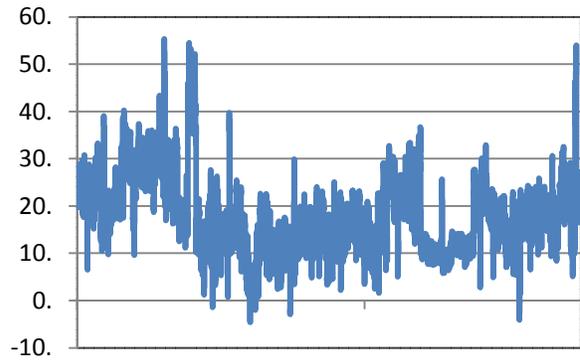


Figure 4: MW flow on S2B at Algoma

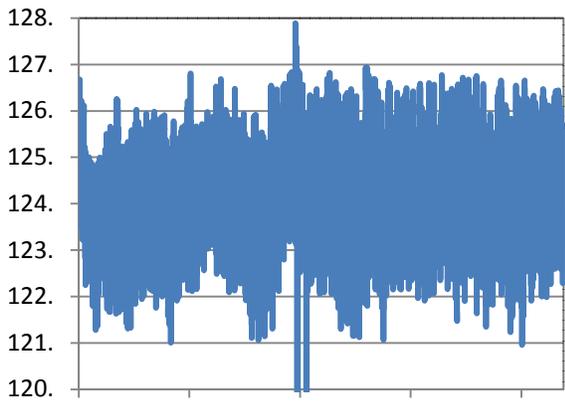


Figure 5: Voltage at Martindale TS 115 kV

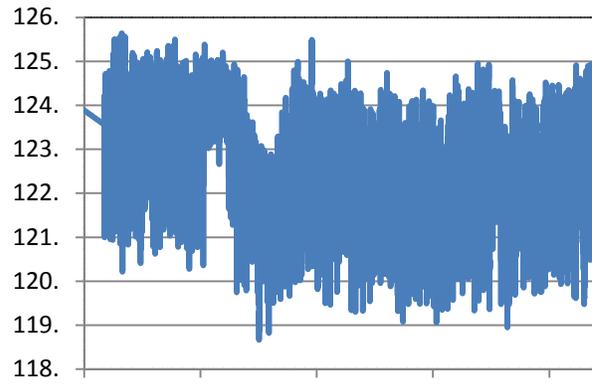


Figure 6: Voltage at Algoma TS 115 kV

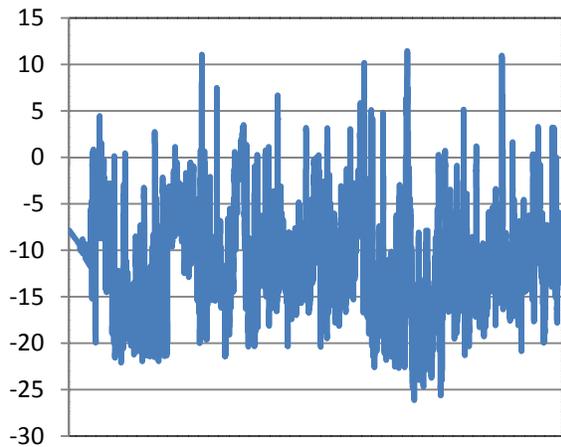


Figure 7: Domtar Espanola Load (MW)

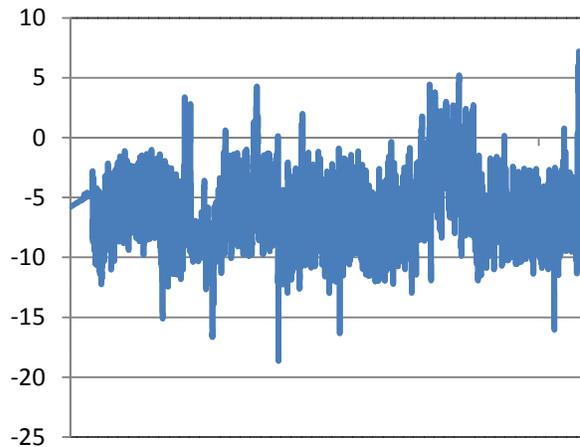
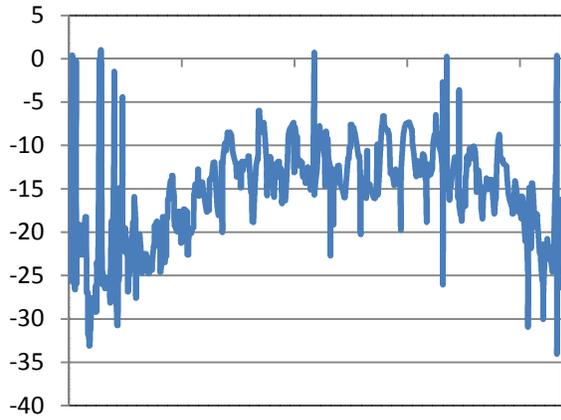
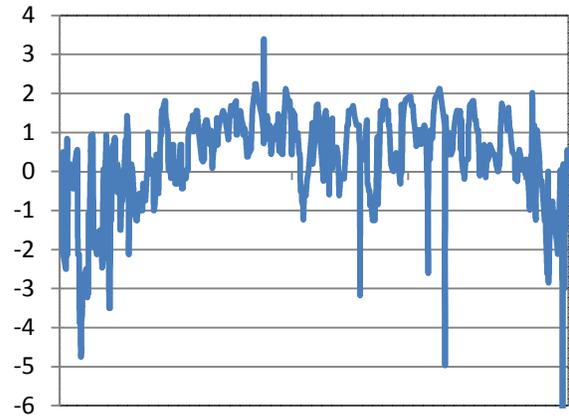


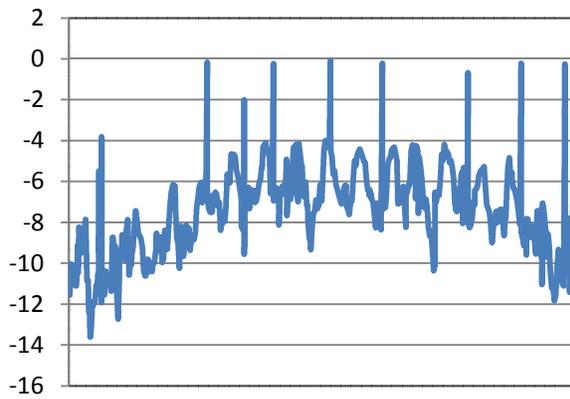
Figure 8: Domtar Espanola Load (Mvar)



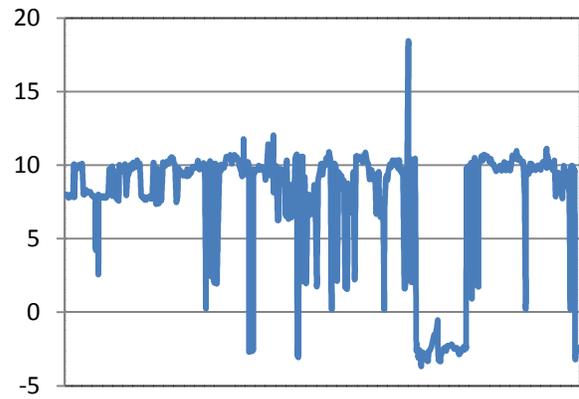
**Figure 9: Manitoulin Load (MW)**



**Figure 10: Manitoulin Load (Mvar)**



**Figure 11: Espanola Load (MW)**



**Figure 12: Espanola Load (Mvar)**

The following can be observed:

Martindale TS		Algoma TS	
Average voltage	124 kV	Average voltage	122 kV
S2B MW load (max)	47 MW	S2B MW load (max)	53 MW
S2B MW load (min)	9 MW	S2B MW load (min)	-2 MW

	Domtar Espanola	Manitoulin	Espanola
Maximum MW Load	25 MW	34 MW	4 MW
Minimum MW Load	0 MW	6 MW	14 MW
Maximum Mvar Load	-3 Mvar	-2 Mvar	-11 Mvar
Minimum Mvar Load	13 Mvar	4 Mvar	3 Mvar

The above quantities were accounted for when determining the study scenarios and assumptions for the System Impact Assessment. For the list of assumptions, please refer to Section 6.1 of this report.

## 4. Data Verification

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### 4.1 Tap Line

The line tap consists of a 1.5 km underwater cable and a 10 km overhead transmission line.

Specifications of line tap provided by the connection applicant are listed below.

	Underwater Cable	Overhead Transmission Line
Voltage	115 kV	115 kV
Length	1.5 km	10 km
Impedance (pu on 118.05 kV, 100 MVA)	0.09015+j0.345 ohms 0.00065+j0.00248 pu	0.576 +j4.9135 ohms 0.00413+j0.03526 pu
Charging (pu on 118.05 kV, 100 MVA)	9.615x10 <sup>-5</sup> mhos 0.01340 pu	3.364x10 <sup>-5</sup> mhos 0.00469 pu

### 4.2 Generator

Vestas V90 1.8 MW Vestas Converter Unity System  
690 3 phase 60 Hz Asynchronous with wound rotor  
Unity power factor

Transformation	0.69/34.5 kV
Rating	1.9 MVA
Impedance	0.078 on a base of 1.9 MVA
Configuration	3 phase, high side: delta, low side: wye grounded

### 4.3 Transformer

Specifications for the 34.5/125 kV step-up transformer is listed below.

Transformation	125/34.5 kV
Rating	37/50/66 MVA ONAN/ONAF/ONAF
Impedance	0.10 pu based on 37 MVA
Configuration	3 phase, high side: wye grounded, low side: delta
Tapping	on-load tap changers at HV ( $\pm 11$ kV in 16 steps)

## 4.4 Circuit Breakers and Switches

Specifications of the isolation devices provided by the connection applicant are listed below. The incomplete data must be provided to the IESO.

<b>Breakers and switches</b>	<b>LV</b>	<b>HV</b>
Rated line-to-line voltage	38 kV	132 kV
Interrupting time (ms)	50 ms	50 ms
Rated continuous current (A)	unknown	1200 A
Rated short circuit breaking current (kA)	unknown	unknown

The interrupting time of the 115 kV breaker is 50 ms, which satisfies the Transmission system code interrupting requirement of  $\leq 5$  cycles.

The applicant has not provided the symmetrical rated short circuit breaking current of the 115 kV breaker. As per the Transmission System Code, the 115 kV breaker must be able to sustain the fault levels in the area.

## 4.5 Collector System

The 34.5 kV collector system equivalent circuit impedance provided by the connection applicant are listed as follows:

<b>Feeder #</b>	<b>Equivalent Impedance (Ohm)</b>	<b>Equivalent Impedance(pu)</b>	<b>Charging (Mhos, pu)</b>
1	0.569+j1.369	0.04781+j0.11502	$7.49 \times 10^{-5}$ , 0.00089
2	0.569+j1.369	0.04781+j0.11502	$7.49 \times 10^{-5}$ , 0.00089
3	0.569+j1.369	0.04781+j0.11502	$7.49 \times 10^{-5}$ , 0.00089

Per unit data are based on 100 MVA & 34.5 kV.

– End of Section –

## 5. Fault Level Assessment

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Fault level studies were completed by Hydro One to examine the effects of McLean's Mountain on fault 'levels at existing facilities in the area. Studies were performed to analyze the fault levels with and without McLean's Mountain and other proposed wind farms in the surrounding area. The short circuit study was carried out with the following facilities and system assumptions:

Niagara, South West, West Zones

- All hydraulic generation
- 6 Nanticoke
- 2 Lambton
- Brighton Beach (J20B/J1B)
- Greenfield Energy Centre (Lambton SS)
- St. Clair Energy Centre (L25N & L27N)
- East Windsor Cogen (E8F & E9F) + existing Ford generation
- TransAlta Sarnia (N6S/N7S)
- Imperial Oil (N6S/N7S)
- Thorold GS (Q10P)

Central, East Zones

- All hydraulic generation
- **6 Pickering units**
- **4 Darlington units**
- **4 Lennox units**
- GTAA (44 kV buses at Bramalea TS and Woodbridge TS)
- Sithe Goreway GS (V41H/V42H)
- Portlands GS (Hearn SS)
- Kingston Cogen
- TransAlta Douglas (44 kV buses at Bramalea TS)

Northwest, Northeast Zones

- All hydraulic generation
- 1 Atikokan
- 2 Thunder Bay
- NP Iroquois Falls
- AP Iroquois Falls
- Kirkland Lake
- 1 West Coast (G2)
- Lake Superior Power

- Terrace Bay Pulp STG1 (embedded in Neenah paper)

#### Bruce Zone

- 8 Bruce units (Bruce G1 and Bruce G2 maximum capacity @ 835 MW)
- 4 Bruce B Standby Generators

#### All constructed wind farms including

- Erie Shores WGS (WT1T)
- Kingsbridge WGS (embedded in Goderich TS)
- Amaranth WGS – Amaranth I (B4V) & Amaranth II (B5V)
- Ripley WGS (B22D/B23D)
- Prince I & II WGS (K24G)
- Underwood (B4V/B5V)
- Kruger Port Alma (C24Z)
- Wolf Island (injecting into X4H)

#### **New Generation Facilities:**

##### *Committed wind generation*

- Greenwich Wind Farm (M23L and M24L)
- Gosfield Wind Project (K2Z)
- Kruger Energy Chatham Wind Project (C24Z)
- Raleigh Wind Energy Centre (C23Z)
- Talbot Wind Farm (W45LC)
- Greenfield South GS (R24C)
- Halton Hills GS (T38B/T39B)
- Oakville Generating Station (B15C/B16C)
- York Energy Centre (B82V/B83V)
- Island Falls (H9K)
- Becker Cogeneration (M2W)
- Wawatay G4 (M2W)
- Beck 1 G9: increase capacity to 68.5 MVA (Beck #1 115 kV bus)
- Lower Mattagami Expansion
- All renewable generation projects awarded FIT contracts were included

#### **Transmission System Configuration**

##### Existing system with the following upgrades:

- Bruce x Orangeville 230 kV circuits up-rated
- Burlington TS: Rebuild 115 kV switchyards
- Leaside TS to Birch JCT: Build new 115 kV circuit. Birch to Bayfield: Replace 115 kV cables.
- Uprate circuits D9HS, D10S and Q11S
- Hurontario SS in service with R19T+V41H open from R21T+V42H (230 kV circuits V41H and V42H extended and connected from Cardiff TS to Hurontario SS). Hurontario SS to Jim Yarrow 2x3km 230 kV circuits in-service
- Cherrywood TS to Claireville TS: Unbundle the two 500 kV super-circuits (C551VP & C550VP)

- Allanburg x Middleport 230 kV circuits (Q35M and Q26M) installed
- Claireville TS: Reterminate circuit 230 kV V1RP to Parkway V71P Reterminate circuit 230 kV V72R to Cardiff(V41H)
- One 250 Mvar (@ 250 kV) shunt capacitor bank installed at Buchanan TS
- LV shunt capacitor banks installed at Meadowvale
- 1250 MW HVDC line ON-HQ in service
- Tilbury West DS second connection point for DESN arrangement using K2Z and K6Z
- Second 500kV Bruce-Milton double-circuit line in service. Double-circuit line from the Bruce Complex to Milton TS with one circuit originating from Bruce A and the other from Bruce B
- Windsor area transmission reinforcement:
  - 230 kV transmission line from Sandwich JCT (C21J/C22J) to Lauzon TS
  - New 230/27.6 DESN, Leamington TS, that will connect C21J and C22J and supply part of the existing Kingsville TS load
- Replace Keith 230/115 kV T11 and T12 transformers
- 115 kV circuits J3E and J4E upgrades
- Woodstock Area transmission reinforcement:
  - Karn TS in service and connected to M31W & M32W at Ingersol TS
  - W7W/W12W terminated at LaFarge CTS
  - Woodstock TS connected to Karn TS
- Nanticoke and Detweiler SVCs
- Series capacitors at Nobel SS in each of the 500 kV circuits X503 & X504E to provide 50% compensation for the line reactance
- Lakehead TS SVC
- Porcupine TS & Kirkland Lake TS SVC
- Porcupine TS: Install 2x125 Mvar shunt capacitors
- Essa TS : Install 250 Mvar shunt capacitor
- Hanmer TS: Install 149 Mvar shunt capacitor
- Pinard TS: Install 2x30 Mvar LV shunt capacitors
- Upper Mattagami expansion
- Fort Frances TS: Install 22 Mvar moveable shunt capacitor
- Dryden TS: Install shunt capacitors
- Lower Mattagami Expansion – H22D line extension from Harmon to Kipling.

### *System Assumptions*

- Lambton TS 230 kV operated open
- Claireville TS 230 kV operated open
- Leaside TS 230 kV operated open
- Leaside TS 115 kV operated open
- Middleport TS 230 kV bus operated open
- Hearn SS 115 kV bus operated open – as required in the Portlands SIA
- Napanee TS 230 kV operated open
- Cherrywood TS north & south 230kV buses operated open
- Cooksville TS 230 kV bus operated open
- Richview TS 230 kV bus operated open
- All capacitors in service
- All tie-lines in service and phase shifters on neutral taps
- Maximum voltages on the buses

The following table summarizes the symmetric and asymmetrical fault levels near McLean's Mountain and corresponding breaker ratings under normal operating conditions. Under normal operating conditions, Manitoulin load and McLean's Mountain wind farm would be supplied from Martindale.

Short Circuit Levels: Normal S2B Operating Conditions										
Bus	Wind Farm O/S				Wind Farm I/S				Breaker Ratings	
	Total Fault Current (kA)				Total Fault Current (kA)					
	Symm		Asymm		Symm		Asymm		Symm (kA)	Asymm (kA)
	3-ph fault	L-G fault	3-ph fault	L-G fault	3-ph fault	L-G fault	3-ph fault	L-G fault		
Martindale 115 kV	14.306	17.462	16.679	21.430	14.755	17.931	17.155	21.940	19.20	22.70
Martindale 230 kV	17.552	18.993	20.399	23.032	17.802	19.191	20.684	23.268	41.10	46.20
Algoma 115 kV	10.127	11.876	11.275	13.862	10.138	11.892	11.286	13.879	39.30	45.50
Algoma 230 kV	8.140	7.394	9.320	9.180	8.155	7.416	9.337	9.203	39.40	46.20
Domtar Espanola 115 kV	2.482	1.229	2.787	1.233	2.482	1.232	2.788	1.236	7.3	7.9
McLean's Mountain 115 kV	N/A	N/A	N/A	N/A	1.829	1.861	1.941	2.064	unknown	unknown

The results show that the fault levels in the surrounding area of the McLean's Mountain wind farm area are within the symmetrical and asymmetrical breaker ratings. Fault levels increase slightly when the wind farm is in service with the highest increase at Martindale 115 kV of 0.513 kA (Asymmetrical current for L-G fault). It should also be noted that the asymmetrical current for a L-G fault is marginally within the asymmetrical breaker capability at Martindale 115 kV ( $21.943/22.70 = 0.97$ ).

A sensitivity study was performed to determine the short circuit levels at Martindale 115 kV for the condition in which S2B is supplied entirely by Martindale. The following table summarizes the symmetric and asymmetrical fault levels with and without McLean's Mountain wind farm in-service.

Short Circuit Levels: S2B supplied entirely Martindale 115 kV										
Bus	Wind Farm O/S				Wind Farm I/S				Breaker Ratings	
	Total Fault Current (kA)				Total Fault Current (kA)					
	Symm		Asymm		Symm		Asymm		Symm (kA)	Asymm (kA)
	3-ph fault	L-G fault	3-ph fault	L-G fault	3-ph fault	L-G fault	3-ph fault	L-G fault		
Martindale 115 kV	14.949	18.095	17.357	22.119	15.185	18.355	17.593	22.380	19.20	22.70

As shown from the results, if S2B is supplied by Martindale and with the McLean's wind farm in-service, the fault levels at Martindale are still within the interrupting capabilities of the Martindale 115 kV breakers ( $22.380/22.70 = 0.99$ ). Hydro One has indicated that the fault levels presented for Martindale may be conservative as Martindale 115 kV breakers are 4 cycle breakers, while contact parting times characteristic of 2 cycle 115 kV breakers were assumed for the analysis.

Therefore, it can be concluded that the increases in fault levels due to the proposed McLean's Mountain wind farm will not exceed the interrupting capabilities of the existing breakers on the IESO-controlled grid.

## 6. System Impact Studies

This connection assessment was carried out to identify the effect of the proposed facility on thermal loading of transmission interfaces in the vicinity, the system voltages for pre/post contingencies, the ability of the facility to control voltage and the transient performance of the system.

### 6.1 Assumptions and Background

Various peak and minimum load conditions within the 115 kV pocket bounded by Martindale T21+T22+T23 and Algoma T5+T6 were studied for this assessment. For maximum load conditions, winter 2013 peak loads along S2B were used and for minimum load conditions 2009 minimum load values along S2B were used. The following describes the study scenarios, system conditions and modeling assumptions.

#### Study Scenarios

A total of four scenarios were studied for this assessment:

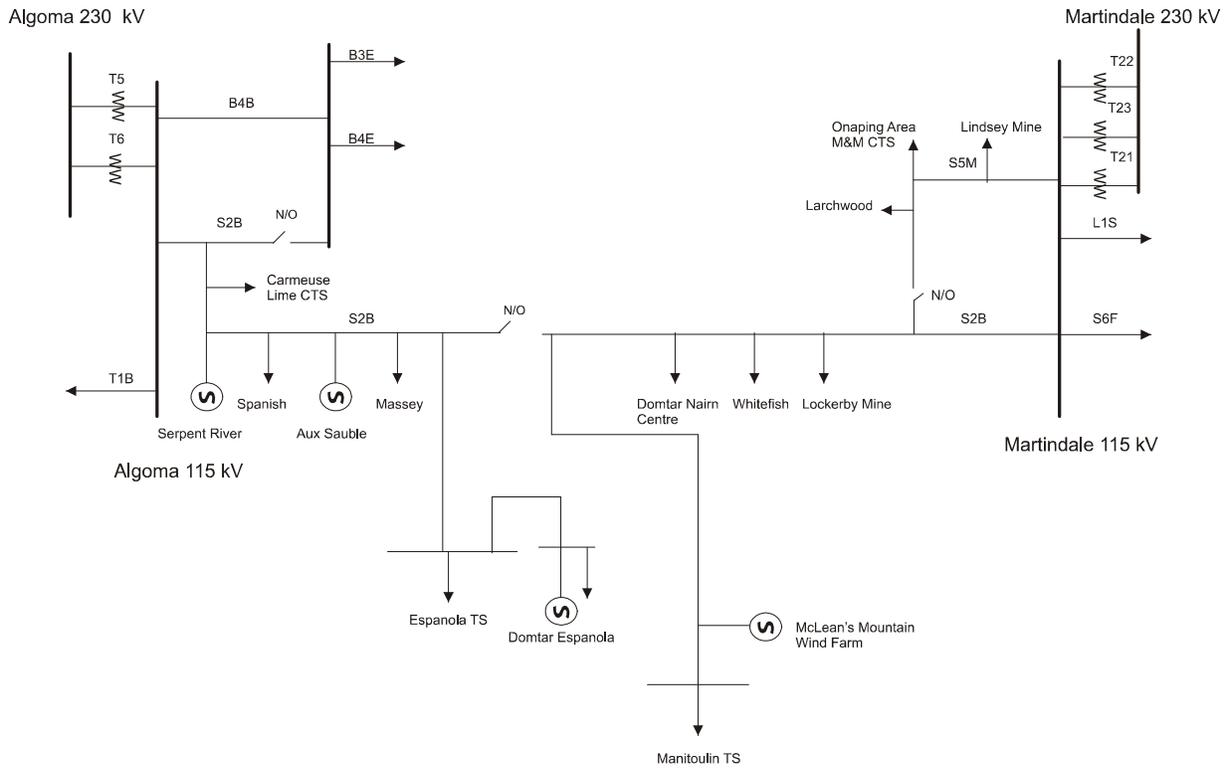
- S1 – Normally operated S2B configuration at maximum S2B load
- S2 – Normally operated S2B configuration at minimum S2B load
- S3 - Manitoulin and McLean’s Wind Farm transferred to S2B Algoma supply at maximum S2B load
- S4 - Manitoulin and McLean’s Wind Farm transferred to S2B Algoma supply at minimum S2B load

The following table summarizes the various S2B flows, loads and interface values for each of the scenarios. In all cases, the Flow South interface was maintained at the post-Lower Mattagami redevelopment limit of 2050 MW and the Mississagi Flow East interface was maintained near the limit of 650 MW.

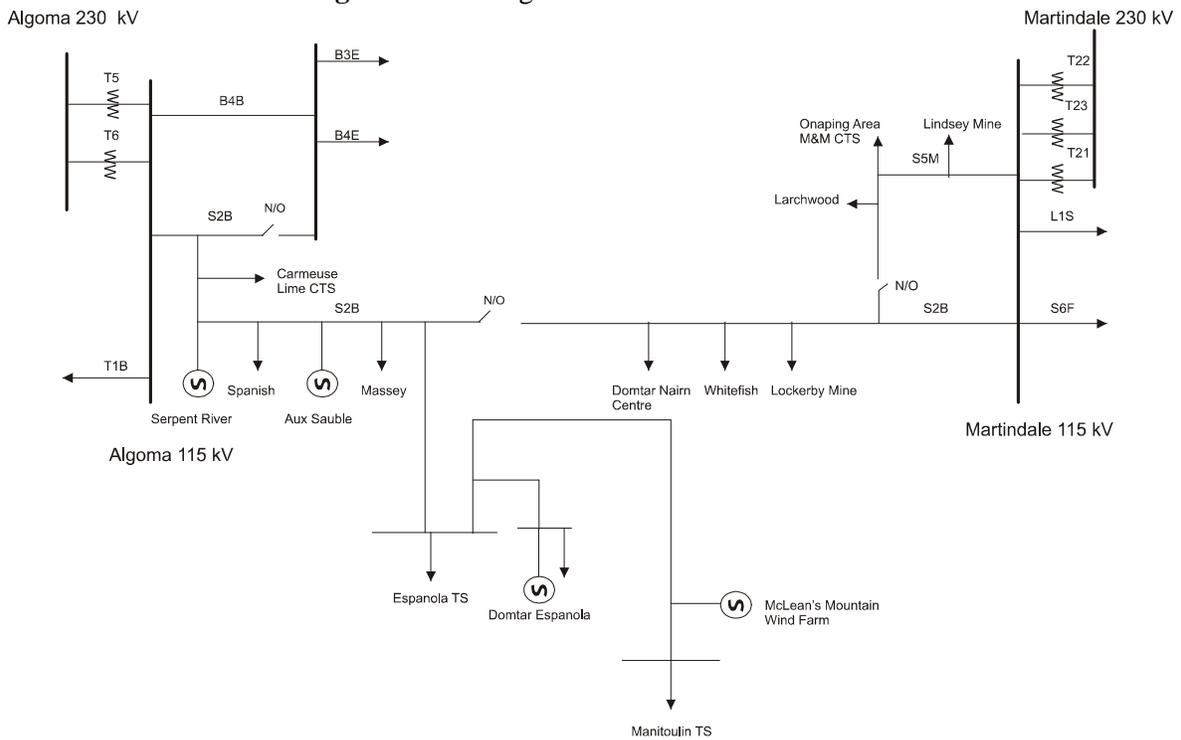
Case	S2B Flows (MW)		Loads and Embedded Generation (MW)						Interfaces (MW)		Flows (MW) <sup>1</sup>	
	At Martindale	At Algoma	Manitoulin		Espanola		Domtar Espanola <sup>1</sup>		Flow South	Mississagi Flow East	Martindale T21+T22+T23	Algoma T6+T5
			Load	Gen	Load	Gen	Load	Gen				
S1	-12	43	38	4	15	4.54	52	25	2050	661.5	82	12.2
S2	-37.5	5.8	6	4	4	4.54	42	41	2050	661.9	-33.9	-8.4
S3	12	17.9	38	4	15	4.54	52	25	2050	661.5	105.3	-13.1
S4	12.6	44.2	6	4	4	4.54	42	41	2050	661.7	14.3	-58.7

Notes: (1) Flows measured at 230 kV side of transformer

Illustrations of these scenarios can be seen in Figures 13 and 14.



**Figure 13: Configuration: S1 and S2 Scenarios**



**Figure 14: Configuration: S3 and S4 Scenarios**

### System Conditions

All transmission system elements were in service.

Stations along the following S2B stations were set to operate at the following power factors at the loads for each of the scenarios. These power factors were chosen based on 2009 historical active and reactive power data obtained at similar load levels.

S2B Station	Max Load Scenario S1 and S3	Minimum Load Scenario S2 and S4
Espanola TS	0.97 lagging	0.71 lagging
Domtar Espanola TS	0.99 lagging	0.12 lagging
Manitoulin TS	0.98 lagging	0.95 lagging

The rest of the S2B stations not mentioned above were set to operate at 0.9 power factor.

The demand in the Northeast was scaled to the 2013 extreme weather summer coincident peak demand of 1220 MW (Forecasted normal weather coincident peak is 1200 MW).

### Modeling Assumptions

For both load flow and transient studies, the IESO 2010 summer base case was used as a starting point. The Northeast demand was first scaled to the 2013 extreme weather coincident peak. Afterwards, the 115 kV pocket bounded by Martindale T22+T23+T21 and Algoma T5+T6 was scaled to either maximum or minimum load values to produce scenarios S1 to S4. The following other changes were implemented into the base case:

- Lower Mattagami generation expansion (CAA 2006-239)
- Nobel SS Series Compensation (CAA 2004-160)
- Addition of capacitors at Porcupine, Hanmer, Pinard (CAA 2008-352)
- Addition of SVC at Kirkland Lake and Porcupine (CAA 2006-223)
- Kenora Power/Angle Relay Deregistration (CAA 2009-EX448)
- Loads were represented by *constant MVA loads* for thermal and voltage analysis and as *voltage dependent loads* with P being modeled as 50% constant current and 50% constant impedance ( $P \propto V^{1.5}$ ) and Q being modeled as 100% constant impedance ( $Q \propto V^2$ ) for transient analysis.
- To meet the IESO dynamic reactive capability requirements, a - 19 / +29 Mvar SVC was assumed to be connected at the 34.5 kV collector bus. For more details of this requirement, please refer to Section 6.4 of this report.
- The PTI Model CSVGN1 was used as the as an assumed SVC representation for the transient study. Figure 15 shows the block diagram and generic values assumed for this model.

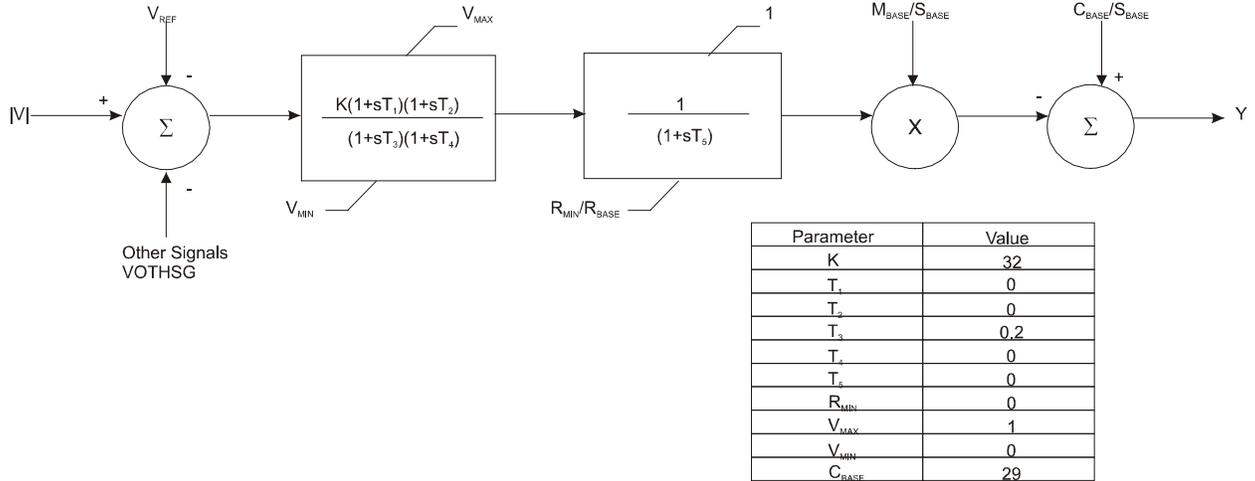


Figure15: Block diagram of Assumed SVC at McLean’s Wind Farm

## 6.2 Protection Impact Assessment

A Protection Impact Assessment (PIA) was completed by Hydro One to examine the impact of the new generators on existing transmission system protections. The existing protections for S2B at Martindale 115 kV and Algoma 115 kV were described in the PIA report and the proposed protection settings were analyzed based on preliminary fault calculation. Proposed protection solutions and recommendations were also presented.

The installation of Mclean’s Mountain will result in the need for protection and setting revisions at Martindale TS and Algoma TS and addition of new telecommunication links between the new McLean’s Mountain Wind facility and the terminal stations of S2B. A copy of the Protection Impact Assessment can be found in **Appendix C** of this report.

The IESO concluded that the proposed protection adjustments have no material adverse impact on the IESO-controlled grid.

## 6.4 Reactive Power Compensation

Market Rules require that generators inject or withdraw reactive power continuously (i.e. dynamically) at a connection point up to 33% of its rated active power at all levels of active power output except where a lesser continually available capability is permitted by the IESO.

The Market Rules accepts that a generating unit with a power factor range of 0.90 lagging and 0.95 leading at rated active power connected via a main output transformer impedance not greater than 13% based on generator rated apparent power provides the required range of dynamic power at the connection point.

Typically, the impedance between the WTG and the connection point is larger than 13%. However, provided the WTG has the capability to provide a reactive power range of 0.90 lagging power factor and 0.95 leading power factor at rated active power, the IESO accepts the WF to compensate for the full

reactive power requirement range at the connection point with switchable shunt admittances (e.g. capacitors and reactors). Where the WTG technology has no capability to supply the full dynamic reactive power range at its terminal, the shortfall has to be compensated with dynamic reactive power devices. It has been assumed for the System Impact Assessment that a SVC would be installed at McLean's Mountain.

This section of the SIA indicates how the McLean's Mountain wind farm can meet the MR requirements regarding reactive power capability, but the applicant is free to deploy any other solutions which result in its compliance with the MR.

It is the applicant's responsibility to ensure that the WF has the capability to meet the MR requirement at the connection point and be able to confirm this capability during the commissioning tests.

### 6.4.1 Dynamic Reactive Power Compensation

The following table summarizes the IESO's adequate level of reactive power from each generator and the available capability of Vestas V90 1.8 MW VCUS 60 Hz wind turbine generators, at rated terminal voltage and rated power. As shown, the Vestas V90 operates at unity power factor and therefore does not have the dynamic reactive capability of +0.87 Mvar and -0.59 Mvar required for each turbine. As a facility, McLean's Mountain is required to have a dynamic reactive power range of 28.71 Mvar (0.87x33) and -19.47 Mvar (-0.59 x 33).

	Rated Voltage	Rated Active Power	Reactive Power Capability	Power Factor
IESO Requirements	690 V	1.8 MW	$Q_{\max} = 1.8 \times \tan [\cos^{-1} (0.9)] = 0.87 \text{ Mvar}$	0.9 lag
			$Q_{\min} = 1.8 \times \tan [\cos^{-1} (0.95)] = 0.59 \text{ Mvar}$	0.95 lead
Vestas V90 Capability	690 V	1.8 MW	$Q_{\max} = 0 = 0 \text{ Mvar}$	Unity
			$Q_{\min} = 0 = 0 \text{ Mvar}$	Unity

A dynamic reactive power device with a capability of at least **-19.5 / +29 Mvar** has to be installed at the collector bus to compensate for the dynamic reactive power capability of the facility.

### 6.4.2 Static Reactive Power Compensation

In addition to the dynamic reactive power requirement identified above, the WF has to compensate for the reactive power losses within the facility to ensure that it has the capability to inject or withdraw reactive power up to 33% of its rated active power at the connection point. In the case of McLean's Mountain, the facility will need to have the capability to inject or withdraw 19.6 Mvar (59.4 x 0.33) at the connection point.

As mentioned above, the IESO accepts this compensation to be made with switchable shunt admittances.

Load flow studies were performed to calculate the need for static reactive compensation, based on the equivalent parameters for the WF provided by the connection applicant.

The reactive power capability in lagging p.f. of the generation facility was assessed under the following assumptions:

- A desired voltage of 123 kV at the connection point;
- maximum active power output from the equivalent WTG;
- maximum reactive power output (lagging power factor) from a dynamic reactive device connected to the collector bus;
- the main step-up transformer ULTC is available to adjust the LV voltage as close as possible to 1 pu voltage.

The following table shows the capacitor requirement at two different levels of SVC output:

SVC Output (Mvar)	Collector Bus Voltage (kV)	Static Compensation (Mvar)	115/34.5 kV Tap Position (kV)	PCC Reactive Power injection (Mvar)	PCC Voltage (kV)
35.4	36.6 (1.06 pu)	0	125	20.7	123
29	35.1 (1.02 pu)	7	131	20.2	123

The reactive power capability in leading p.f. of the generation facility was assessed under the following assumptions:

- typical voltage of 123 kV at the connection point;
- minimum (zero) active power output from the equivalent WTG;
- maximum reactive power consumption (leading power factor) from a dynamic reactive device, connected to the collector bus;
- the main step-up transformer ULTC is available to adjust the LV voltage as close as possible to 1 pu voltage.

The following table shows the reactor requirement at a SVC output of -21 Mvar:

SVC Output (Mvar)	Collector Bus Voltage (kV)	Static Compensation (Mvar)	115/34.5 kV Tap Position (kV)	PCC Reactive Power injection (Mvar)	PCC Voltage (kV)
-21	35.0 kV (1.01 pu)	0 MX	114	-20.1	123

- It is therefore recommended that the connection applicant installs a dynamic reactive compensation device with an output range of +29/-21 Mvar and a 7 Mvar static capacitor at the collector bus.
- Alternatively, the connection applicant can install a SVC with an output range of +35.4/-21 Mvar. With this output range, a static capacitor is not needed.

The IESO's reactive power calculation used the equivalent electrical model for the WTG and collector feeders as provided by the connection applicant. It is very important that the WF has a proper internal design to ensure that the WTG are not limited in their capability to produce active and reactive power due to terminal voltage limits or other facility's internal limitations. For example, it is expected that the transformation ratio of the WTG step up transformers will be set in such a way that it will offset the voltage profile along the collector, and all the WTG would be able to contribute to the reactive power production of the WF in a shared amount.

Based on the equivalent parameters for the WF provided by the connection applicant, an amount of +7 Mvar of static reactive power compensation is required to be installed at the WF collector bus to meet the reactive power requirements at the connection point.

The connection applicant has the obligation to ensure that the WF design and the reactive power compensation system takes into account the real electrical parameters and real limitations within the WF facility.

It is necessary to supply the static reactive compensation in small enough steps to have operational flexibility over the entire range of active power output from the wind turbines. The amount of static reactive power compensation should be shared between at least two switchable shunt capacitors.

### 6.4.3 Static Reactive Power Switching

A switching study was carried out to investigate the effect of the new LV shunt capacitor banks / reactor on the voltage changes. It was assumed that the largest capacitor step size is 3.5 Mvar. To reflect the reasonable restrictive system conditions, the voltage change study assumed that the Martindale T22 transformer was out of service pre-switching.

Capacitor at LV kV bus	LV bus voltage	ICG connection point
Pre-switching	34.5 kV	122.1 kV
Post-switching	35.6 kV	124.6 kV
$\Delta V$	3.2%	2.00%

The IESO requires the voltage change on a single capacitor switching to be no more than 4 % at the any point in the ICG. The results show that switching a single capacitor of 3.5 Mvar produces less than 4 % voltage change at the connection point. A subsequent study with the switching of a 7 Mvar capacitor shows that the ICG connection point voltage would reach 127.1 kV, which translates to a 4.1% voltage change. Hence, the capacitor bank is required to have two steps of 3.5 Mvar each in order to observe the system voltage change requirements on shunt switching.

The IESO has no restrictions on voltage changes within the WF facility; however, if the equipment within the proposed facility is sensitive to voltage changes, small enough shunt capacitor size steps have to be designed to cater to the facility needs.

## 6.5 Reactive Power Management System

If the generation facility connects to the IESO-controlled grid, the IESO requires that the facility assists maintaining voltage in the high voltage system. It is expected that the wind farm controls the voltage at a point as close as possible to the connection point to values specified by the IESO. This requires that wind farms

possess the ability to supply sufficient dynamic reactive power to the high voltage system during voltage declines.

The generation facility shall regulate automatically voltage at a point whose impedance (based on rated apparent power and rated voltage) is not more than 13% from the highest voltage terminal based within  $\pm 0.5\%$  of any set point within  $\pm 5\%$  of rated voltage. If the AVR target voltage is a function of reactive output, the slope  $\Delta V / \Delta Q_{max}$  shall be adjustable to 0.5%.

The Reactive Power Management System must coordinate the voltage control process. The IESO recommends the following two voltage control scheme options:

*Option #1*

- (1) The dynamic reactive compensation device controls the PCC voltage to a reference value. A control slope is applied for reactive power sharing with adjacent generators.
- (2) Capacitor banks are automatically switched in/out to regulate the overall dynamic reactive compensation device to around zero output.
- (3) WF main transformer ULTC is automatically adjusted to regulate the collector bus voltage (LT bus voltage) such that it is within normal range;

*Option #2*

- (1) The capacitor banks are automatically switched in/out according to the WF active power output. A sample capacitor switching scheme is shown in the following table.

P - overall WF active power output	Capacitor banks to be switched on
$0 < P < P_1$	(No capacitor)
$P_1 < P < P_2$	$C_1$
$P_2 < P < P_3$	$C_1 + C_2$
.....	.....
$P_N < P < P_{MAX}$	$C_1 + C_2 + \dots + C_N$

- (2) The dynamic reactive compensation device controls the PCC voltage to a reference value. A control slope is applied for reactive power sharing with adjacent generators.
- (3) WF main transformer ULTC is automatically adjusted to regulate the collector bus voltage (LT bus voltage) such that it is within normal range;

The proponent has indicated to the IESO that they will implement the “Option 2” voltage control scheme.

Prior to McLean’s Mountain’s in-service date, the proponent must submit a “Voltage Control Document” describing the functionalities of the Reactive Power Management System, including the coordination between the automatic capacitor switching and dynamic reactive device production to control the voltage at a desired point. This document must also contain the settings of the automatic capacitor switching scheme. If the Reactive Power Management system document is unavailable, the IESO requires the Reactive Power Management System to control the collector bus.

The proponent must also demonstrate in this document that the functionalities of the Reactive Power Management System will be in line with the “Option 2” control scheme described above.

## 6.6 Thermal Analysis

The assessment examined the effect the proposed facility would have on the thermal loadings of the Algoma area transmission elements.

The *Ontario Resource and Transmission Assessment Criteria* requires that all line and equipment loads be within their continuous ratings with all elements in service, and within their long-term emergency ratings with any element out of service. Lines and equipment may be loaded up to their short-term emergency ratings immediately following the contingencies to effect re-dispatch, perform switching, or implement control actions to reduce the loading to the long-term emergency ratings.

Hydro One provided the Continuous, Long Term Emergency and Short Term Emergency planning thermal ratings for various circuits under summer weather conditions. The algorithm for deriving these ratings is as follows:

- *Ambient conditions*: 30°C temperature , 4 km/hr wind speed, daytime
- *Continuous*: Rating obtained at the lesser of conductor temperature of 93 °C or sag temperature
- *Long Term Emergency*: Rating obtained at the lesser conductor temperature of 127°C or sag temperature
- *Short Term Emergency*: Rating obtained at the sag temperature with a pre-contingency loading of 100% of the continuous rating.

Planning ratings for transformers were obtained from the Hydro One secure website. Planning ratings provided by Hydro One were compared against operational ratings. In cases where the operational rating of an element was found to be more limiting than its planning rating, the operational rating was used instead for the thermal analysis.

The following table summarizes the ratings for various circuits and transformers monitored for the thermal analysis. Unless indicated, the values provided are assumed to be planning ratings.

Thermal Ratings for Circuits and Transformers						
Element	Monitored Element		Rating			
	From	To	Continuous	Long Term Emergency	Short Term Emergency	
X26S	Hanmer_ts 220	Hanmer_jx26s220	1420 A	1420 A	1420 A	
	Hanmer_jx26s220	Martind_jx26220	2840 A	2840 A	2840 A	
	Martindale 220	Martind_jx26220	1420 A	1420 A	1420 A	
X25S	Hanmer_ts 220	Danmer_jx25s220	1420 A	1420 A	1420 A	
	Hanmer_jx25s220	Martind_jx25220	2280 A	2280 A	2280 A	
	Martindale 220	Martind_jx25220	1420 A	1420 A	1420 A	
L1S	Martindale 118	Sudbury_j 118	620 A	790 A	840 A	
	Coniston_ts 118	Sudbury_j 118	620 A	790 A	840 A	
	Coniston_ts 118	Warren_ds 118	620 A	790 A	840 A	
	Verner_j 118	Warren_ds 118	620 A	790 A	840 A	
	Cryst_fls_ss118	Verner_j 118	620 A	790 A	840 A	
S2B	C_cliff_js2b118	Martindale 118	495 A *	550 A	550 A	
	C_cliff_js2b118	Creighton_j 118	520 A	520 A	520 A	
	Creighton_j 118	Vermillion_j118	490 A	490 A	500 A	
	Ethel_lake_j118	Vermillion_j118	620 A	790 A	840 A	
	Ethel_lake_j118	Turbine_j 118	389 A *	390 A	390 A	
	Domt_nairn_j118	Turbine_j 118	440 A	440 A	450 A	
	Domt_nairn_j118	Espanola_j 118	440 A	440 A	450 A	
	Espanola_j 118	Eddy_tap_j 118	370 A	430 A	440 A	
	Espanola_j_a118	Eddy_tap_j 118	370 A	430 A	440 A	
	Algoma_ts 118	Blind_rivr_j118	375 A*	420 A	420 A	
	Carmeuse_j 118	Blind_rivr_j118	375 A*	420 A	420 A	
	Carmeuse_j 118	Serpent_rivrj118	375 A*	420 A	420 A	
	Cutler_j_s2b118	Serpent_rivrj118	375 A*	420 A	420 A	
	Cutler_j_s2b118	Spanish_j 118	375 A*	420 A	420 A	
	Camern_fls_j118	Spanish_j 118	375 A*	420 A	420 A	
	Camern_fls_j118	Massey_j 118	375 A*	420 A	420 A	
	Baldwin_j 118	Massey_j 118	389 A*	390 A	390 A	
	Baldwin_j 118	Espanola_ts 118	620 A	790 A	880 A	
	Espanola_j_a118	Espanola_ts 118	370 A	430 A	440 A	
	Espanola_j_a118	Mcleansmt 118	375 A*	420 A	420 A	
	Mcleansmt 118	Manitoulin_t118	375 A*	420 A	420 A	
	X27A	Algoma_ts 220	Hanmer_ts 220	1160 A	1420 A	1660 A
	S22A	Algoma_ts 220	Clarabel_j22220	1160 A	1500 A	1800 A
Martindale 220		Clarabel_j22220	1500 A	1940 A	2121 A*	
Martindale T21	Martindale 115	Martindale 230 kV	115 MVA	189 MVA	191 MVA*	
Martindale T22	Martindale 115	Martindale 12.5	115 MVA	158 MVA	164 MVA	
Martindale T23	Martindale 115	Martindale 12.5	125 MVA	133 MVA	172 MVA	
Algoma T5	Algoma 115	Algoma 230, Algoma 12.5	195 MVA*	298 MVA	298 MVA	
Algoma T6	Algoma 115	Algoma 230, Algoma 12.5	115 MVA	166 MVA	190 MVA*	

Note: (\*) Operational Rating

The following table summarizes the pre-contingency loading as a percentage of the continuous rating for each of the scenarios studied. For each scenario, the pre-contingency output of the McLean's Mountain facility was at 59.4 MW and 0 Mvar.

Element	Monitored Element		% of Continuous Rating				
	From	To	S1	S2	S3	S4	
X26S	Hanmer_ts 220	Hanmer_jx26s220	24.5	29.4	23.6	26.8	
	Hanmer_jx26s220	Martind_jx26220	12.5	14.9	12.1	13.5	
	Martindale 220	Martind_jx26220	25.1	29.7	24.2	27.1	
X25S	Hanmer_ts 220	Danmer_jx25s220	27.9	33.5	26.9	30.5	
	Hanmer_jx25s220	Martind_jx25220	17.7	21.1	17.1	19.1	
	Martindale 220	Martind_jx25220	28.4	33.8	27.5	30.7	
L1S	Martindale 118	Sudbury_j 118	33.3	22.4	34.0	23.7	
	Coniston_ts 118	Sudbury_j 118	33.6	22.8	34.3	24.0	
	Coniston_ts 118	Warren_ds 118	34.4	23.7	35.1	24.9	
	Verner_j 118	Warren_ds 118	36.5	25.7	37.3	26.9	
	Cryst_fls_ss118	Verner_j 118	38.7	27.8	39.4	29.1	
	C_cliff_js2b118	Martindale 118	14.9	39.8	11.7	12.1	
	C_cliff_js2b118	Creighton_j 118	14.4	38.1	11.3	11.7	
S2B	Creighton_j 118	Vermillion_j118	15.8	40.7	12.1	12.6	
	Ethel_lake_j118	Vermillion_j118	13.0	33.5	8.5	8.0	
	Ethel_lake_j118	Turbine_j 118	25.5	58.8	5.5	4.8	
	Domt_nairn_j118	Turbine_j 118	22.8	52.2	5.0	4.4	
	Domt_nairn_j118	Espanola_j 118	26.7	55.8	0.6	0.6	
	Espanola_j 118	Eddy_tap_j 118	31.8	66.4	0.0	0.0	
	Espanola_j_a118	Eddy_tap_j 118	31.8	66.4	0.0	0.0	
	Algoma_ts 118	Blind_rivr_j118	54.2	12.3	22.5	59.3	
	Carmeuse_j 118	Blind_rivr_j118	54.2	12.3	22.5	59.3	
	Carmeuse_j 118	Serpent_rivj118	50.4	8.9	18.7	62.5	
	Cutler_j_s2b118	Serpent_rivj118	59.5	13.1	27.8	54.5	
	Cutler_j_s2b118	Spanish_j 118	59.5	13.2	27.9	54.6	
	Camern_fls_j118	Spanish_j 118	55.7	7.7	24.0	58.9	
	Camern_fls_j118	Massey_j 118	61.0	13.0	29.7	54.5	
	Baldwin_j 118	Massey_j 118	52.7	6.6	22.1	57.7	
	Baldwin_j 118	Espanola_ts 118	33.0	4.1	14.0	36.2	
	Espanola_j_a118	Espanola_ts 118	0.0	0.0	31.6	66.6	
	Espanola_j_a118	Mcleansmt 118	32.2	66.2	31.7	66.2	
	Mcleansmt 118	Manitoulin_t118	44.5	8.0	44.9	8.1	
	X27A	Algoma_ts 220	Hanmer_ts 220	43.7	45.6	45.7	49.7
	S22A	Algoma_ts 220	Clarabel_j22220	45.2	46.7	47.3	51.1
		Martindale 220	Clarabel_j22220	27.9	28.9	29.6	32.3
	Martindale T21	Martindale 115	Martindale 230 kV	33.3	16.2	37.2	9.0
Martindale T22	Martindale 115	Martindale 12.5	34.5	16.7	38.6	9.4	
Martindale T23	Martindale 115	Martindale 12.5	31.4	15.3	35.0	8.6	
Algoma T5	Algoma 115	Algoma 230, Algoma 12.5	16.6	23.7	15.8	27.3	
Algoma T6	Algoma 115	Algoma 34.5	15.5	8.9	16.5	21.5	

The following is a list of contingencies that were studied as part of the thermal analysis:

C1	Loss of X25S	C2	Loss of Macleans Wind Farm	C3	Loss of L1S
C4	Loss of X27A + Algoma T6	C5	Loss of Algoma T5	C6	Loss of Martindale T21

The following table summarizes the post-contingency loading as a percentage of the Long Term Emergency rating for scenarios S1 and S2.

Element	Monitored Element		% of Long Term Emergency Rating												
			Scenario S1						Scenario S2						
	From	To	C1	C2	C3	C4	C5	C6	C1	C2	C3	C4	C5	C6	
X26S	Hanmer_ts 220	Hanmer_jx26s220	49.6	22.3	23.2	34.2	24.5	23.9	61.1	25.5	29.0	41.1	29.5	29.4	
	Hanmer_jx26s220	Martind_jx26220	25.1	11.5	11.9	17.3	12.6	12.3	30.7	12.9	14.7	20.7	14.9	14.9	
	Martindale 220	Martind_jx26220	50.2	23.0	23.8	34.7	25.1	24.5	61.4	25.8	29.3	41.4	29.7	29.7	
X25S	Hanmer_ts 220	Danmer_jx25s220	0.0	25.4	26.4	38.9	27.9	27.3	0.0	29.0	33.0	46.8	33.5	33.5	
	Hanmer_jx25s220	Martind_jx25220	0.0	16.2	16.8	24.5	17.8	17.3	0.0	18.2	20.7	29.3	21.0	21.0	
	Martindale 220	Martind_jx25220	0.0	26.1	27.0	39.4	28.5	27.8	0.0	29.3	33.3	47.1	33.8	33.8	
L1S	Martindale 118	Sudbury_j 118	24.5	26.4	0.0	24.5	24.7	25.4	15.7	17.8	0.0	15.6	16.1	15.5	
	Coniston_ts 118	Sudbury_j 118	24.8	26.6	0.0	24.7	24.9	25.6	15.9	18.1	0.0	15.9	16.3	15.8	
	Coniston_ts 118	Warren_ds 118	25.4	27.2	0.0	25.3	25.5	26.2	16.6	18.8	0.0	16.5	17.1	16.4	
	Verner_j 118	Warren_ds 118	27.1	28.9	0.0	27.1	27.2	28.0	18.3	20.4	0.0	18.2	18.7	18.1	
	Cryst_fls_ss118	Verner_j 118	28.8	30.7	0.0	28.8	29.0	29.7	19.9	22.0	0.0	19.9	20.3	19.7	
S2B	C_cliff_js2b118	Martindale 118	13.1	43.7	13.8	12.4	12.9	12.9	38.9	12.5	39.0	38.7	38.9	38.9	
	C_cliff_js2b118	Creighton_j 118	14.2	46.4	14.9	13.3	14.0	13.9	41.3	13.4	41.5	41.1	41.4	41.3	
	Creighton_j 118	Vermillion_j118	15.5	49.4	16.3	14.5	15.2	15.2	44.1	14.3	44.3	43.9	44.2	44.1	
	Ethel_lake_j118	Vermillion_j118	10.0	29.8	10.5	9.5	9.9	9.9	28.4	7.3	28.5	28.3	28.5	28.4	
	Ethel_lake_j118	Turbine_j 118	25.3	51.9	25.7	24.8	25.1	25.1	63.3	7.3	63.3	63.4	63.3	63.3	
	Domt_nairn_j118	Turbine_j 118	22.6	46.3	23.1	22.2	22.5	22.5	56.3	6.4	56.3	56.3	56.3	56.3	
	Domt_nairn_j118	Espanola_j 118	26.7	40.8	26.9	26.6	26.6	26.6	60.0	2.4	59.9	60.2	60.0	60.0	
	Espanola_j 118	Eddy_tap_j 118	27.3	41.9	27.5	27.2	27.3	27.3	61.4	2.3	61.4	61.6	61.4	61.4	
	Espanola_j_a118	Eddy_tap_j 118	27.3	41.9	27.5	27.2	27.3	27.3	61.4	2.3	61.4	61.6	61.4	61.4	
	Algoma_ts 118	Blind_rivr_j118	41.9	41.9	41.9	42.7	43.9	41.9	1.6	2.2	1.8	2.2	0.3	1.8	
	Carmeuse_j 118	Blind_rivr_j118	41.9	41.9	41.9	42.7	43.9	41.9	1.7	2.2	1.9	2.2	0.2	1.8	
	Carmeuse_j 118	Serpent_rivrj118	38.5	38.5	38.5	39.5	40.8	38.5	3.3	3.5	3.4	4.6	3.5	3.3	
	Cutler_j_s2b118	Serpent_rivrj118	46.6	46.6	46.6	47.4	48.4	46.6	6.0	6.2	6.1	4.9	5.3	6.0	
	Cutler_j_s2b118	Spanish_j 118	46.6	46.6	46.6	47.4	48.4	46.6	6.2	6.5	6.3	5.0	5.5	6.3	
	Camern_fls_j118	Spanish_j 118	44.4	44.4	44.3	45.2	46.3	44.3	2.4	2.8	2.6	2.2	1.6	2.5	
	Camern_fls_j118	Massey_j 118	49.2	49.2	49.1	50.0	50.8	49.1	6.7	6.8	6.8	6.4	6.5	6.8	
	Baldwin_j 118	Massey_j 118	46.9	46.9	46.8	47.8	48.8	46.9	0.9	0.9	0.9	2.8	1.5	0.9	
	Baldwin_j 118	Espanola_ts 118	23.1	23.1	23.1	23.5	24.0	23.1	0.8	0.9	0.9	0.6	0.5	0.9	
	Espanola_j_a118	Espanola_ts 118	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Espanola_j_a118	Mcleansmt 118	28.7	42.9	29.0	28.3	28.6	28.6	63.4	2.3	63.4	63.5	63.4	63.4	
	Mcleansmt 118	Manitoulin_t118	39.8	43.6	39.6	40.1	39.9	39.9	3.4	3.4	3.3	3.4	3.4	3.4	
	X27A	Algoma_ts 220	Hanmer_ts 220	37.2	36.8	36.8	0.0	37.9	36.8	39.0	38.4	38.5	0.0	38.5	38.5
	S22A	Algoma_ts 220	Clarabel_j22220	35.6	36.2	36.1	60.4	37.0	36.0	36.6	37.4	37.4	62.7	37.3	37.4
Martindale 220		Clarabel_j22220	22.0	22.7	22.6	40.8	23.2	22.5	22.5	23.5	23.4	42.4	23.4	23.4	
Martindale T21	Martindale 115	Martindale 230	18.9	27.8	21.4	18.4	18.8	0.0	10.5	5.0	6.1	10.1	10.7	0.0	
Martindale T22	Martindale 115	Martindale 230	23.4	34.4	26.6	22.8	23.3	34.5	13.0	6.2	7.6	12.6	13.3	19.2	
Martindale T23	Martindale 115	Martindale 230	27.5	40.3	31.1	26.7	27.3	40.4	15.3	7.4	9.0	14.8	15.6	22.6	
Algoma T5	Algoma 115	Algoma 230	10.4	10.5	10.6	2.0	0.0	10.6	8.6	8.8	8.6	9.9	0.0	8.6	
Algoma T6	Algoma 115	Algoma 13.4	10.7	10.6	10.5	0.0	5.3	10.6	14.8	14.6	14.8	0.0	16.5	14.8	

As shown, all post-contingency flows were found to be within the Long Term Emergency ratings.

The following table summarizes the post-contingency loading as a percentage of the Long Term Emergency rating for scenarios S3 and S4.

Element	Monitored Element		% of Long Term Emergency Rating												
			Scenario S3						Scenario S4						
	From	To	C1	C2	C3	C4	C5	C6	C1	C2	C3	C4	C5	C6	
X26S	Hanmer_ts 220	Hanmer_jx26s220	47.8	22.1	22.2	33.8	23.7	23.1	55.3	25.3	26.1	39.5	26.6	26.6	
	Hanmer_jx26s220	Martind_jx26220	24.2	11.4	11.4	17.2	12.1	11.9	27.8	12.8	13.2	19.9	13.5	13.5	
	Martindale 220	Martind_jx26220	48.4	22.8	22.8	34.3	24.3	23.7	55.6	25.6	26.4	39.8	26.9	26.9	
X25S	Hanmer_ts 220	Danmer_jx25s220	0.0	25.2	25.3	38.5	27.0	26.3	0.0	28.8	29.7	45.0	30.3	30.3	
	Hanmer_jx25s220	Martind_jx25220	0.0	16.1	16.1	24.3	17.2	16.7	0.0	18.1	18.7	28.2	19.1	19.1	
	Martindale 220	Martind_jx25220	0.0	25.8	25.9	39.0	27.6	26.9	0.0	29.1	30.0	45.3	30.6	30.6	
L1S	Martindale 118	Sudbury_j 118	25.1	25.7	0.0	25.1	25.2	26.2	17.0	17.8	0.0	16.8	17.4	17.3	
	Coniston_ts 118	Sudbury_j 118	25.4	26.0	0.0	25.4	25.5	26.5	17.2	18.0	0.0	17.1	17.6	17.6	
	Coniston_ts 118	Warren_ds 118	26.0	26.7	0.0	26.0	26.1	27.1	18.0	18.8	0.0	17.7	18.3	18.3	
	Verner_j 118	Warren_ds 118	27.7	28.3	0.0	27.7	27.8	28.8	19.6	20.3	0.0	19.4	19.9	19.9	
	Cryst_fls_ss118	Verner_j 118	29.4	30.0	0.0	29.5	29.5	30.5	21.2	22.0	0.0	21.1	21.6	21.6	
S2B	C_cliff_js2b118	Martindale 118	10.5	10.4	10.4	10.8	10.6	10.6	11.0	10.8	10.9	11.2	10.9	11.0	
	C_cliff_js2b118	Creighton_j 118	11.3	11.2	11.2	11.6	11.4	11.4	11.8	11.6	11.7	12.1	11.7	11.8	
	Creighton_j 118	Vermillion_j118	12.1	12.0	12.0	12.4	12.2	12.2	12.6	12.5	12.5	13.0	12.6	12.6	
	Ethel_lake_j118	Vermillion_j118	6.7	6.6	6.6	6.9	6.8	6.8	6.3	6.2	6.2	6.5	6.3	6.3	
	Ethel_lake_j118	Turbine_j 118	5.5	5.5	5.5	5.6	5.5	5.5	4.8	4.8	4.8	4.9	4.8	4.8	
	Domt_nairn_j118	Turbine_j 118	5.0	5.0	5.0	5.2	5.1	5.1	4.4	4.3	4.3	4.5	4.4	4.4	
	Domt_nairn_j118	Espanola_j 118	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	
	Espanola_j 118	Eddy_tap_j 118	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Espanola_j_a118	Eddy_tap_j 118	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Algoma_ts 118	Blind_rivr_j118	19.2	91.4	19.2	19.6	20.8	19.2	58.3	8.6	58.4	58.0	58.1	58.4	
	Carmeuse_j 118	Blind_rivr_j118	19.2	91.4	19.2	19.6	20.8	19.2	58.4	8.6	58.5	58.0	58.2	58.4	
	Carmeuse_j 118	Serpent_rivrj118	15.6	87.8	15.6	16.6	18.3	15.6	61.3	4.9	61.3	61.2	61.1	61.3	
	Cutler_j_s2b118	Serpent_rivrj118	24.0	96.4	24.0	24.1	24.8	24.0	54.7	13.2	54.7	53.8	54.3	54.7	
	Cutler_j_s2b118	Spanish_j 118	24.0	96.4	24.1	24.0	24.8	24.1	54.8	13.4	54.8	53.8	54.5	54.8	
	Camern_fls_j118	Spanish_j 118	21.6	94.0	21.7	21.9	22.9	21.7	57.5	9.6	57.5	56.9	57.2	57.5	
	Camern_fls_j118	Massey_j 118	26.4	99.2	26.4	26.6	27.1	26.4	52.9	14.1	53.0	52.4	52.8	52.9	
	Baldwin_j 118	Massey_j 118	22.1	100.3	22.1	22.8	23.8	22.1	62.2	9.0	62.2	62.0	62.1	62.2	
	Baldwin_j 118	Espanola_ts 118	10.9	49.5	10.9	11.1	11.5	10.9	30.7	4.6	30.7	30.6	30.7	30.7	
	Espanola_j_a118	Espanola_ts 118	27.2	42.7	27.2	27.3	27.5	27.2	61.7	2.3	61.7	62.1	61.8	61.7	
	Espanola_j_a118	Mcleansmt 118	28.2	43.7	28.2	28.1	28.2	28.2	63.6	2.4	63.5	63.8	63.6	63.6	
	Mcleansmt 118	Manitoulin_t118	40.2	44.4	40.2	40.5	40.7	40.2	3.4	3.4	3.4	3.4	3.4	3.4	
	X27A	Algoma_ts 220	Hanmer_ts 220	38.5	34.0	38.1	0.0	39.2	38.1	42.2	37.8	41.7	0.0	41.7	41.7
	S22A	Algoma_ts 220	Clarabel_j22220	37.0	33.4	37.4	62.9	38.4	37.4	40.0	36.8	40.6	69.0	40.6	40.6
Martindale 220		Clarabel_j22220	23.0	20.5	23.6	42.7	24.3	23.6	25.1	23.0	25.9	47.2	25.9	25.9	
Martindale T21	Martindale 115	Martindale 230 Martindale 12.5	21.3	21.5	24.7	21.1	21.3	0.0	4.7	5.0	5.6	4.1	4.8	0.0	
Martindale T22	Martindale 115	Martindale 230 Martindale 12.5	26.4	26.6	30.6	26.1	26.3	38.9	5.8	6.1	6.9	5.1	5.9	8.6	
Martindale T23	Martindale 115	Martindale 230 Martindale 12.5	31.0	31.2	35.8	30.6	30.9	45.6	6.9	7.3	8.2	6.1	7.1	10.2	
Algoma T5	Algoma 115	Algoma 230 Algoma 13.4	11.5	15.1	11.7	8.7	0.0	11.6	17.4	5.5	17.4	26.2	0.0	17.4	
Algoma T6	Algoma 115	Algoma 230 Algoma 13.4	12.2	11.3	12.0	0.0	16.6	12.1	21.1	17.2	21.0	0.0	45.5	21.1	

As shown for contingency C2, if McLean's Mountain and Manitoulin are transferred to the Algoma supply under peak loads, the loss of the McLean's Mountain Wind farm, will result in a flow change of up to 60 MW on S2B. This will increase the net load radial on S2B supplied by Algoma resulting in the sections along Cameron Falls and Baldwin Junction to be possibly loaded to the long term emergency rating. In all other cases, flows were found to be within the long term emergency ratings.

## 6.7 Voltage Analysis

The assessment of the voltage performance in the Algoma area was done in accordance with the IESO's *Ontario Resource and Transmission Assessment Criteria*. The criteria states that with all facilities in service pre-contingency, 115 kV and 230 kV system voltage declines following a contingency shall be limited to 10% both before and after transformer tap changer action. The study was done for peak load conditions and Constant MVA model in both immediate pre-contingency state and in post-ULTC state. For each scenario, the pre-contingency output of the McLean's Mountain facility was at 59.4 MW and 0 Mvar.

The study results under pre-ULTC and post-ULTC conditions for each scenario are summarized in the following tables.

Scenario S1 Voltage Declines																	
Monitored Busses	Pre-Cont Voltage (kV)	Loss of X27A+Algoma T6				Loss of Algoma T5+Algoma Capacitor				Loss of McLean's Wind Farm				Loss of X503E			
		Pre-ULTC		Post-ULTC		Pre-ULTC		Post-ULTC		Pre-ULTC		Post-ULTC		Pre-ULTC		Post-ULTC	
		kV	%	kV	%	kV	%	kV	%	kV	%	kV	%	kV	%	kV	%
Algoma 115 kV	123.0	123.0	0.86	120.6	1.96	118.5	3.62	118.4	3.70	122.7	0.23	122.8	0.13	120.1	2.37	118.7	3.48
Dom Nairn JCT 115 kV	122.6	122.6	1.04	120.8	1.42	121.8	0.58	121.8	0.63	116.7	4.81	116.7	4.75	117.8	3.89	117.2	4.40
Espanola 115 kV	120.0	120.0	0.74	118.2	1.50	116.8	2.68	116.8	2.69	119.6	0.30	119.7	0.24	117.9	1.79	117.0	2.53
Manitoulin 115 kV	122.6	122.6	0.68	121.5	0.92	122.2	0.38	122.1	0.41	111.8	8.82	111.9	8.77	119.5	2.52	119.1	2.86
Martindale 115 kV	123.8	123.8	1.39	121.4	1.90	122.8	0.78	122.7	0.84	123.2	0.47	123.2	0.42	117.3	5.19	116.5	5.88
Vermillion Jct 115 kV	122.8	122.8	1.21	120.8	1.65	122.0	0.68	121.9	0.73	119.4	2.78	119.5	2.73	117.3	4.52	116.5	5.11
Whitefish DS 115 kV	122.5	122.5	1.20	120.5	1.63	121.7	0.67	121.7	0.72	118.8	3.04	118.9	2.99	117.1	4.47	116.3	5.05
Spanish JCT 115 kV	121.8	121.8	0.84	119.6	1.78	117.9	3.22	117.8	3.28	121.4	0.30	121.5	0.22	119.2	2.13	118.1	3.07
Manitoulin 44 kV	46.1	46.1	0.69	46.2	-0.32	45.9	0.39	46.5	-0.86	41.9	9.07	46.2	-0.31	44.9	2.59	46.5	-0.79
McLean's Mountain 115 kV	122.7	122.7	0.67	121.6	0.92	122.2	0.38	122.2	0.41	111.9	8.81	111.9	8.76	119.6	2.52	119.2	2.86

Scenario S2 Voltage Declines																	
Monitored Busses	Pre-Cont Voltage (kV)	Loss of X27A+Algoma T6				Loss of Algoma T5+Algoma Capacitor				Loss of McLean's Wind Farm				Loss of X503E			
		Pre-ULTC		Post-ULTC		Pre-ULTC		Post-ULTC		Pre-ULTC		Post-ULTC		Pre-ULTC		Post-ULTC	
		kV	%	kV	%	kV	%	kV	%	kV	%	kV	%	kV	%	kV	%
Algoma 115 kV	122.0	120.9	0.92	119.5	2.06	120.8	0.99	120.8	0.99	121.9	0.06	122.0	-0.03	119.3	2.18	118.2	3.12
Dom Nairn JCT 115 kV	123.5	122.3	0.96	121.8	1.34	123.5	-0.02	123.5	-0.02	124.5	-0.80	124.5	-0.84	119.1	3.59	118.5	4.03
Espanola 115 kV	121.7	120.6	0.87	119.7	1.64	120.6	0.92	120.6	0.92	121.3	0.31	121.4	0.25	119.6	1.72	118.9	2.30
Manitoulin 115 kV	124.7	123.9	0.61	123.6	0.85	124.7	-0.01	124.7	-0.01	124.2	0.37	124.3	0.32	121.8	2.26	121.5	2.54
Martindale 115 kV	124.9	123.3	1.28	122.7	1.79	125.0	-0.03	125.0	-0.03	125.7	-0.61	125.7	-0.66	118.9	4.78	118.2	5.37
Vermillion JCT 115 kV	123.6	122.2	1.12	121.7	1.56	123.7	-0.03	123.7	-0.03	124.8	-0.93	124.8	-0.98	118.4	4.18	117.8	4.70
Whitefish DS 115 kV	123.3	122.0	1.11	121.4	1.55	123.4	-0.03	123.4	-0.03	124.5	-0.93	124.5	-0.98	118.2	4.14	117.6	4.65
Spanish JCT 115 kV	122.0	120.8	0.98	119.6	1.97	120.7	1.04	120.7	1.04	121.7	0.26	121.8	0.19	119.5	2.06	118.5	2.85
Manitoulin 44 kV	46.1	45.8	0.61	46.3	-0.45	46.1	-0.01	46.1	-0.01	45.9	0.37	46.6	-0.99	45.1	2.27	46.1	-0.01
McLean's Mountain 115 kV	124.7	123.9	0.61	123.6	0.85	124.7	-0.01	124.7	-0.01	124.2	0.37	124.3	0.32	121.8	2.26	121.5	2.54

Scenario S3 Voltage Declines																	
Monitored Busses	Pre-Cont Voltage (kV)	Loss of X27A+Algoma T6				Loss of Algoma T5+Algoma Capacitor				Loss of McLean's Wind Farm				Loss of X503E			
		Pre-ULTC		Post-ULTC		Pre-ULTC		Post-ULTC		Pre-ULTC		Post-ULTC		Pre-ULTC		Post-ULTC	
		kV	%	kV	%	kV	%	kV	%	kV	%	kV	%	kV	%	kV	%
Algoma 115 kV	123.0	121.8	0.97	120.2	2.24	118.7	3.51	118.6	3.59	122.4	0.46	122.8	0.18	120.0	2.45	118.6	3.60
Dom Nairn JCT 115 kV	122.7	120.7	1.62	119.9	2.29	121.6	0.86	121.5	0.93	123.1	-0.33	123.2	-0.44	115.7	5.72	114.7	6.51
Espanola 115 kV	120.9	120.1	0.68	119.3	1.29	118.5	1.99	118.5	1.96	113.2	6.40	113.8	5.86	119.2	1.44	118.5	1.96
Manitoulin 115 kV	121.4	120.8	0.47	120.3	0.90	119.7	1.39	119.7	1.37	109.2	10.02	109.9	9.46	120.2	1.00	119.7	1.37
Martindale 115 kV	123.9	121.9	1.57	121.1	2.22	122.8	0.83	122.7	0.90	124.3	-0.32	124.4	-0.43	117.0	5.54	116.1	6.30
Vermillion Jct 115 kV	123.0	121.0	1.60	120.2	2.27	122.0	0.85	121.9	0.92	123.4	-0.33	123.5	-0.44	116.0	5.67	115.1	6.45
Whitefish DS 115 kV	122.7	120.7	1.61	119.9	2.28	121.7	0.85	121.6	0.93	123.1	-0.33	123.2	-0.44	115.7	5.71	114.7	6.49
Spanish JCT 115 kV	122.3	121.2	0.93	119.9	1.93	118.7	2.96	118.6	3.01	118.6	3.00	119.1	2.63	119.7	2.11	118.6	3.01
Manitoulin 44 kV	46.2	46.0	0.49	46.4	-0.33	45.5	1.43	46.1	0.16	41.4	10.32	46.4	-0.53	45.7	1.03	46.1	0.16
McLean's Mountain 115 kV	121.5	120.9	0.47	120.4	0.90	119.8	1.39	119.8	1.36	109.3	10.01	110.0	9.45	120.2	1.00	119.8	1.37

Scenario S4 Voltage Declines																	
Monitored Busses	Pre-Cont Voltage (kV)	Loss of X27A+Algoma T6				Loss of Algoma T5+Algoma Capacitor				Loss of McLean's Wind Farm				Loss of X503E			
		Pre-ULTC		Post-ULTC		Pre-ULTC		Post-ULTC		Pre-ULTC		Post-ULTC		Pre-ULTC		Post-ULTC	
		kV	%	kV	%	kV	%	kV	%	kV	%	kV	%	kV	%	kV	%
Algoma 115 kV	122.0	120.4	1.35	118.3	3.07	120.7	1.09	120.7	1.09	122.9	-0.71	123.1	-0.91	118.9	2.50	117.5	3.65
Dom Nairn JCT 115 kV	123.9	121.8	1.65	120.8	2.46	123.8	0.03	123.8	0.03	124.5	-0.49	124.6	-0.60	117.1	5.50	116.2	6.18
Espanola 115 kV	122.1	121.0	0.85	120.1	1.66	121.2	0.73	121.2	0.73	121.5	0.47	121.7	0.34	120.3	1.42	119.8	1.90
Manitoulin 115 kV	123.5	122.8	0.58	122.1	1.13	122.9	0.49	122.9	0.49	121.2	1.85	121.4	1.72	122.3	0.97	121.9	1.29
Martindale 115 kV	125.1	123.0	1.60	122.1	2.38	125.0	0.03	125.0	0.03	125.6	-0.48	125.8	-0.58	118.4	5.33	117.6	5.98
Vermillion Jct 115 kV	124.2	122.1	1.64	121.1	2.44	124.1	0.03	124.1	0.03	124.8	-0.49	124.9	-0.60	117.4	5.46	116.5	6.13
Whitefish DS 115 kV	123.9	121.8	1.65	120.8	2.45	123.8	0.03	123.8	0.03	124.5	-0.49	124.6	-0.60	117.1	5.49	116.2	6.17
Spanish JCT 115 kV	121.9	120.4	1.25	118.7	2.60	120.6	1.04	120.6	1.04	122.3	-0.31	122.5	-0.48	119.3	2.17	118.2	3.05
Manitoulin 44 kV	46.3	46.0	0.58	46.3	-0.15	46.0	0.50	46.0	0.50	45.4	1.86	46.1	0.45	45.8	0.97	46.3	0.02
McLean's Mountain 115 kV	123.5	122.8	0.58	122.1	1.13	122.9	0.49	122.9	0.49	121.2	1.85	121.4	1.71	122.3	0.97	121.9	1.29

Under the normally operating configuration (S1), the loss of McLean's Mountain coincident with high S2B loads may result in 9% voltage declines at McLean's Mountain 115 kV, Manitoulin 115 kV and Manitoulin 44 kV busses. With Manitoulin and McLean's Mountain transferred to Algoma supply under high S2B loads (S3), voltage declines at McLean's Mountain 115 kV, Manitoulin 115 kV and Manitoulin 44 kV buses may be as high as 10%. The reactive injection from the wind farm at the McLean's Mountain 115 kV point of common coupling for scenario S3 was found to be 4.7 Mvar. Therefore, the reactive injection at the wind farm would have to be restricted to approximately 4.7 Mvar and pre-contingency voltages at the McLean's Mountain 115 kV bus maintained at 121 kV in order for voltage declines to be within IESO criteria.

A sensitivity test was performed on scenarios S1 and S3 to examine the pre-contingency voltages at Manitoulin without the wind farm in-service. Results show that the voltages at Manitoulin can be as low as 112 kV when it is supplied from Martindale 115 kV and 110 kV it is supplied from Algoma 115 kV. In both cases, the voltage is below the minimum continuous voltage of 113 kV as per the IESO Transmission Assessment Criteria. Subsequent analysis showed that placing a 7 Mvar @ 44kV capacitor in-service at Manitoulin would help increase the pre-contingency voltage to 113 kV.

The following table shows results for the loss of McLean's Mountain under scenario S3 with a 7 Mvar capacitor in-service at Manitoulin for different amounts of pre-contingency reactive power injection at the Point of Common Coupling (PCC).

Loss of McLean's Mountain Sensitivity: Scenario S3 with 7 Mvar capacitor at Manitoulin						
Pre-contingency Reactive injection at PCC	Monitored Busses	Pre-Contingency Voltage (kV)	Pre-ULTC		Post-ULTC	
			kV	%	kV	%
4.5 Mvar	Manitoulin 115 kV	124.2	112.2	9.64	113.2	8.85
	Manitoulin 44 kV	46.4	41.8	9.90	45.1	2.84
	McLean's Mountain 115 kV	124.2	112.3	9.63	113.2	8.84
6.7 Mvar	Manitoulin 115 kV	125.0	112.1	10.31	113.4	9.27
	Manitoulin 44 kV	46.0	41.1	10.59	46.3	-0.56
	McLean's Mountain 115 kV	125.0	112.1	10.30	113.4	9.27

As shown, with 7 Mvar capacitor in-service at Manitoulin, and a pre-contingency reactive injection at the McLean's Mountain PCC less than 4.5 Mvar and voltage at McLean's Mountain 115 kV bus maintained at 124 kV, the voltage declines at Manitoulin 115kV and 44 kV and McLean's Mountain 115 kV for the loss of the McLean's Mountain wind farm would be within IESO criteria.

## 6.7 Transient Analysis

Transient stability analyses were performed considering faults in the Algoma area with the proposed McLean's Mountain project in-service. Seven contingencies were studied under the normally operated S2B configuration at minimum S2B load (scenario S2) and four contingencies were studied under the configuration where Manitoulin and McLean's Wind Farm are transferred to S2B Algoma supply at minimum load (scenario S4). For each scenario, the pre-contingency output of the McLean's Mountain facility was at 59.4 MW and 0 Mvar.

ID	Contingency	Voltage (kV)	Location	LLG Fault MVA	Fault Clearing Time (ms) <sup>1</sup>	
					Near	Remote
<i>Scenario S2 : Normally operated S2B configuration at minimum S2B load</i>						
SC1	LLG fault on L1S	115 kV	Martindale	655-j8700 MVA	200 ms	616 ms
SC2	LLG fault on S5M	115 kV	Martindale	655-j8700 MVA	200 ms	200 ms
SC3	3phase fault on X503E	500 kV	Hanmer	N/A	166 ms	191 ms
SC4	LLG fault on X74P	230 kV	Hanmer	1769-j22618 MVA	183 ms	216 ms
SC5	LLG fault on X27A	230 kV	Hanmer	1769-j22617 MVA	183ms	249 ms
SC6	LLG fault on S22A	230 kV	Martindale	2206 -j14215 MVA	200 ms	216 ms
SC7	LLG fault on L1S	115 kV	Crystal Falls	60.57-345.96 MVA	216 ms	600 ms
<i>Scenario S4: Manitoulin and McLean's Wind Farm transferred to S2B Algoma supply at minimum S2B load</i>						
SC8	3phase fault on X503E	500 kV	Hanmer	N/A	166 ms	191 ms
SC9	LLG fault on X74P	230 kV	Mississagi	781-j6952 MVA	183 ms	216 ms
SC10	LLG fault on X27A	230 kV	Algoma	611-j4983 MVA	216 ms	216 ms
SC11	LLG fault on S22A	230 kV	Algoma	611-j4983 MVA	183 ms	233 ms

Note: (1) Fault applied at t=0.1 seconds

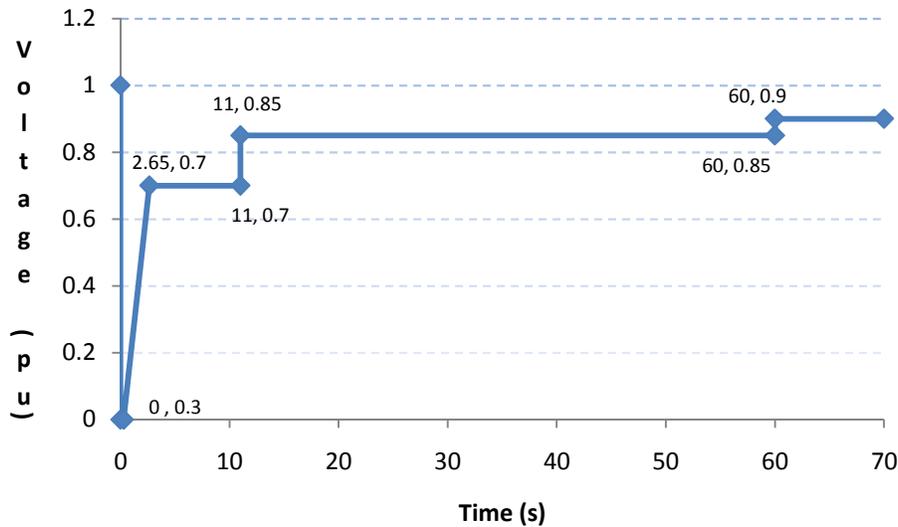
The transient responses can be found in **Appendix B** of the report. It can be concluded from the results that, with McLean's Mountain Wind Farm in-service, none of the simulated contingencies caused transient instability or undamped oscillations.

## 6.8 Low-voltage ride through capability

As any other generators, the Vestas V90 VCUS is expected to trip only for contingencies which remove the generator by configuration or abnormal conditions such as severe and sustained under-voltage, over-voltage, under-frequency, over-frequency etc. The severity of under-voltage seen by generator terminals is to be temporarily mitigated by the LVRT capability.

The following table shows the LVRT protection settings obtained from the Vestas V90 VCUS PSS/E Model (Reference: Vestas Document “Model User Manual Generic PSS/E Model for Vestas Wind Turbines Version 7.2”). These setting points are plotted in **Figure 16** to yield the LVRT under voltage protection limit curve.

Voltage Limit	Setting	Timeout	Setting
$U_{LVRT1}$	0.00	$t_{LVRT1}$	300 ms
$U_{LVRT2}$	0.70	$t_{LVRT2}$	2.65 s
$U_{LVRT3}$	0.85	$t_{LVRT3}$	11 s
$U_{LVRT4}$	0.90	$t_{LVRT4}$	60s

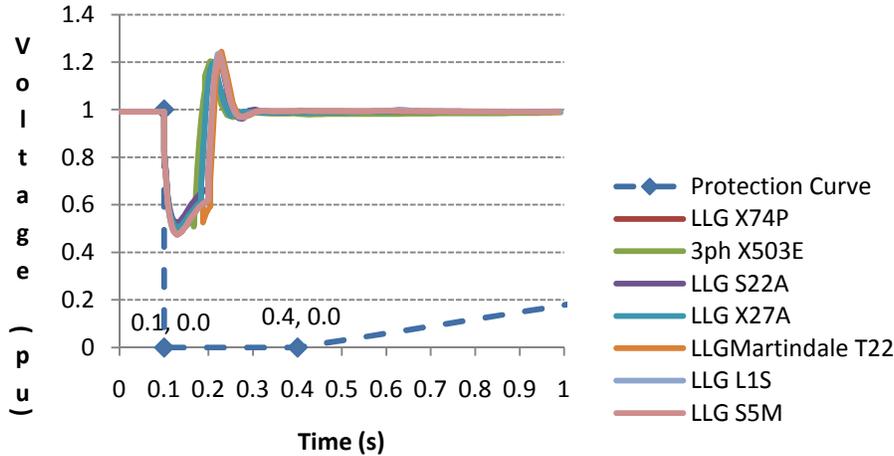


**Figure 16: LVRT Under Voltage Protection Limits**

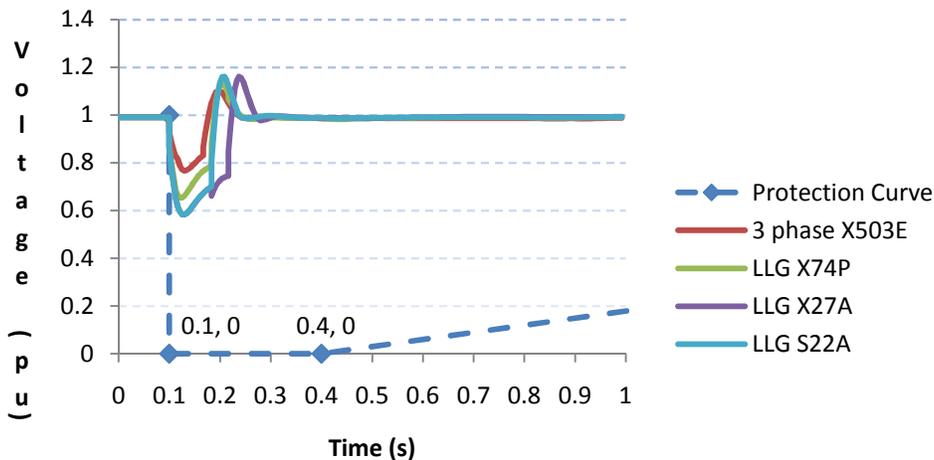
In terms of under voltage protection, the turbine is governed by a normal voltage protection and a LVRT protection scheme. Once the voltage of the turbine drops below the normal voltage protection voltage thresholds for a specified period of time, the LVRT takes over the voltage protection of the turbine. During low voltage ride through, as long as the turbine voltage is above the curve shown in **Figure 16**, the turbine will remain connected.

It is expected that no change to the above LVRT settings are required for the implementation of McLean’s Mountain.

In order to examine the need for low voltage ride through (LVRT) capability, the terminal voltage of the wind generator was monitored for all eleven contingencies. The variation of the terminal voltage of the new generation facility is plotted in **Figure 17** below for the SC1 to SC6 contingencies and **Figure 18** below for the SC7 to SC11 against the LVRT protection curve. Note, as the fault was applied at  $t=0.1s$ , each timeout setting ( $t_{LVRTI}$ ) was shifted by 0.1s. It can be seen that the voltage response is well above the LVRT protection curve. Therefore, fault ride through capability of the proposed wind turbines is adequate.



**Figure 17 – McLean’s Wind Farm Terminal Voltage Vs LVRT Protection Curve (SC1 to SC6)**



**Figure 18 – McLean’s Wind Farm Terminal Voltage vs LVRT Protection Curve (SC7 to SC11)**

The LVRT capability must be demonstrated during commissioning by monitoring several variables under a set of IESO specified field tests and the results should be verifiable using the PSS/E model.

The new generating facility is required to ride-through routine switching events and design criteria contingencies assuming standard fault detection, auxiliary relaying, communication, and rated breaker interrupting times, unless disconnected by configuration.

## **Appendix A: Market Rule Appendix 4.2**

## Appendix 4.2 – Generation Facility Requirements

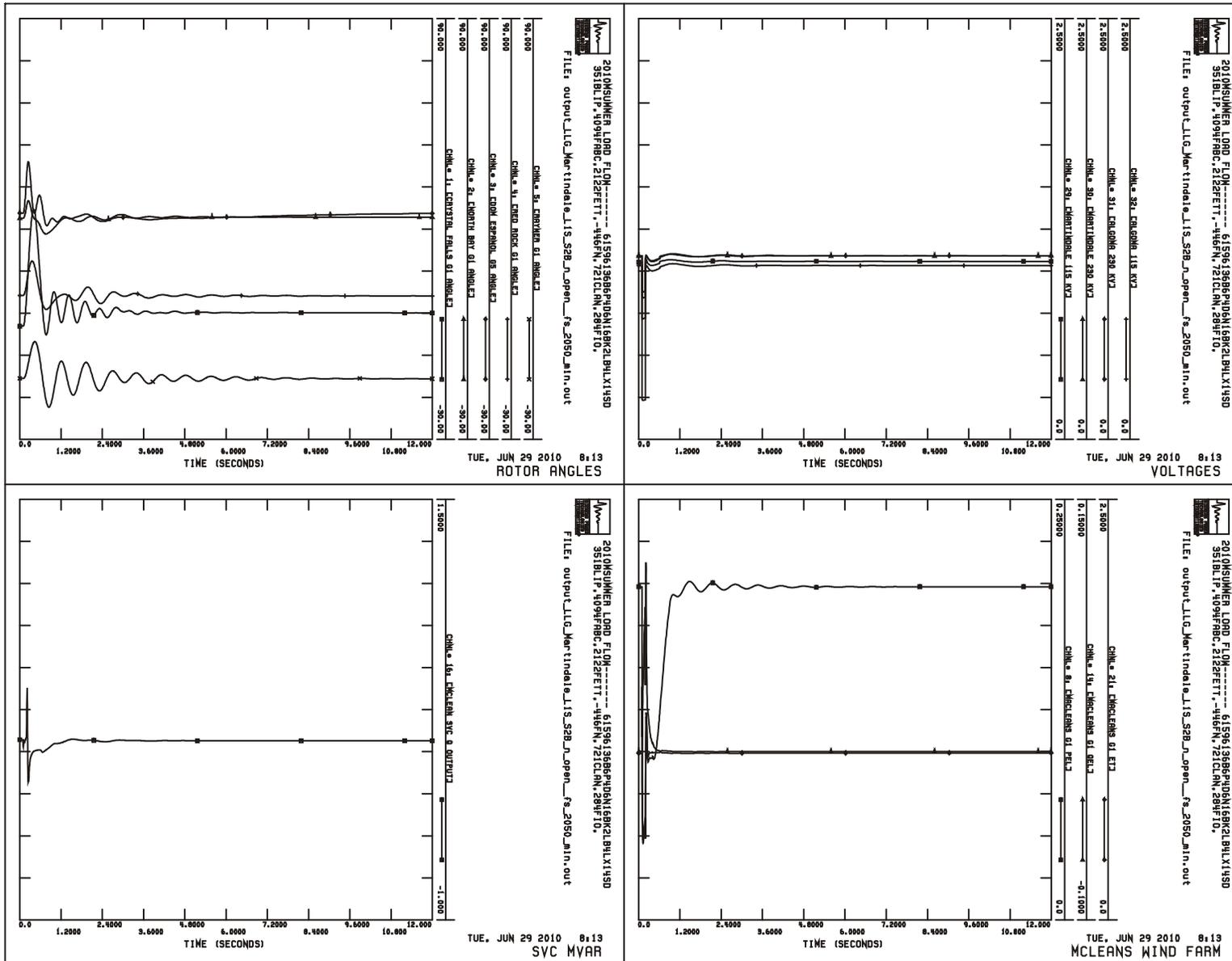
The performance requirements set out below shall apply to *generation facilities* subject to a *connection assessment* finalized after March 6, 2010. Performance of alternative technologies will be compared at the point of connection to the *IESO-controlled grid* with that of a conforming conventional synchronous *generation unit* with an equal apparent power rating to determine whether a requirement is satisfied.

Each *generation facility* that was authorized to connect to the *IESO-controlled grid* prior to March 6, 2010 shall remain subject to the performance requirements in effect for each system at the time of its authorization to connect to the *IESO-controlled grid* was granted or as agreed to by the *market participant* and the *IESO* (i.e. the “original performance requirements”). These requirements shall prevail until the main elements of an associated system (e.g. governor control mechanism, main exciter) are replaced or substantially modified. At that time, the replaced or substantially modified system shall meet the applicable performance requirements set out below. All other systems, not affected by replacement or substantial modification, shall remain subject to the original performance requirements.

<b>Category</b>	<b>Generation facility directly connected to the IESO-controlled grid, generation facility greater than 50 MW, or generation unit greater than 10 MW shall have the capability to:</b>
1. Off-Nominal Frequency	Operate continuously between 59.4 Hz and 60.6 Hz and for a limited period of time in the region above straight lines on a log-linear scale defined by the points (0.0 s, 57.0 Hz), (3.3 s, 57.0 Hz), and (300 s, 59.0 Hz).
2. Speed/Frequency Regulation	Regulate speed with an average droop based on maximum active power adjustable between 3% and 7% and set at 4% unless otherwise specified by the <i>IESO</i> . Regulation deadband shall not be wider than $\pm 0.06\%$ . Speed shall be controlled in a stable fashion in both interconnected and island operation. A sustained 10% change of rated active power after 10 s in response to a constant rate of change of speed of 0.1%/s during interconnected operation shall be achievable. Due consideration will be given to inherent limitations such as mill points and gate limits when evaluating active power changes. Control systems that inhibit governor response shall not be enabled without <i>IESO</i> approval.
3. Low Voltage Ride Through	Ride through routine switching events and design criteria contingencies assuming standard fault detection, auxiliary relaying, communication, and rated breaker interrupting times unless disconnected by configuration.
<b>Category</b>	<b>Generation facility directly connected to the IESO-controlled grid shall have the capability to:</b>
4. Active Power	Supply continuously all levels of active power output for 5% deviations in terminal voltage. Rated active power is the smaller output at either rated ambient conditions (e.g. temperature, head, wind speed, solar radiation) or 90% of rated apparent power. To satisfy steady-state reactive power requirements, active power reductions to rated active power are permitted.
5. Reactive Power	Inject or withdraw reactive power continuously (i.e. dynamically) at a <i>connection point</i> up to 33% of its rated active power at all levels of active power output except where a lesser continually available capability is permitted by the <i>IESO</i> . A conventional synchronous unit with a power factor range of 0.90 lagging and 0.95 leading at rated active power connected via a main output transformer impedance not greater than 13% based on generator rated apparent power is acceptable.
6. Automatic Voltage Regulator (AVR)	Regulate automatically voltage within $\pm 0.5\%$ of any set point within $\pm 5\%$ of rated voltage at a point whose impedance (based on rated apparent power and rated voltage) is not more than 13% from the highest voltage terminal. If the AVR target voltage is a function of reactive output, the slope $\Delta V / \Delta Q_{max}$ shall be adjustable to 0.5%. The equivalent time constants shall not be longer than 20 ms for voltage sensing and 10 ms for the forward path to the exciter output. AVR reference compensation shall be adjustable to within 10% of the unsaturated direct axis reactance on the unit side from a bus common to multiple units.
7. Excitation System	Provide (a) Positive and negative ceilings not less than 200% and 140% of rated field voltage at rated terminal voltage and rated field current; (b) A positive ceiling not less than 170% of rated field voltage at rated terminal voltage and 160% of rated field current; (c) A

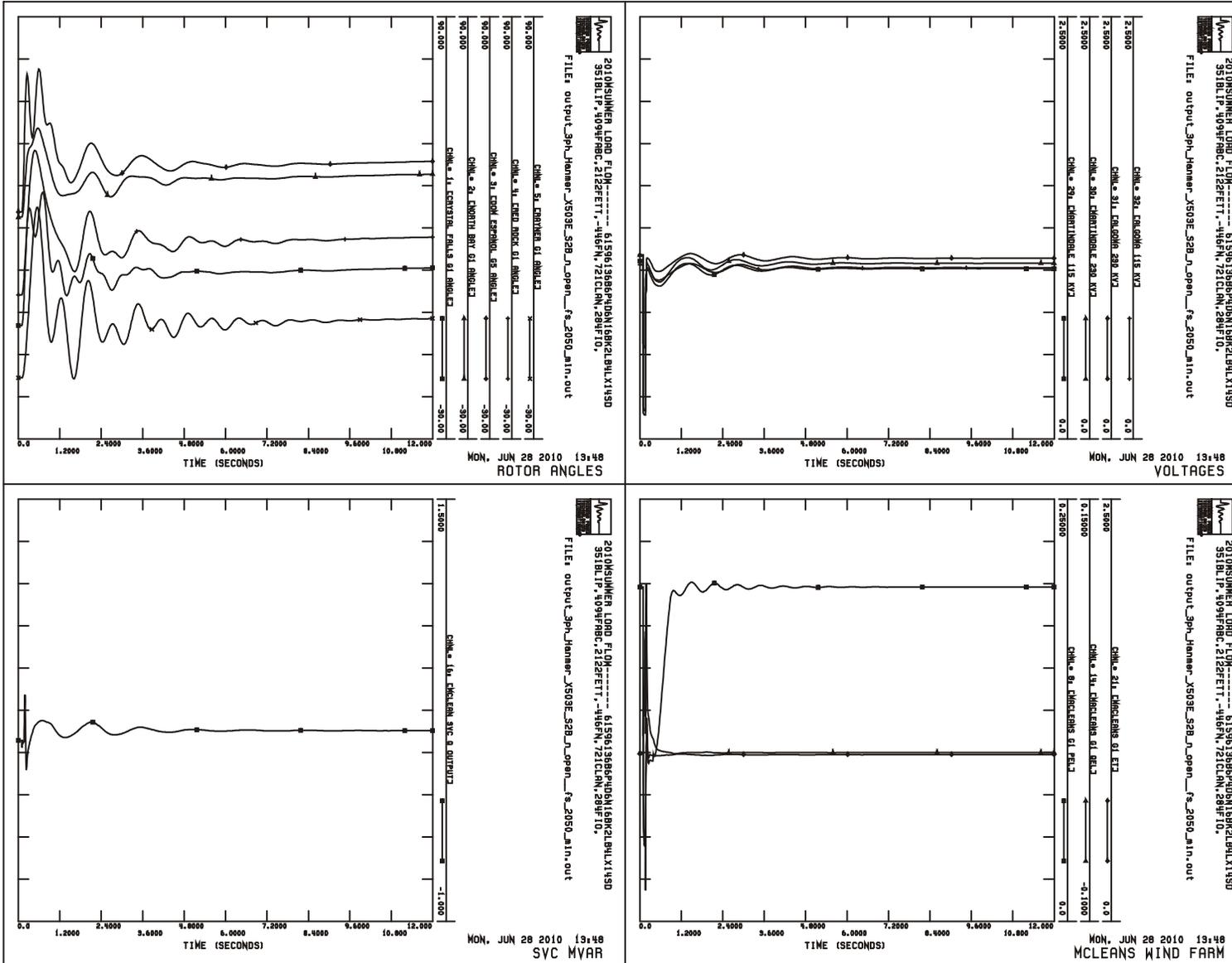
	voltage response time to either ceiling not more than 50 ms for a 5% step change from rated voltage under open-circuit conditions; and (d) A linear response between ceilings. Rated field current is defined at rated voltage, rated active power and required maximum continuous reactive power.
8. Power System Stabilizer (PSS)	Provide (a) A change of power and speed input configuration; (b) Positive and negative output limits not less than $\pm 5\%$ of rated AVR voltage; (c) Phase compensation adjustable to limit angle error to within $30^\circ$ between 0.2 and 2.0 Hz under conditions specified by the IESO, and (d) Gain adjustable up to an amount that either increases damping ratio above 0.1 or elicits exciter modes of oscillation at maximum active output unless otherwise specified by the IESO. Due consideration will be given to inherent limitations.
9. Phase Unbalance	Provide an open circuit phase voltage unbalance not more than 1% at a <i>connection point</i> and operate continuously with a phase unbalance as high as 2%.
10. Armature and Field Limiters	Provide short-time capabilities specified in IEEE/ANSI 50.13 and continuous capability determined by either field current, armature current, or core-end heating. More restrictive limiting functions, such as steady state stability limiters, shall not be enabled without IESO approval.
11. Performance Characteristics	Exhibit <i>connection point</i> performance comparable to an equivalent synchronous <i>generation unit</i> with characteristic parameters within typical ranges. Inertia, unsaturated transient impedance, transient time constants and saturation coefficients shall be within typical ranges (e.g. $H > 1.2$ Aero-derivative, $H > 1.2$ Hydraulic less than 20 MVA, $H > 2.0$ Hydraulic 20 MVA or larger, $H > 4.0$ Other synchronized units, $X'd < 0.5$ , $T'do > 2.0$ , and $S1.2 < 0.5$ ) except where permitted by the IESO.

## **Appendix B: Diagrams for Transient Simulation Results**

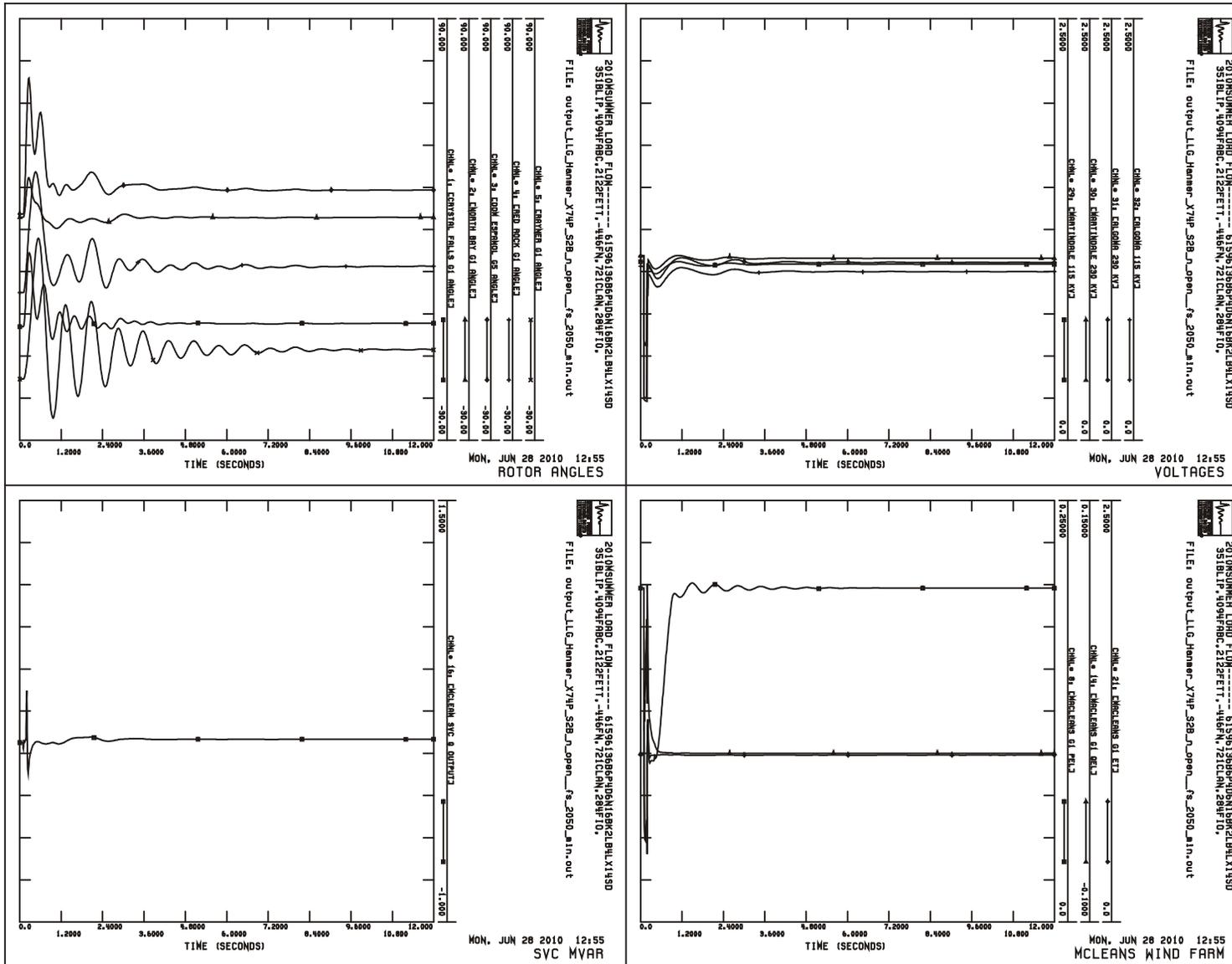


SC1 – Scenario S2: LLG Fault on L1S at Martindale 115 kV

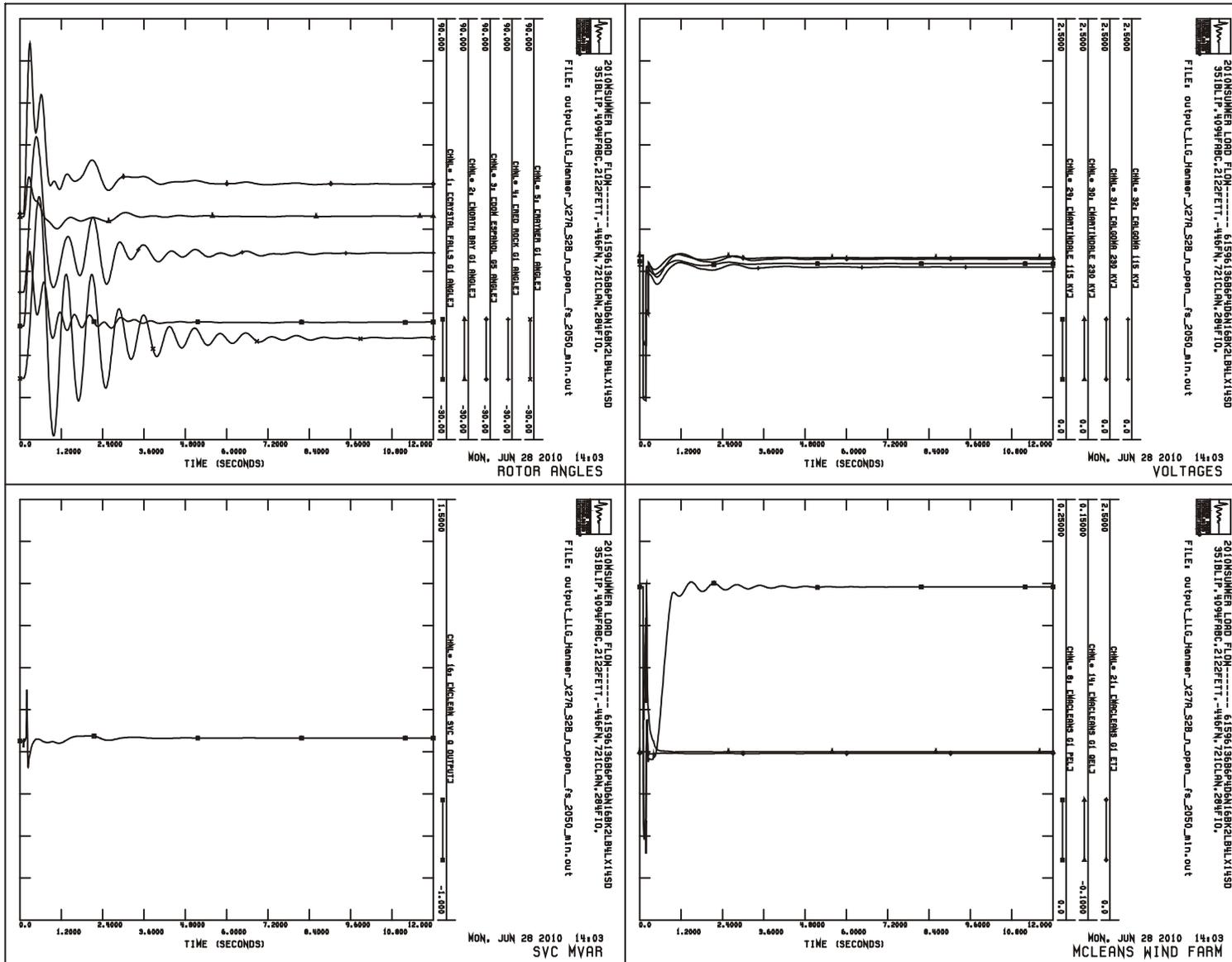




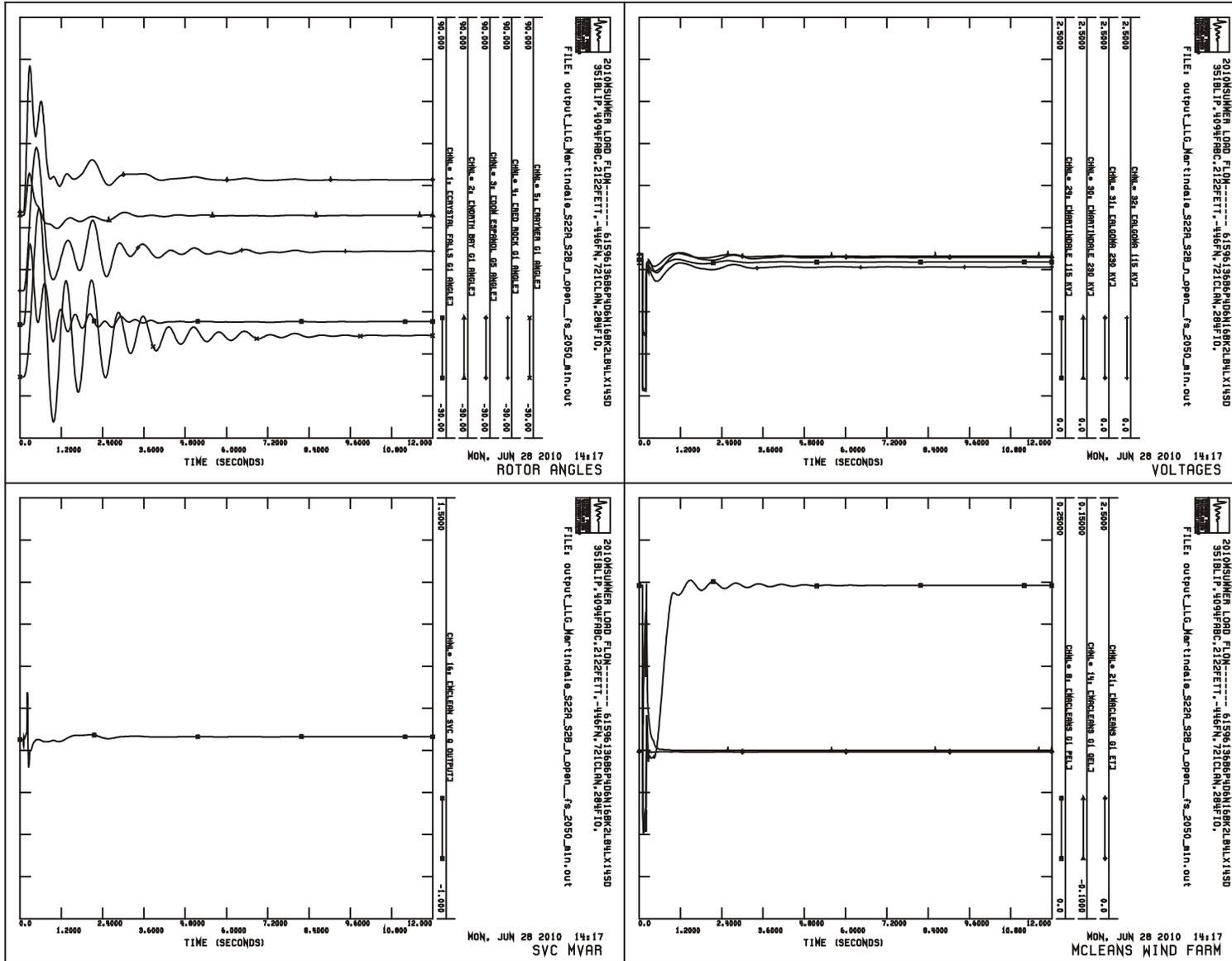
SC3 – Scenario S2: 3 phase Fault on X503E at Hanmer 500 kV



SC4 – Scenario S2: LLG Fault on X74P at Hammer 230 kV

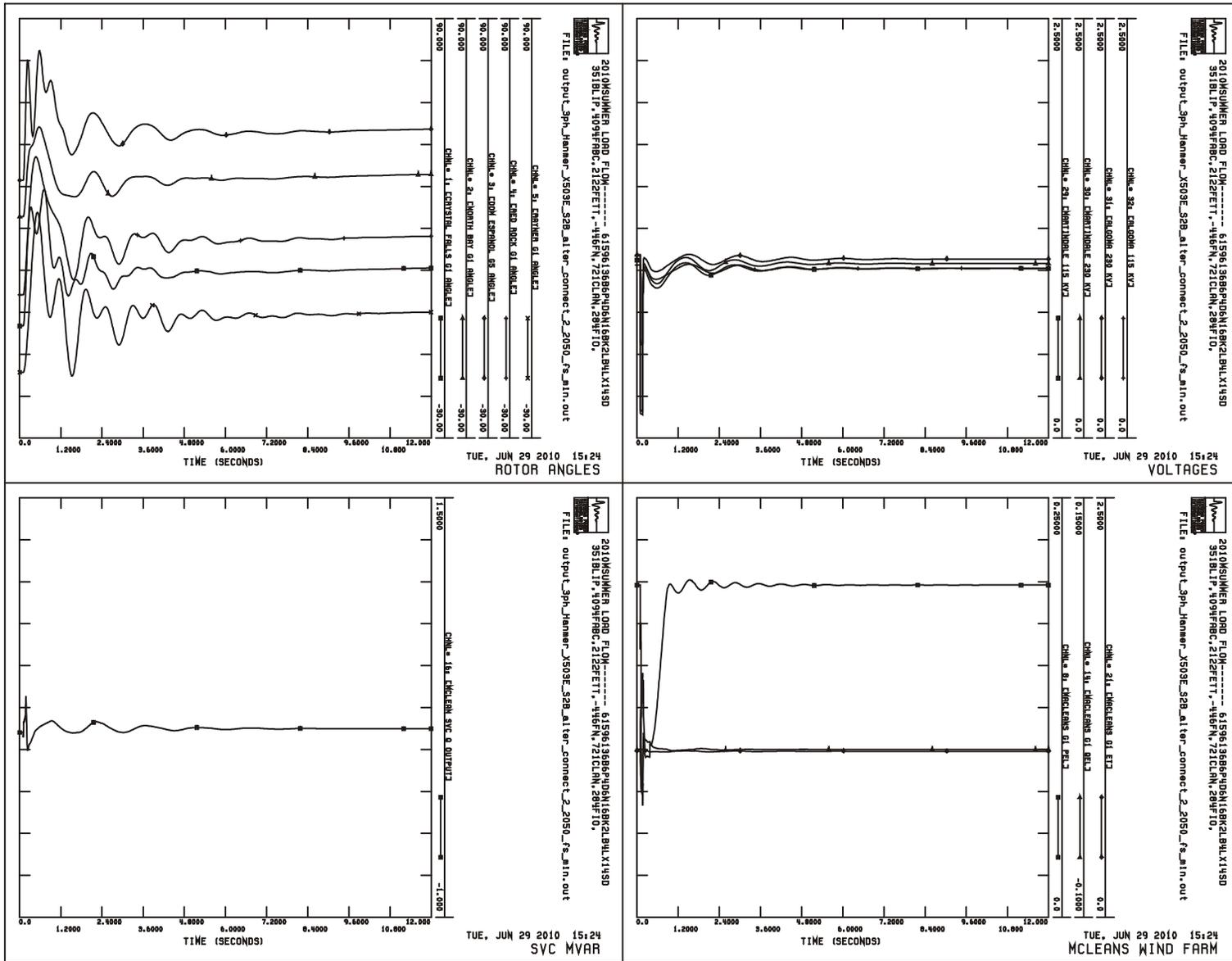


SC5 – Scenario S2: LLG Fault on X27A at Hanmer 230 kV

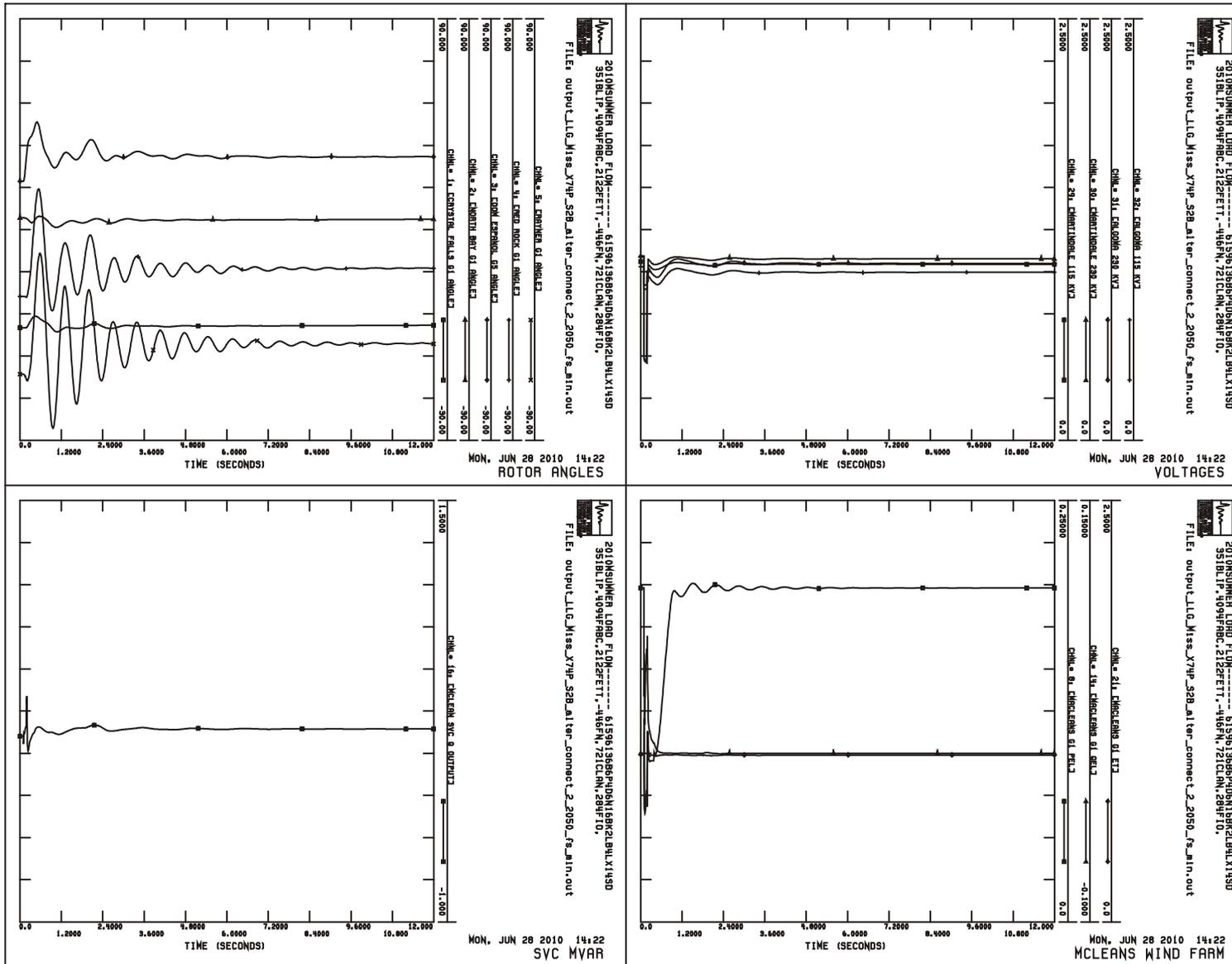


SC6 – Scenario S2: LLG S22A at Martindale 230 kV

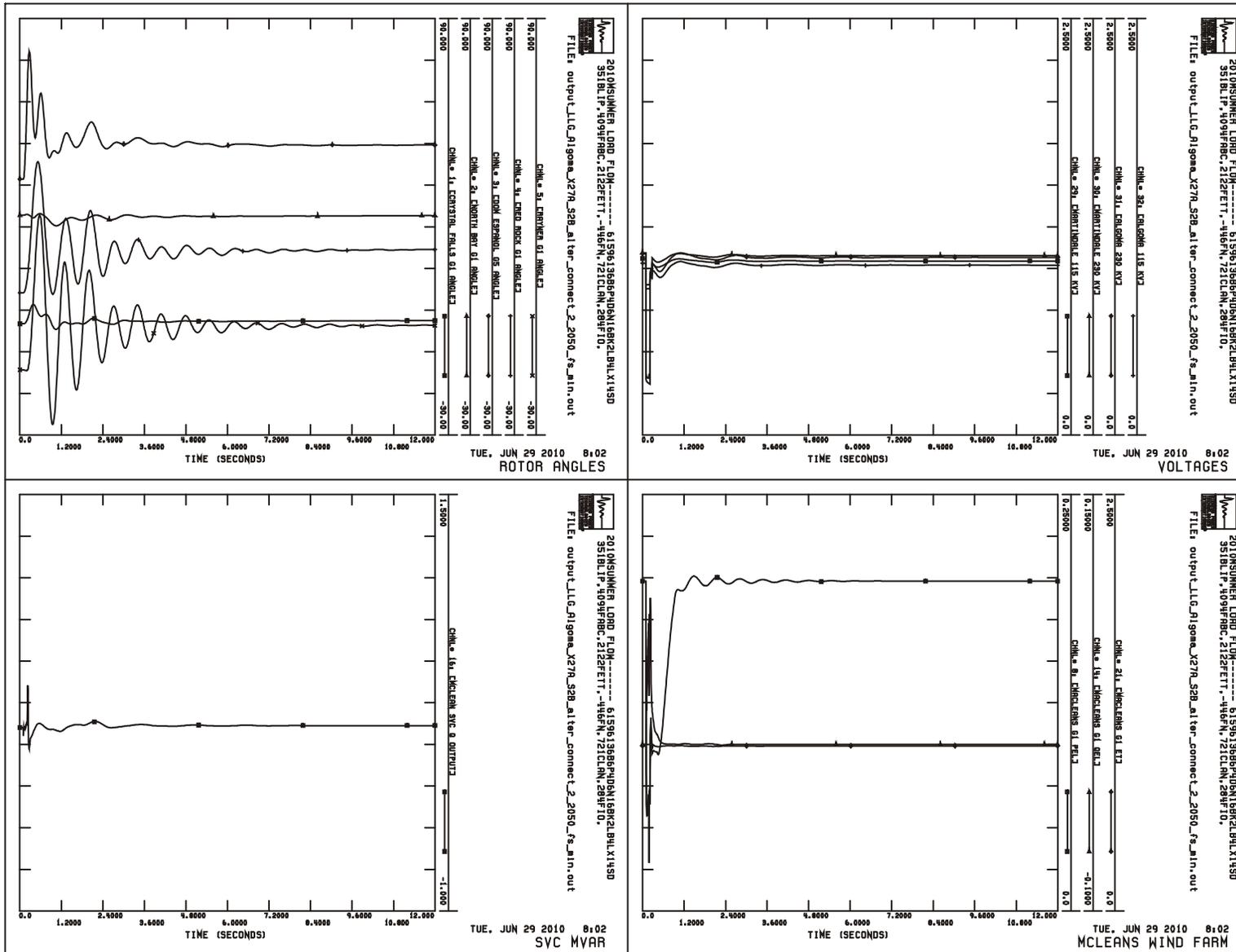




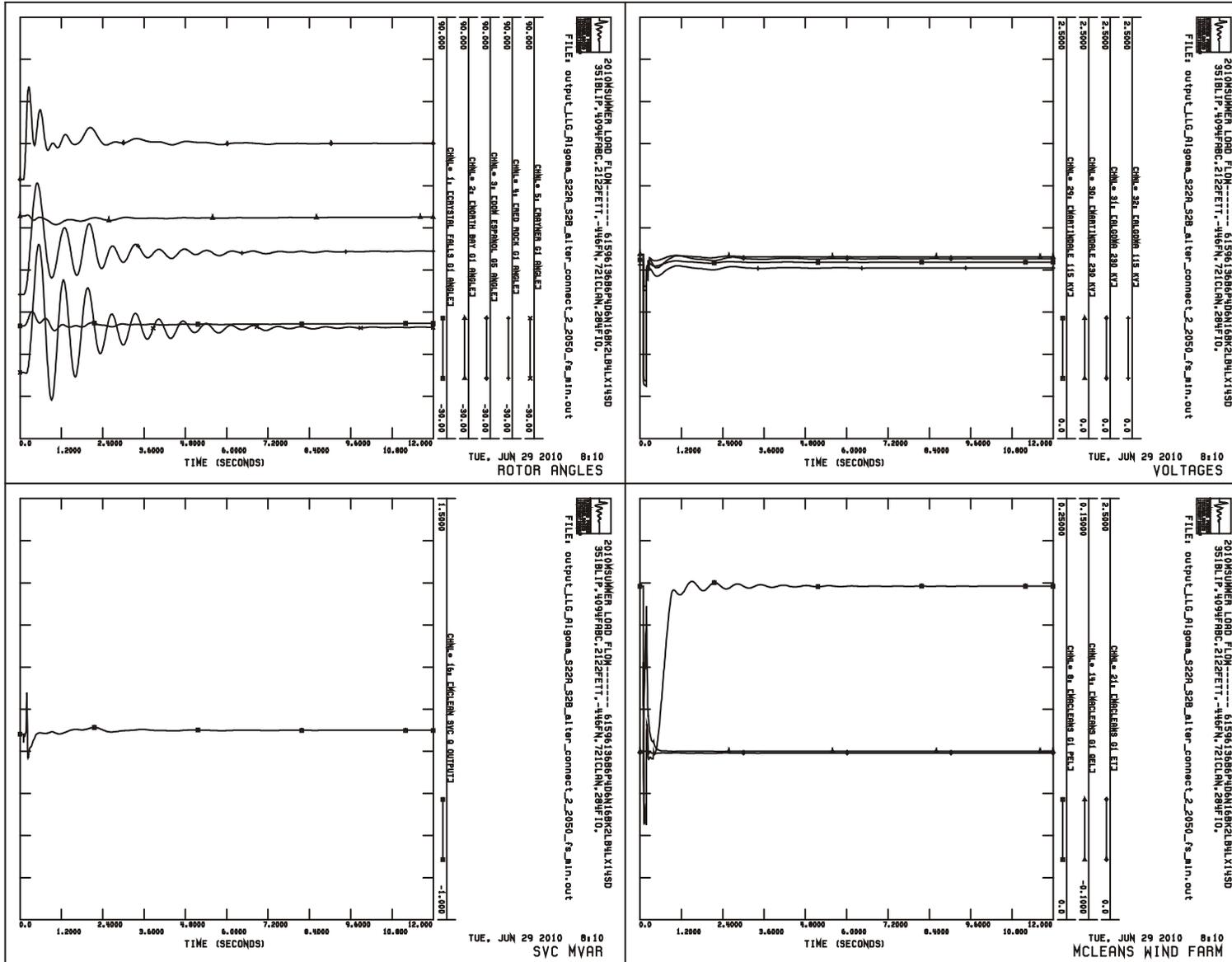
SC8 – Scenario S4: 3 Phase Fault on X503E at Hammer 500 kV



SC9 – Scenario S4: LLG fault on X74P at Mississagi 230 kV



SC10 – Scenario S4: LLG Fault on X27A at Algoma 230 kV



SC 11 – Scenario S4: LLG Fault on S22A at Algoma 230 kV

## **Appendix C: Protection Impact Assessment**



Hydro One Networks Inc.  
483 Bay Street  
Toronto, Ontario  
M5G 2P5

**Protection Impact Assessment**  
**Maclean's Mountain Windfarm**  
**59.4 MW Wind**  
**Generation Connection**

Date: Sept 3, 2010 R3  
P&C Planning Group Project # PCT-113

Prepared by:

Hydro One Networks Inc.

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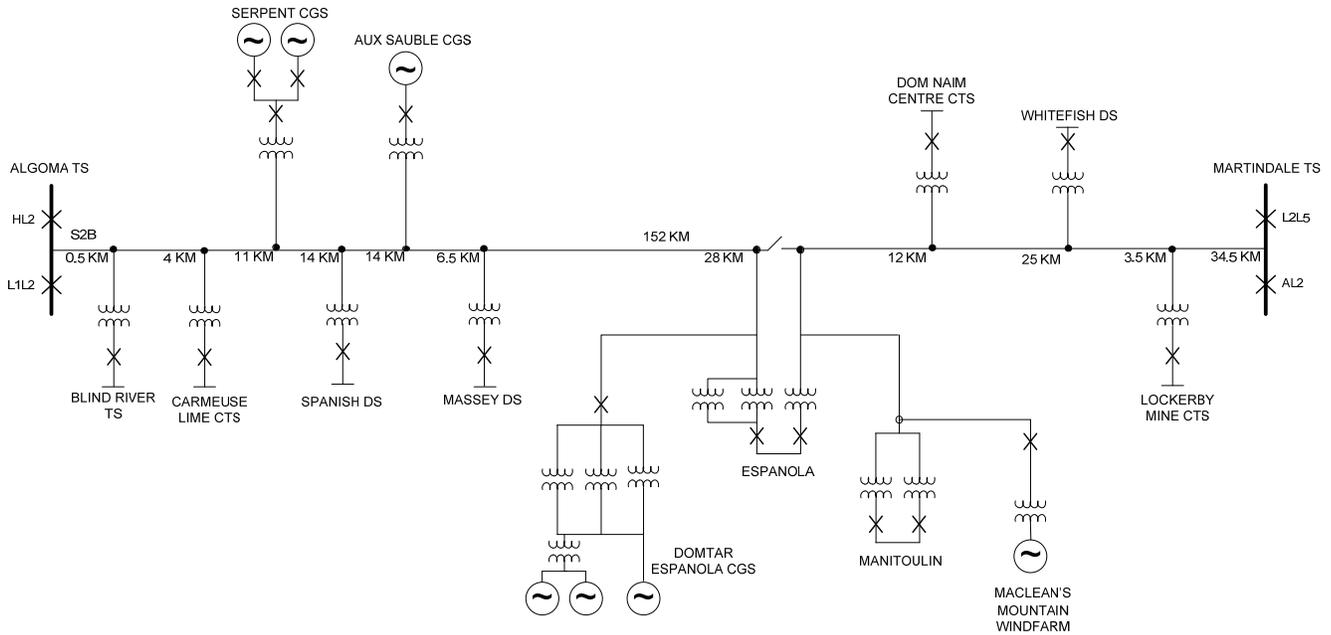
### Disclaimer

This Protection Impact Assessment has been prepared solely for the IESO for the purpose of assisting the IESO in preparing the System Impact Assessment for the proposed connection of the proposed generation facility to the IESO-controlled grid. This report has not been prepared for any other purpose and should not be used or relied upon by any person, including the connection applicant, for any other purpose.

This Protection Impact Assessment was prepared based on information provided to the IESO and Hydro One by the connection applicant in the application to request a connection assessment at the time the assessment was carried out. It is intended to highlight significant impacts, if any, to affected transmission protections early in the project development process. The results of this Protection Impact Assessment are also subject to change to accommodate the requirements of the IESO and other regulatory or legal requirements. In addition, further issues or concerns may be identified by Hydro One during the detailed design phase that may require changes to equipment characteristics and/or configuration to ensure compliance with the Transmission System Code legal requirements, and any applicable reliability standards, or to accommodate any changes to the IESO-controlled grid that may have occurred in the meantime.

Hydro One shall not be liable to any third party, including the connection applicant, which uses the results of the Protection Impact Assessment under any circumstances, whether any of the said liability, loss or damages arises in contract, tort or otherwise.

**EXECUTIVE SUMMARY**



**Figure 1: MacLean’s Mountain Windfarm Connection to HONI Transmission System**

It is feasible for MacLean’s Mountain Windfarm to connect the proposed 59.4 MW generation at the location in Figure 1 as long as the proposed changes are made:

**PROTECTION HARDWARE**

- Due to connection of the new MacLean’s Mountain Windfarm generating facility, the electromechanical relays at Martindale and Algoma TS must be replaced with microprocessor based relays having multiple setting groups. Multiple setting groups are required to accommodate several operating conditions: namely, with the line sectionalizer at Espanola TS open/closed and the S2B circuit connected to Martindale TS or Algoma TS.

**PROTECTION SETTING**

- The updated protections will function as the existing ones in a Directional Underreaching Scheme for Zone 1 and Directional Overreaching Scheme for Zones 2 and 3. The existing Zone 2 and Zone 3 reaches will be extended to cover the maximum apparent impedance due to the connection of the MacLean’s Mountain Windfarm. Time delay settings will need to be reviewed to ensure proper coordination.

## TELECOMMUNICATIONS

- New communications will be required between MacLean's Mountain Windfarm and Martindale TS (normal supply terminal) for transfer trip and GEO signals. When the entire circuit is supplied from Algoma TS only, the MacLean's Mountain Windfarm will need to be taken offline. If MacLean's Wind Farm requires to be connected under this operating condition, communications (transfer trip and GEO) must be established to Algoma TS.

**McLean's Mountain Wind Limited Partnership**  
**Exhibit I**  
**Tab 1**  
**Schedule 4**

**INTERCONNECTION: CUSTOMER IMPACT ASSESSMENT**



Hydro One Networks Inc.  
483 Bay Street  
Toronto, Ontario  
M5G 2P5

**CUSTOMER IMPACT ASSESSMENT  
FINAL**

**Proposed 59.4 MW  
McLean's Mountain Wind Farm  
Generation Project**

Revision: **1**

Date: **October 22, 2010**

Prepared by:

---

Marzieh Abdollahi  
Transmission System Development  
Hydro One Networks Inc.

Approved by:

---

Ibrahim El Nahas  
Transmission System Development  
Hydro One Networks Inc.

Issued by:

Transmission System Planning Department  
System Investment Division  
Hydro One Networks Inc.

**CUSTOMER IMPACT ASSESSMENT**  
Proposed 59.4MW McLean's Mountain Wind Farm Project

**Disclaimer**

This Customer Impact Assessment was prepared based on preliminary information available about the connection of the proposed McLean's Mountain Wind Farm Project. It is intended to highlight significant impacts, if any, to affected transmission customers early in the project development process and thus allow an opportunity for these parties to bring forward any concerns that they may have including those needed for the review of the connection and for any possible application for leave to construct. Subsequent changes to the required modifications or the implementation plan may affect the impacts of the proposed connection identified in this Customer Impact Assessment. The results of this Customer Impact Assessment and the estimate of the outage requirements are also subject to change to accommodate the requirements of the IESO and other regulatory or municipal authority requirements.

Hydro One Networks shall not be liable to any third party which uses the results of the Customer Impact Assessment under any circumstances whatsoever, for any indirect or consequential damages, loss of profit or revenues, business interruption losses, loss of contract or loss of goodwill, special damages, punitive or exemplary damages, whether any of the said liability, loss or damages, arises in contract, tort or otherwise.

# **CUSTOMER IMPACT ASSESSMENT**

## **PROPOSED 59.4MW MCLEANS WIND FARM PROJECT**

### **1. INTRODUCTION**

#### **1.1 Scope of the Study**

This study covers the impact of the proposed McLean's Mountain Wind Farm Project (MMWFP) on the Hydro One Networks Inc. (Hydro One) system in the area. The primary focus of this study is to identify the impact on the transmission connected customer facilities and ensure that the voltage performance at these facilities meets the planning criteria. The study also assists in determining if any transmission system upgrade will be required to integrate the proposed generation during possible system conditions.

**This study does not evaluate the overall impact of the MMWFP on the bulk system. The impact of MMWFP on the bulk system is the subject of the System Impact Assessment (SIA) which is issued by the Independent Electricity System Operator (IESO). In addition, this study does not evaluate the impact of the MMWFP on the existing network's Protection and Control facilities. Protection and Control aspects will be reviewed under the Protection Impact Assessment (PIA) and during the preparation of the Connection Cost Estimate stage of the project and will be reflected in the Connection Cost Recovery Agreement (CCRA).**

### **2. BACKGROUND**

Northland Power Inc. is proposing to construct a 59.4MW wind farm under Ontario Power Authority's (OPA) Feed-In-Tariff (FIT) program. The facility, known as McLean's Mountain Wind Farm Project, consists of 33 wind turbine generators with a nameplate rating of 1.8MVA at 1.0 power factor. The facility will connect to the transmission system through a 34.5/125 kV step-up transformer and a 115 kV transmission line consisting of a 1.5km submarine cable and a 10km overhead line tapping onto S2B line between Manitoulin TS and Espanola JCT (Please refer to Fig. 1 and 2).

The proposed project will utilize 33 Vestas V90, 1.8MW wind turbine generators arranged in three groups of 11 turbines. The generators are induction generators with an output voltage of 690V. The output transformers of the individual turbines are connected to the 34.5 kV collector system for each group. The groups are then connected to the 34.5 kV bus and the bus is connected to a 34.5/115 kV step-up transformer. The transformer, which is equipped with ULTC operating between 111kV and 136kV, will connect to Hydro One's S2B 115 kV circuit.

The draft CIA was issued and sent out to IESO and impacted customers on September 29<sup>th</sup>, 2010. Several comments and questions were received from the customers. These comments have been addressed in this version of the CIA.

### **3. METHODOLOGY & CRITERIA**

#### **3.1 Voltage Performance - Planning Criteria**

To establish the impact of incorporating the proposed MMWFP, the following post-fault voltage decline criteria were applied.

- At the Bulk Electricity System Level (115kV and up): The loss of a single transmission circuit should not result in a voltage decline greater than 10% for pre- and post- transformer tap-changer action.
- The maximum and minimum phase-to-phase voltages given in the IESO's Transmission Assessment Criteria and Canadian Standard Association document CAN-3-C235-83 were considered. However, in Northern Ontario, the maximum continuous voltage for the 230kV and 115KV systems can be as high as 260kV and 132kV respectively (from IESO document IMO\_REQ\_0041 Issue 5.0).

The voltage performance on Hydro One customers was assessed by monitoring the voltage performance of the 115kV stations of circuit S2B.

#### **3.2 Power System Analysis**

Power System Analysis is an integral part of the transmission planning process. It is used by Hydro One to evaluate the capability of the existing network to deliver power and energy from generating stations to provide a reliable supply to customers. Two relevant aspects of Power System Analysis were used for this assessment, namely:

- **Short-Circuit Studies:** A Short Circuit Analysis program was used to determine the impact on customers.
- **Load Flow Studies:** An AC load flow program was used to set up a base case with the MMWFP facility.

#### 4. SHORT-CIRCUIT STUDIES

Short-circuit studies were carried out to assess the fault contribution when the new MMWFP facilities are placed in-service. The impact of the new facilities on the fault levels on Hydro One customers through the 115kV S2B circuit was analyzed.

The study results are summarized in Tables 1 and 2 below showing both symmetric and asymmetric fault currents in kA. Table 1 shows the existing fault levels based on the following assumptions:

- All existing and committed generating facilities in-service in the area.
- The maximum pre-fault voltage considered for the two voltage levels is shown on the table below.

Pre-fault Voltages (kV)	
Level	Pre-fault
220	260
115	132

**Table 1: Fault Levels before Incorporating MMWFP**

Fault Level Locations	Bus Voltage (kV)	Fault Levels (kA)			
		3-Phase		Line-Ground	
		Symmetrical	Asymmetrical	Symmetrical	Asymmetrical
WHITEFISH_DS	118.05	2.881	2.886	1.925	1.927
FAL_LOCKERBY	118.05	3.468	3.518	2.378	2.382
MANITOULIN_T	118.05	1.191	1.195	0.699	0.699
DOMTAR_NAIRN	118.05	2.150	2.167	1.404	1.406
MASSEY_DS	118.05	2.986	3.051	1.642	1.644
DOM_ESPANOLA	118.05	2.482	2.787	1.231	1.235
ESPANOLA_TS	118.05	2.516	2.863	1.251	1.255
CARMEUSE_LM	118.05	8.127	8.527	7.706	7.964
SPANISH_DS	118.05	4.295	4.431	2.624	2.645
SERPENT_RIV	118.05	5.011	5.156	3.369	3.410
AUX_SABLE_GS	118.05	2.955	3.039	1.612	1.618
MARTINDALE	118.05	14.325	16.681	17.542	21.507
ALGOMA	118.05	10.131	11.277	11.882	13.866
ESPANOLA_BY	44	3.911	5.088	4.926	6.623
MANITOULIN_J	44	1.764	1.805	2.374	2.460
MANITOULIN_Q	44	1.766	1.806	2.379	2.464

**Table 2: Fault Levels after Incorporation of MMWFP**

Fault Level Locations	Bus Voltage (kV)	Fault Levels (kA)			
		3-Phase		Line-Ground	
		Symmetrical	Asymmetrical	Symmetrical	Asymmetrical
WHITEFISH_DS	118.05	3.241	3.249	2.254	2.256
FAL_LOCKERBY	118.05	3.920	3.992	2.816	2.833
MANITOULIN_T	118.05	1.814	1.922	1.831	2.021
DOMTAR_NAIRN	118.05	2.660	2.715	1.977	1.996
MASSEY_DS	118.05	2.987	3.052	1.645	1.647
DOM_ESPANOLA	118.05	2.482	2.788	1.234	1.238
ESPANOLA_TS	118.05	2.516	2.863	1.254	1.259
CARMEUSE_LM	118.05	8.132	8.531	7.713	7.970
SPANISH_DS	118.05	4.296	4.432	2.627	2.647
SERPENT_RIV	118.05	5.012	5.157	3.371	3.412
AUX_SABLE_GS	118.05	2.955	3.039	1.615	1.620
MARTINDALE	118.05	14.750	17.128	17.990	21.989
ALGOMA	118.05	10.137	11.284	11.895	13.879
ESPANOLA_BY	44	3.911	5.088	4.926	6.623
MANITOULIN_J	44	2.245	2.475	2.938	3.365
MANITOULIN_Q	44	2.248	2.476	2.945	3.368

Table 2 shows that the fault levels after the incorporation of MMWFP meet maximum symmetrical three-phase and single line-to-ground faults (kA) of 115 kV stations as set out in Appendix 2 of the *Transmission System Code* (TSC) and reproduced below. It also meets the requirements of Hydro One equipment in the identified stations.

Nominal Voltage (kV)	Max. 3-Phase Fault (kA)	Max. SLG Fault (kA)
44	20	19
115	50	50
220	63	80
500	80	80

**4.1. Impact at Stations Previously Mitigated for Fault Level**

Customer Impact Assessment studies conducted for projects that have either previously connected or plan to connect prior to the connection date planned for this project have identified stations where the fault level has exceeded the limits contained in Appendix B of the *Transmission System Code* (TSC), and it was necessary to install measures to

reduce the fault level to within those contained in the TSC. The customer whose project caused the fault level to exceed the TSC limit either funded or will be required to fund the cost of this mitigation measure. The TSC requires that any customer that benefits from such an installation that connects within five calendar years of the in-service date of the mitigation measure also contribute towards the cost of the measure, and that any such payments be refunded to the original contributing customer(s). This Section of this CIA report is to report on the impact that this project has at those previously mitigated stations to see if this project is required to financially contribute to the cost for any of those measures.

Fault Level Locations	Bus Voltage (kV)	Symmetrical 3-Phase Fault level (kA)			Symmetrical L-G Fault level (kA)		
		Without MMWFP	With MMWFP	Difference if $\geq 0.01$	Without MMWFP	With MMWFP	Difference if $\geq 0.01$
Windsor Walker TS #1 EQ	28	17.526	17.526	0	3.053	3.053	0
Martindale Z	44	14.873	14.900	0.027	19.738	19.770	0.032
Caledonia	28	16.512	16.512	0	9.909	9.909	0
Kingsville TS	28	16.714	16.714	0	11.853	11.853	0

**Table 3: Impact at Stations Previously Mitigated for Fault Levels**

The results of the table above show that current L-G fault levels at Martindale 44kV bus already exceeds the TSC limits (19kA). Adding MMWFP increases the fault levels at Martindale LV bus by about 30A ( $\geq 0.01$ kA). Therefore, MMWFP has to make a capital contribution towards the cost of the mitigation measure installed for this problem, the proportion of funding will be determined in their CCRA.

## 5. LOAD FLOW STUDIES

Load flow studies were carried out to analyze the impact of the new wind farm on the voltage performance of Hydro One customers in the affected area. The load flow model used for the load flow analysis performed by Hydro One was based on information supplied by the IESO.

### 5.1. Base Case

S2B circuit is normally operated open at Espanola. It means that half of S2B including Manitoulin is normally supplied from Martindale (S2B east) and the other half is supplied from

Algoma (S2B west). As a result, any change on S2B east (e.g., adding MMWFP) does not have a significant impact on S2B west and vice versa.

Two base cases representing the system with S2B east minimum and maximum load were used for the contingency analysis. System loads were adjusted to attain minimum and maximum flow from Martindale to S2B east which corresponds to S2B east minimum and maximum load respectively.

## **5.2. Impact of Adding MMWFP**

Based on IESO requirements, when modeling the wind farm, it is assumed that a dynamic reactive power device with a capability of -21/+29 MVar is installed at the collector bus to compensate for the dynamic reactive power capability of the facility. It is also assumed that a static compensation device of 7MVar is installed at the collector bus to compensate for the losses within the wind farm.

The impact of incorporating MMWFP on S2B bus voltages for minimum and maximum load conditions is shown in Tables 1 and 2 of Appendix 1. No voltage limit violation is observed in Tables 1 and 2. Therefore, the impact of adding MMWFP on the system is acceptable.

## **5.3. Contingency Analysis**

The following single element contingencies were identified as being potentially critical after the connection of MMWFP:

- **Contingency #1:** Loss of MMWFP
- **Contingency #2:** Loss of S6F
- **Contingency #3:** Loss of S5M
- **Contingency #4:** Loss of L1S

The first contingency, loss of MMWFP, was analyzed for two cases, minimum load on S2B east, as well as maximum load on S2B east. The results for this contingency, which is the worst contingency, are represented in Tables 4 and 5.

**Table 4: Loss of MMWFP Voltage Performance  
(S2B East Minimum Load)**

Bus Name	Base Case	IMM	%IMM	ULTC	%ULTC
Algoma	123.6	123.8	0.16	123.8	0.16
Manitoulin TS	122.2	126.6	3.60	126.6	3.60
Manitoulin 44kV	46.5	48.1	3.44	46.3	-0.43
WhiteFish 115kV	124.1	126.9	2.26	126.9	2.26
WhiteFish 12.5kV	13	13.3	2.31	13.3	2.31
Espanola J	123.2	127	3.08	127	3.08
Domtar-Narin J	123.4	127	2.92	127	2.92
Vermillion J	124.3	127	2.17	127	2.17
Martindale TS	126	127	0.79	127	0.79

**Table 5: Loss of MMWFP Voltage Performance  
(S2B East Maximum Load)**

Bus Name	Base Case	IMM	%IMM	ULTC	%ULTC
Algoma	123.6	123.5	-0.08	123.5	-0.08
Manitoulin TS	119.3	116.8	-2.10	116.8	-2.10
Manitoulin 44kV	46.8	45.8	-2.14	45.8	-2.14
WhiteFish 115kV	123.1	122.3	-0.65	122.3	-0.65
WhiteFish 12.5kV	12.5	12.4	-0.80	12.4	-0.80
Espanola J	121.5	119.9	-1.32	119.9	-1.32
Domtar-Narin J	122	120.6	-1.15	120.6	-1.15
Vermillion J	123.5	122.9	-0.49	122.9	-0.49
Martindale TS	126	126	0.00	126	0.00

The other three contingency scenarios (i.e., loss of another circuit of Martindale 115kV bus) were analyzed for S2B east minimum load. The results are summarized in Tables 1 to 6 of Appendix 2 for the following two cases:

- before connecting MMWFP to Hydro One network
- after connecting MMWFP to Hydro One network

The tables show the voltages immediately after the contingency (**IMM**) and after under-load tap-changer operations (**ULTC**). The percentage changes in relation to the pre-contingency values are also provided.

The contingency analyses performed indicate that the post-contingency voltage performance at the monitored stations is acceptable. Circuit loadings were also monitored. The introduction of MMWFP did not adversely impact post-contingency flows. It is reasonable to conclude that the impact of these contingencies on customer's facilities is acceptable.

## 6. CUSTOMER RELIABILITY

The proposed MMWFP will have a high voltage breaker connected at the point of common coupling on S2B. Faults along the line tap will be cleared by the breaker and have minimum impact on the customers supplied by circuit S2B.

## 7. CONCLUSIONS AND RECOMMENDATIONS

In the connection approval process, a Customer Impact Assessment (CIA) report is carried out for a specific connection proposal that has been submitted to the IESO for System Impact Assessment (SIA). Many of the study parameters are established in the SIA. This study was carried in advance of a SIA with the preliminary information provided by Northland Power Inc. and intended to provide a general indication on the potential impact of the McLean's Mountain Wind Farm Project connection on Hydro One customers. The study includes short circuit and voltage performance analyses on transformer stations connected to S2B circuit. Two base cases, representing S2B east minimum and maximum loads, were used in the contingency analyses. The study did not include any consideration for potential impact of the proposed generation connection on the BES. This is considered under the SIA carried out by the IESO.

The studies carried out indicated that for different load levels considered, no adverse impact on voltage performance to the customers in the area would be expected. The study indicates insignificant increase in short circuit levels at the 115kV level. However, connecting MMWFP will increase the short circuit levels on Martindale 44kV bus by 32A. Since the short circuit levels on Martindale TS are already above the TSC limit, mitigation measures are required to be put in place prior to connecting the wind farm and MMWFP will be required to contribute towards the mitigation cost if they wish to continue with their connection. Potentially impacted customers will need to review the adequacy of their equipment.

## 8. REFERENCES

- [1] Independent Electricity Market Operator (IMO), *IMO Transmission Assessment Criteria*, Issue 5.0.
- [2] Ontario Energy Board, *Transmission System Code*, July 25, 2005

## Appendix 1: Impact of Incorporating MMWFP

Tables 1 and 2 summarize the impact of incorporating MMWFP for S2B east minimum and maximum load conditions respectively.

**Table 1: Impact of Incorporating MMWFP  
(Martindale Minimum Flow Condition)**

Bus Name	Base Case (Minimum Load)	After Connection of MMWFP
<b>Algoma</b>	123.8	123.6
<b>Manitoulin TS</b>	126.6	122.2
<b>Manitoulin 44kV</b>	46.9	46.5
<b>WhiteFish 115kV</b>	126.9	124.1
<b>WhiteFish 12.5kV</b>	13.3	13
<b>Espanola J</b>	127	123.2
<b>Domtar-Narin J</b>	127	123.4
<b>Vermillion J</b>	127	124.3
<b>Martindale TS</b>	127	126

**Table 2: Impact of Incorporating MMWFP  
(Martindale Maximum Flow Condition)**

Bus Name	Base Case (Maximum Load)	Base Case After Connection of MMWFP
<b>Algoma</b>	123.5	123.6
<b>Manitoulin TS</b>	116.8	119.3
<b>Manitoulin 44kV</b>	46.9	46.8
<b>WhiteFish 115kV</b>	122.3	123.1
<b>WhiteFish 12.5kV</b>	12.4	12.5
<b>Espanola J</b>	119.9	121.5
<b>Domtar-Narin J</b>	120.6	122
<b>Vermillion J</b>	122.9	123.5
<b>Martindale TS</b>	126	126

## Appendix 2: Contingency Analysis (Loss of S6F, S5M and L1S)

The results of contingency analysis for the loss of S6F, S5M and L1S are summarized in Tables 1 to 6. Tables 1, 3 and 5 show the impact of losing S6F, S5M and L1S before incorporating the MMWFP, while Tables 2, 4 and 6 show the results after connecting the wind farm. For all mentioned contingency, a base case with S2B east minimum load was used.

**Table 1: Loss of S6F before Connecting MMWFP  
Voltage Performance**

Bus Name	Base Case	IMM	%IMM	ULTC	%ULTC
Algoma	123.8	124.1	0.24	124.1	0.24
Manitoulin TS	126.6	127.9	1.03	127.9	1.03
Manitoulin 44kV	46.9	47.4	1.07	46.7	-0.43
WhiteFish 115kV	127	128.2	0.94	128.2	0.94
WhiteFish 12.5kV	13.3	13.4	0.75	13.4	0.75
Espanola J	127	128.2	0.94	128.2	0.94
Domtar-Narin J	127	128.2	0.94	128.2	0.94
Vermillion J	127	128.2	0.94	128.2	0.94
Martindale TS	127	128.2	0.94	128.2	0.94

**Table 2: Loss of S6F after Connecting MMWFP  
Voltage Performance**

Bus Name	Base Case	IMM	%IMM	ULTC	%ULTC
Algoma	123.6	123.9	0.24	123.9	0.24
Manitoulin TS	122.2	122.9	0.57	122.9	0.57
Manitoulin 44kV	46.5	46.7	0.43	46.7	0.43
WhiteFish 115kV	124.1	125.1	0.81	125.1	0.81
WhiteFish 12.5kV	13	13.1	0.77	13.1	0.77
Espanola J	123.2	124	0.65	124	0.65
Domtar-Narin J	123.4	124.3	0.73	124.3	0.73
Vermillion J	124.3	125.3	0.80	125.3	0.80
Martindale TS	126	127.1	0.87	127.1	0.87

**Table 3: Loss of S5M before Connecting MMWFP  
Voltage Performance**

Bus Name	Base Case	IMM	%IMM	ULTC	%ULTC
Algoma	123.8	123.9	0.08	123.9	0.08
Manitoulin TS	126.6	127.1	0.39	127.1	0.39
Manitoulin 44kV	46.9	47.1	0.43	47.1	0.43
WhiteFish 115kV	127	127.4	0.31	127.4	0.31
WhiteFish 12.5kV	13.3	13.3	0.00	13.3	0.00
Espanola J	127	127.4	0.31	127.4	0.31
Domtar-Narin J	127	127.4	0.31	127.4	0.31
Vermillion J	127	127.4	0.31	127.4	0.31
Martindale TS	127	127.4	0.31	127.4	0.31

**Table 4: Loss of S5M after Connecting MMWFP  
Voltage Performance**

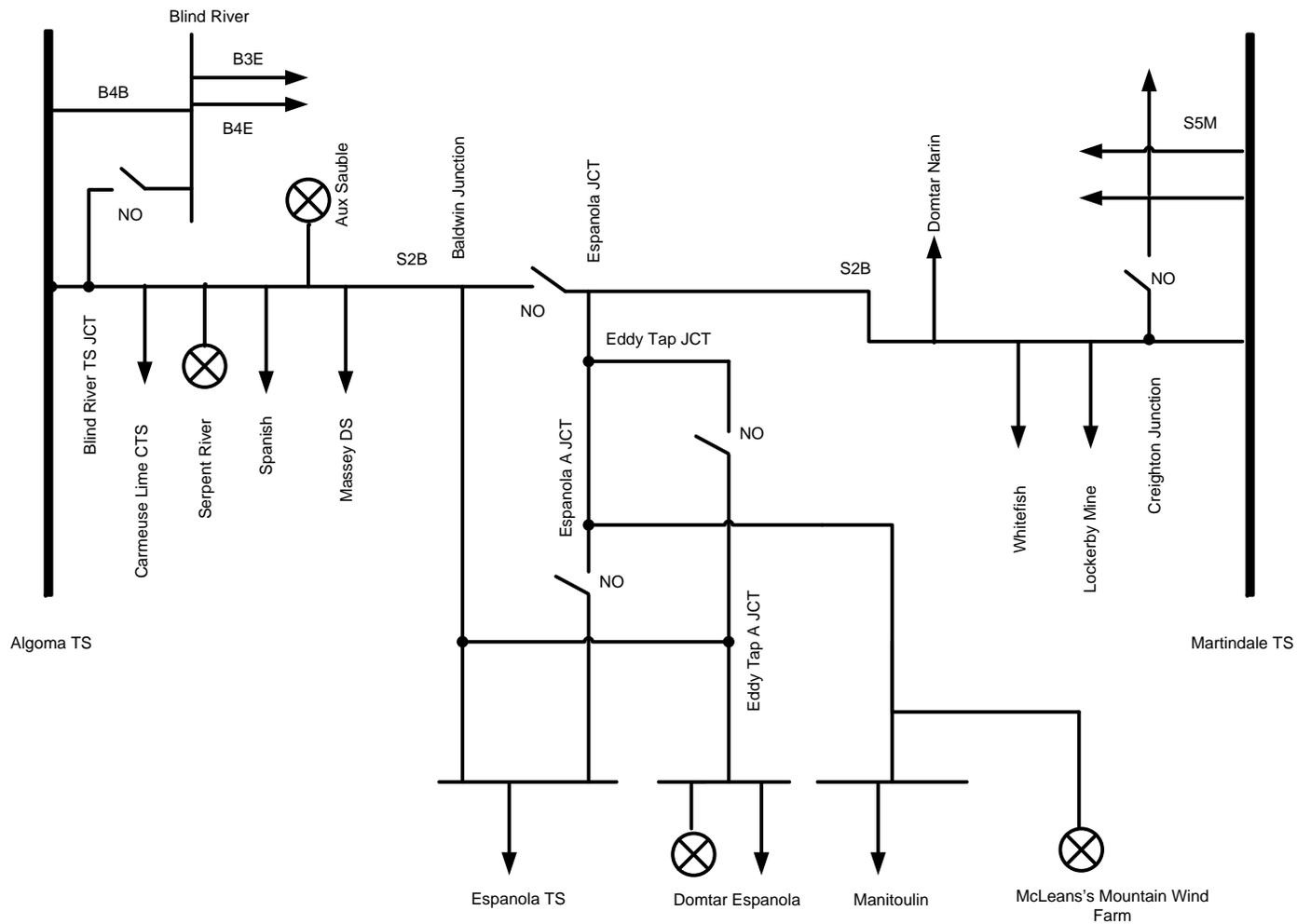
Bus Name	Base Case	IMM	%IMM	ULTC	%ULTC
<b>Algoma</b>	123.6	123.7	0.08	123.7	0.08
<b>Manitoulin TS</b>	122.2	122.5	0.25	122.5	0.25
<b>Manitoulin 44kV</b>	46.5	46.5	0.00	46.5	0.00
<b>WhiteFish 115kV</b>	124.1	124.5	0.32	124.5	0.32
<b>WhiteFish 12.5kV</b>	13	13	0.00	13	0.00
<b>Espanola J</b>	123.2	123.5	0.24	123.5	0.24
<b>Domtar-Narin J</b>	123.4	123.7	0.24	123.7	0.24
<b>Vermillion J</b>	124.3	124.7	0.32	124.7	0.32
<b>Martindale TS</b>	126	126.4	0.32	126.4	0.32

**Table 5: Loss of L1S before Connecting MMWFP  
Voltage Performance**

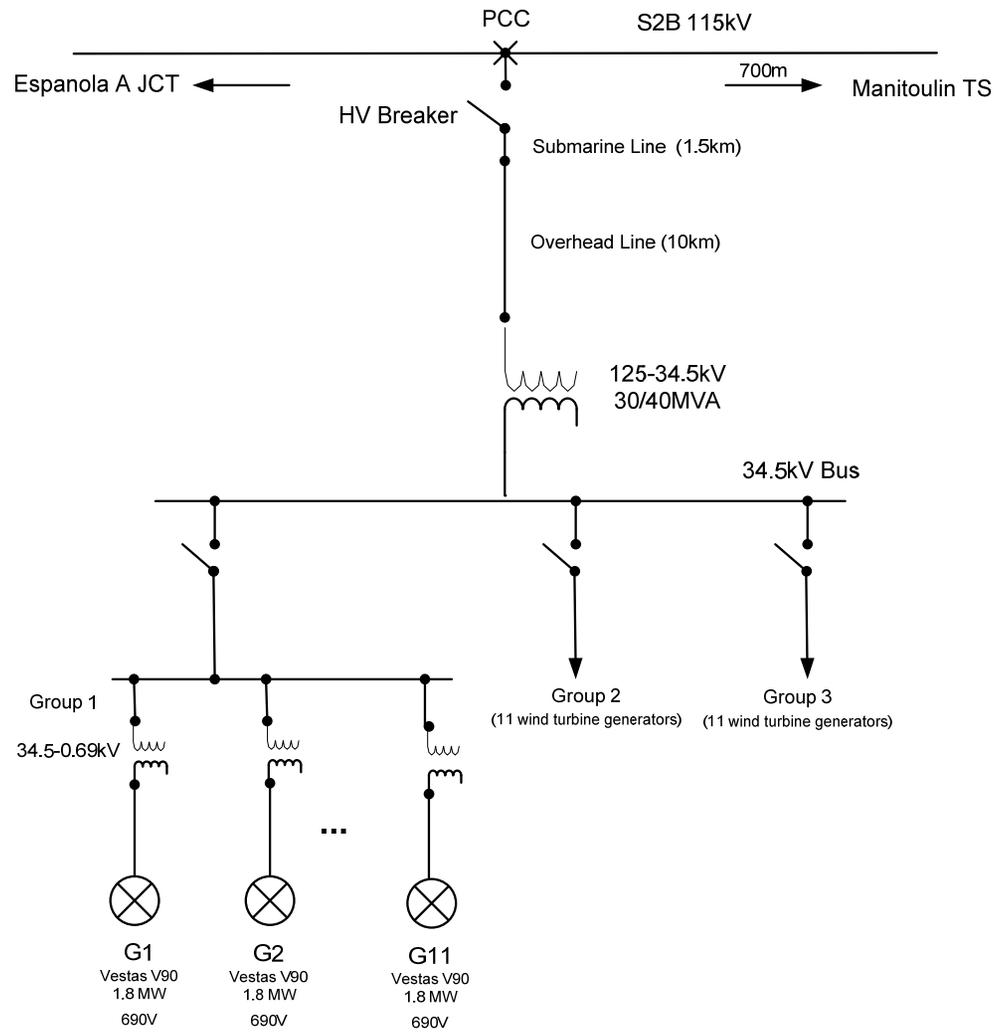
Bus Name	Base Case	IMM	%IMM	ULTC	%ULTC
<b>Algoma</b>	123.8	123.9	0.08	123.9	0.08
<b>Manitoulin TS</b>	126.6	127.3	0.55	127.3	0.55
<b>Manitoulin 44kV</b>	46.9	47.1	0.43	47.1	0.43
<b>WhiteFish 115kV</b>	127	127.6	0.47	127.6	0.47
<b>WhiteFish 12.5kV</b>	13.3	13.3	0.00	13.3	0.00
<b>Espanola J</b>	127	127.6	0.47	127.6	0.47
<b>Domtar-Narin J</b>	127	127.6	0.47	127.6	0.47
<b>Vermillion J</b>	127	127.6	0.47	127.6	0.47
<b>Martindale TS</b>	127	127.6	0.47	127.6	0.47

**Table 6: Loss of L1S after Connecting MMWFP  
Voltage Performance**

Bus Name	Base Case	IMM	%IMM	ULTC	%ULTC
<b>Algoma</b>	123.6	123.7	0.08	123.7	0.08
<b>Manitoulin TS</b>	122.2	122.5	0.25	122.5	0.25
<b>Manitoulin 44kV</b>	46.5	46.6	0.22	46.6	0.22
<b>WhiteFish 115kV</b>	124.1	124.6	0.40	124.6	0.40
<b>WhiteFish 12.5kV</b>	13	13	0.00	13	0.00
<b>Espanola J</b>	123.2	123.5	0.24	123.5	0.24
<b>Domtar-Narin J</b>	123.4	123.8	0.32	123.8	0.32
<b>Vermillion J</b>	124.3	124.8	0.40	124.8	0.40
<b>Martindale TS</b>	126	126.5	0.40	126.5	0.40



**Figure 1: Overview of S2B Configuration**



**Figure 2: McLean's Mountain Wind Farm Single Line Diagram**

**McLean's Mountain Wind Limited Partnership**  
**Exhibit I**  
**Tab 1**  
**Schedule 5**

**INTERCONNECTION: SYSTEM IMPACT ASSESSMENT ADDENDUM**



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# **System Impact Assessment Report (Addendum)**

## **McLean's Mountain Wind Farm**

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### **CONNECTION ASSESSMENT & APPROVAL PROCESS**

*CAA ID 2010-386*

**Final Report**

*Applicant: McLean's Mountain Wind Farm L.P.*

Market Facilitation Department

March 15, 2011

**REPORT**

System Impact Assessment Report

<b>Document ID</b>	IESO_REP_0661
<b>Document Name</b>	System Impact Assessment Report (Addendum)
<b>Issue</b>	Issue 1.0
<b>Reason for Issue</b>	Issue as Addendum
<b>Effective Date</b>	March 15, 2011

## **System Impact Assessment Report**

McLean's Mountain Wind Farm Addendum

### **Acknowledgement**

The IESO wishes to acknowledge the assistance of Hydro One in completing this assessment.

### **Disclaimers**

#### **IESO**

This report has been prepared solely for the purpose of assessing whether the connection applicant's proposed connection with the IESO-controlled grid would have an adverse impact on the reliability of the integrated power system and whether the IESO should issue a notice of approval or disapproval of the proposed connection under Chapter 4, section 6 of the Market Rules.

Approval of the proposed connection is based on information provided to the IESO by the connection applicant and the transmitter(s) at the time the assessment was carried out. The IESO assumes no responsibility for the accuracy or completeness of such information, including the results of studies carried out by the transmitter(s) at the request of the IESO. Furthermore, the connection approval is subject to further consideration due to changes to this information, or to additional information that may become available after the approval has been granted. Approval of the proposed connection means that there are no significant reliability issues or concerns that would prevent connection of the proposed facility to the IESO-controlled grid. However, connection approval does not ensure that a project will meet all connection requirements. In addition, further issues or concerns may be identified by the transmitter(s) during the detailed design phase that may require changes to equipment characteristics and/or configuration to ensure compliance with physical or equipment limitations, or with the Transmission System Code, before connection can be made.

This report has not been prepared for any other purpose and should not be used or relied upon by any person for another purpose. This report has been prepared solely for use by the connection applicant and the IESO in accordance with Chapter 4, section 6 of the Market Rules. The IESO assumes no responsibility to any third party for any use, which it makes of this report. Any liability which the IESO may have to the connection applicant in respect of this report is governed by Chapter 1, section 13 of the Market Rules. In the event that the IESO provides a draft of this report to the connection applicant, you must be aware that the IESO may revise drafts of this report at any time in its sole discretion without notice to you. Although the IESO will use its best efforts to advise you of any such changes, it is the responsibility of the connection applicant to ensure that it is using the most recent version of this report.

#### **HYDRO ONE**

#### **Special Notes and Limitations of Study Results**

The results reported in this study are based on the information available to Hydro One, at the time of the study, suitable for a preliminary assessment of a new generation or load connection proposal.

## System Impact Assessment Report

The short circuit and thermal loading levels have been computed based on the information available at the time of the study. These levels may be higher or lower if the connection information changes as a result of, but not limited to, subsequent design modifications or when more accurate test measurement data is available.

This study does not assess the short circuit or thermal loading impact of the proposed connection on facilities owned by other load and generation (including OPG) customers.

In this study, short circuit adequacy is assessed only for Hydro One breakers and does not include other Hydro One facilities. The short circuit results are only for the purpose of assessing the capabilities of existing Hydro One breakers and identifying upgrades required to incorporate the proposed connection. These results should not be used in the design and engineering of new facilities for the proposed connection. The necessary data will be provided by Hydro One and discussed with the connection proponent upon request.

The ampacity ratings of Hydro One facilities are established based on assumptions used in Hydro One for power system planning studies. The actual ampacity ratings during operations may be determined in real-time and are based on actual system conditions, including ambient temperature, wind speed and facility loading, and may be higher or lower than those stated in this study.

The additional facilities or upgrades which are required to incorporate the proposed connection have been identified to the extent permitted by a preliminary assessment under the current IESO Connection Assessment and Approval process. Additional facility studies may be necessary to confirm constructability and the time required for construction. Further studies at more advanced stages of the project development may identify additional facilities that need to be provided or that require upgrading.

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# MCLEAN'S MOUNTAIN WIND FARM IESO SYSTEM IMPACT ASSESSMENT (ADDENDUM)

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## Introduction

This addendum updates the System Impact Assessment, "McLean's Mountain Wind Farm (CAA ID 2010-386)" originally issued on October 27, 2010 for the connection of a new wind power generation farm in Manitoulin Island, Ontario named McLean's Mountain Wind Farm. This project, proposed by McLean's Mountain L.P., is to connect to the provincial grid via the 115 kV circuit S2B. The original assessment evaluated the impact of 59.4 MW of injection from 33 x 1.8 MW Vestas V90 VCUS 60 Hz wind turbine generators at the McLean's Mountain facility.

Recently, McLean's Mountain L.P. has notified the IESO that they will adopt a different technology for their generators, namely the GE-103 2.5MW full conversion wind turbine generator system. The development will now consist of 24 x 2.5 MW wind turbines, with a total maximum output of 60 MW. McLean's Mountain L.P. has also updated their commercial in-service date to October 2012. This addendum examines the impact of the change in generator technology.

## Findings

The following is a list of updated conclusions for the incorporation of McLean's Mountain and they supersede those presented in the original SIA.

- (1) The proposed wind farm, accounting for the change in turbine technology, does not have a material adverse impact on the reliability of the IESO-controlled grid.
- (2) The increase in fault levels, due to the proposed McLean's Mountain, will not exceed the interrupting capabilities of the existing breakers on the IESO-controlled grid.

Under normal S2B operating conditions, the asymmetrical fault level at Martindale 115 kV for a LG fault is 96% of the interrupting capability and under conditions where S2B is supplied entirely by Martindale 115 kV, the asymmetrical fault level at Martindale 115 kV for a LG fault is 99% of the interrupting capability.

- (3) As the amount of load is typically greater than the amount of generation on the 115 kV circuit S2B, the loss of the McLean's wind farm will result in increased flows on S2B. Under high loads along S2B and under conditions where McLean's wind farm and Manitoulin TS are transferred to Algoma 115 kV, the loss of McLean's wind farm may result in S2B line section flows being near or at long term emergency ratings.
- (4) Without the McLean's Mountain wind farm in-service, the pre-contingency voltage at Manitoulin can be as low as 110 kV under 2013 peak load conditions when Manitoulin TS is supplied from Algoma 115 kV and 112 kV under 2013 peak load conditions when Manitoulin TS is supplied from Martindale. In both cases, this voltage is below the minimum acceptable pre-contingency voltage of

113 kV as per the IESO Transmission Assessment Criteria. It was determined that a 7 MX capacitor installed at Manitoulin TS would help increase voltages to above 113 kV.

- (5) Under normal S2B operating conditions, for all contingency cases tested with the proposed McLean's Mountain wind farm, all voltage declines are within the 10% pre and post-ULTC action limit.

Under conditions in which McLean's Mountain and Manitoulin are transferred to Algoma 115 kV supply, the loss of McLean's wind farm, could exceed 10% at McLean's Mountain 115 kV, Manitoulin 44 kV and Manitoulin 115 kV buses under peak system conditions and maximum wind farm active power injection. Under this configuration the pre-contingency reactive injection at the 115 kV point of connection may need to be limited to about 4.7 Mvar to ensure voltage declines are within 10% for the loss of the wind farm.

Sensitivity studies show that under the same system conditions, with a 7 Mvar capacitor at Manitoulin in-service, the wind farm reactive injection at the point of connection must be limited to about 4.5 Mvar in order for voltage declines for the loss of McLean's Mountain to be within IESO criteria.

- (6) None of the recognized contingencies cause any material adverse impact to the transient performance of the IESO-controlled grid.
- (7) The new wind farm is not required to be part of any special protection scheme.
- (8) Based on the information provided by the applicant, the fault ride through capability of the wind turbines is adequate.
- (9) The new generating facility will result in the need for protection and settings revision at Martindale TS and Algoma TS and addition of new telecommunication links between McLean's Mountain and the terminal stations of circuit S2B.

Zone 1 coverage on S2B at Martindale and Algoma will be slightly decreased as a result of the incorporation of McLean's Mountain. Studies show that there is no adverse impact with this reduction.

- (10) The applicant has indicated it will implement a voltage control process whereby all WTGs control the PCC voltage to a reference value, reactive power compensation devices are automatically controlled/switched to regulate the overall WTGs' reactive power generation to around zero output, while the WF main transformer is to be automatically adjusted to regulate the collector bus voltage such that it is within normal range.
- (11) The applicant has indicated that an inertia emulation control function, WindINERTIA, will be part of its wind farm Management system.
- (12) While the facility is capable of injecting/withdrawing up to 33% of its rated active power at all levels of active power at a fixed transformer tap position of 125 kV, a closer examination shows that the wind turbine generator terminal bus voltages would range between 0.88 pu to 1.10 pu. This is outside of the normal generator terminal bus operating range of 0.9 pu to 1.1 pu which would result in turbine tripping under certain conditions. Acceptable voltages at the generator terminal buses and collector system were found with the use of a 115/34.5 kV under load tap changer transformer under automatic adjustment.

## Other Findings

- (1) During the assessment of McLean's Mountain, it has been identified that a 7 MX capacitor at the Manitoulin LV bus may be needed to ensure that pre-contingency voltages at Manitoulin TS are within continuous voltage requirements when McLean's wind farm is out of service. A mitigation plan to address potential voltage issues should be implemented as soon as possible. Accordingly, Hydro One should assess and submit a mitigation plan and schedule as soon as practical. Connection to the grid of McLean's wind farm is not dependent on the in-service of this capacitor.

## IESO Requirements for Connection

The following is a list of updated IESO requirements for the incorporation of McLean's Mountain and they supersede those presented in the original SIA.

## Transmitter Requirements

The following requirements are applicable to Hydro One for the incorporation of McLean's Wind Farm:

- (1) The transmitter changes the relay settings of S2B terminal stations to account for the effect of the wind farm.

Modifications to protection relays after this SIA is finalized must be submitted to IESO as soon as possible or at least six (6) months before any modifications are to be implemented. If those modifications result in adverse impacts, the connection applicant and the transmitter must develop mitigation solutions.

## Connection Applicant Requirements

**Specific Requirements:** The following *specific* requirements are applicable to the applicant for the incorporation of McLean's Mountain Wind Farm. Specific requirements pertain to the level of reactive compensation required, operation restrictions, Special Protection System requirements, upgrading of equipment and any items not covered in the *general* requirements:

- (1) The wind farm is required to have the capability to inject or withdraw reactive power continuously (i.e. dynamically) at a connection point up to 33% of its rated active power at all levels of active power output:
  - Based on the equivalent parameters for the WF provided by the connection application, a static compensation device of 8 Mvar installed at the collector bus would satisfy the reactive power requirement. The capacitor bank will need to be auto-switched via the Wind Farm Management Scheme. The capacitor bank is required to have two steps of 4 Mvar each in order to observe the system voltage change requirements on shunt switching.

The connection applicant has the obligation to ensure that the WF has the capability to meet the Market Rule requirement at the connection point and be able to confirm this capability during the commission tests.

- (2) The applicant is required to provide a copy of the functionalities of the Wind Farm Management System (WFMS) to the IESO.
- (3) The wind farm is required to have a 115/34.5 kV transformer with under load tap changers to be automatically adjusted.

**General Requirements:** The proposed connection must comply with all the applicable requirements from the Transmission System Code (TSC), IESO Market Rules and standards and criteria. The most relevant requirements are summarized below and presented in more detail in Section 2 of the original SIA report.

- (1) The new generator must satisfy the Generator Facility Requirements in Appendix 4.2 of the Market Rules.
- (2) As this facility is in northern Ontario, all new 115 kV equipment must have a maximum continuous voltage rating and the ability to interrupt fault current at a voltage of at least 132 kV.
- (3) Any revenue metering equipment that is installed must comply with Chapter 6 of the Market Rules.
- (4) Equipment must sustain increase fault levels due to future system enhancements. Should future system enhancements result in fault levels exceeding equipment capability, the applicant is required to replace equipment at its own expense with higher rated equipment, up to 50 kA as per the Transmission System Code for 115 kV systems.
- (5) The 115 kV breakers must meet the required interrupting time of less than or equal to 5 cycles as per the Transmission System Code.
- (6) The connection equipment must be designed such that adverse effects due to failure are mitigated on the IESO controlled grid.
- (7) The connection equipment must be designed for full operability in all reasonably foreseeable ambient temperature conditions.
- (8) The facility must satisfy telemetry requirements as per Appendices 4.15 and 4.19 of the Market Rules. The determination of telemetry quantities and telemetry testing will be conducted during the IESO Facility Registration/Market entry process.
- (9) Protection systems must satisfy requirements of the Transmission system code and specific requirements from the transmitter. New protection systems must be coordinated with existing protection systems.
- (10) Protective relaying must be configured to ensure transmission equipment remains in service for voltages between 94% of minimum continuous and 105% of maximum continuous values as per Market Rules, Appendix 4.1.
- (11) Although the SIA has found that a Special Protection Scheme (SPS) is not required for McLean's Mountain, provisions must be made in the design of the protections and controls at the facility to allow for the installation of Special Protection Scheme equipment and participation, if an SPS will be required in the future.

- (12) Protection systems within the generation facility must only trip appropriate equipment required to isolate the fault.
- (13) The autoreclosure of the new 115 kV breaker(s) at the connection point must be blocked. Upon its opening for a contingency, it must be closed only after IESO approval is granted. The IESO will require reduction of power generation prior to the closure of the breaker(s) followed by gradual increase of power to avoid a power surge.
- (14) The generator must operate in voltage control mode. The generation facility shall regulate automatically voltage at a point whose impedance (based on rated apparent power and rated voltage) is not more than 13% from the highest voltage terminal based within  $\pm 0.5\%$  of any set point within  $\pm 5\%$  of rated voltage. If the AVR target voltage is a function of reactive output, the slope  $\Delta V / \Delta Q_{\max}$  shall be adjustable to 0.5%.
- (15) A disturbance monitoring device must be installed. The applicant is required to provide disturbance data to the IESO upon request.
- (16) During the commissioning period, a set of IESO specified tests must be performed. The commissioning report must be submitted to the IESO within 30 days of the conclusion of commissioning. Field test results should be verifiable using the PSS/E models used for this SIA.
- (17) The registration of the new facilities will need to be completed through the IESO's Market Entry process before IESO's final approval for connection is granted and any part of facility can be placed into service. During the IESO Market Entry process, the connection applicant will be required to demonstrate to the IESO that all requirements identified in this SIA report have been satisfied.
- (18) The proposed facility must be compliant with applicable reliability standards set by the North American Electric Reliability Corporation (NERC) and the North East Power Coordinating Council (NPCC) prior to energization to the IESO controlled grid.
- (19) The connection applicant may meet the restoration participant criteria as per the NERC standard EOP-005. Further details can be found in section 3 of Market Manual 7.8 (Ontario Power System Restoration Plan).
- (20) Mathematical models and data, including any controls that would be operational, must be provided to the IESO through the IESO Facility Registration/Market Entry process at least seven months before energization from the IESO-controlled grid. That includes both PSS/E and DSA software compatible mathematical models representing the new equipment for further IESO, NPCC and NERC analytical studies. The connection applicant may need to contact the software manufacturers directly, in order to have the models included in their packages. If the data or assumptions supplied for the registration of the facilities materially differ from those that were used for the assessment, then some of the analysis might need to be repeated.

## **Notification of Conditional Approval**

From the information provided, our review concludes that the proposed changes at McLean's Mountain Wind Farm, subject to the requirements specified in this report, will not result in a material adverse effect on the reliability of the IESO-controlled grid.

It is recommended that a Notification of *Conditional Approval for Connection* be issued for McLean's Mountain Wind Farm subject to the implementation of the requirements listed in this report.

# 1. Review of Connection Proposal

## 1.1 Proposed Connection Arrangement

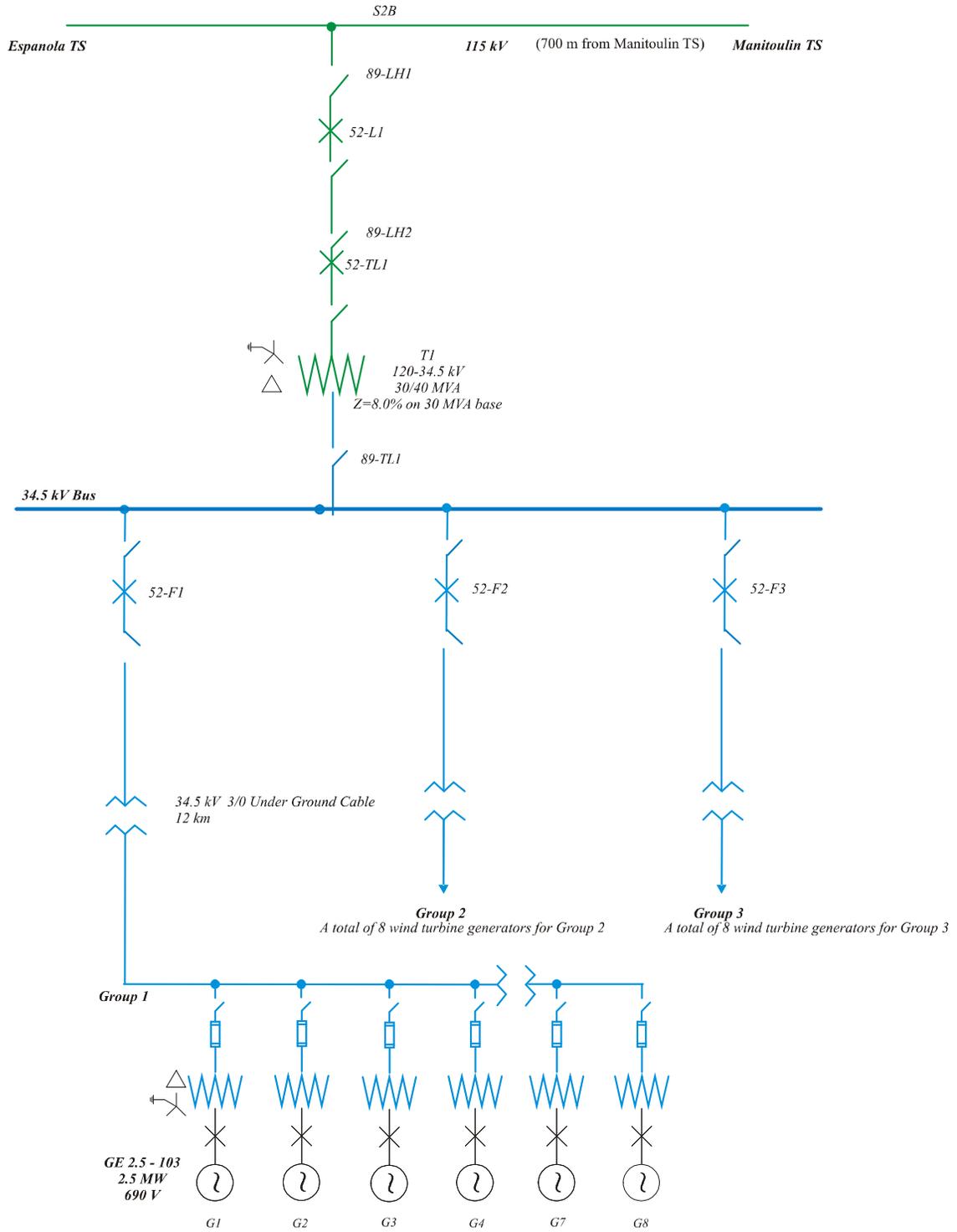
McLean's Mountain Wind L.P. has proposed to develop a 60 MW wind farm located in Manitoulin, Ontario, known as McLean's Mountain Wind Farm which has been awarded a Power Purchase Agreement under the Feed-In Tariff (FIT) program with Ontario Power Authority. Since the original SIA was issued, the expected commercial operation has been updated to November 1, 2011.

With the exception of the number of generators connected to each feeder, the connection arrangement remains the same as what was evaluated in the original SIA assessment. The development will consist of a total of 24 GE-103 12.5 60 Hz wind turbine generators with a rated power output of 2.5 MW each. Each generator is connected to a power converter system and is connected to one of three collector circuits C1, C2 and C3 via a 0.69/34.5 kV (0.06 pu reactance on 2.8 MVA) transformer. The facility will be tapped to the IESO controlled grid via the 115 kV circuit S2B.

Each collector circuit will have the following number of generators:

GE-103 2.5 (2.8 MVA, 2.5 MW each)				
Circuit ID	C1	C2	C3	Total
Number of generators	8	8	8	24
Maximum MW	20	20	20	60
Maximum Mvar	9.6	9.6	9.6	28.8
Minimum. Mvar	-9.6	-9.6	-9.6	-28.8

The proposed connection arrangement is shown in **Figure 1**.



**Figure 1: Proposed Connection Arrangement**

## 2. Data Verification

The proponent has confirmed that other than the change in generator technology, data specifications relating to the 115 kV tap line, 34.5/125 kV step up transformer data, circuit breaker and switches and collector system presented in the original SIA have not been modified.

### 2.1 Generator

GE -103 2.5MW three bladed, variable pitch, variable speed, full conversion wind turbine generator system

Maximum Continuous Rating	2.5 MW
Transformation	0.69/34.5 kV
Rating	1.9 MVA
Impedance	0.078 on a base of 1.9 MVA
Configuration	3 phase, high side: delta, low side: wye grounded

### 2.2 Dynamic Models

The following are dynamic models used for the full conversion wind turbine generator system. Parameters and their associated values are also outlined below.

GEWTG1 – Wind Turbine Generator/Converter Model

CONs	Value	Description
J	2.5	Prate, Rated power of the original unit, MW
J+1	99999	Xeq, Equivalent reactance for current injection, pu on Mbase
J+2	0.575	VLVPL1, LVPL voltage 1
J+3	0.9	VLVPL2, LVPL voltage 2
J+4	1.11	GLVPL2, LVPL gain
J+5	1.2	VHVR2, HVRCR voltage2
J+6	2	CURHVR2, max reactive current at VHVR2
J+7	0.4	VLVACR1, Low voltage active current regulation logic, voltage 1
J+8	0.8	VLVACR2, LVACR logic, voltage 2
J+9	10	Rip_LVPL, Rate of LVACR active current change
J+10	$0.2 \times 10^{-1}$	T_LVPL, voltage sensor for LVACR time constants
ICONs	Value	Description
M	0	Memory
M+1	8	A number of original WTs lumped up to the model equivalent

GEWTT – Two Mass Shaft Model

CONs	Value	Description
J	4.18	H
J+1	0.0	DAMP
J+2	0.0	Htfrac
J+3	1.45	Freq1
J+4	1.5	DSHAFT

GEWTE1 – GE Wind Turbine Electrical Control Model

CONS	Value	Description	CONs	Value	Description
J	0.15	Tfv	J+32	0.95	PFRb
J+1	18	Kpv	J+33	0.95	PFRc
J+2	5	Kiv	J+34	0.4	PFRd
J+3	0	Rc	J+35	1.0	PFRmax
J+4	0	Xc	J+36	0.2	PFRmin
J+5	$0.5 \times 10^{-1}$	Tfp	J+37	1.0	Tw
J+6	0.3	Kpp	J+38	0.25	T_LVPL
J+7	0.1	Kip	J+39	-1.0	V_LVPL
J+8	1.12	Pmax	J+40	14.0	SPDW1
J+9	0.0	Pmin	J+41	25.0	SPDWMX
J+10	0.4	Qmx	J+42	3.0	SPDWMN
J+11	-0.4	Qmn	J+43	-0.9	SPD_LOW
J+12	1.1	IPmax	J+44	8.0	WTHRES
J+13	$0.2 \times 10^{-1}$	Trv	J+45	0.2	EBST
J+14	0.45	RPMX	J+46	10.0	KDBR
J+15	-0.45	RPMN	J+47	1.0	Pdbr_MAX
J+16	60	Tpower	J+48	1.7	ImaxTD
J+17	0.1	KQi	J+49	<b>1.11</b>	Iphl
J+18	0.9	Vmincl	J+50	1.25	Iqhl
J+19	1.1	Vmaxcl	J+51	5.0	Tlpgd
J+20	120	KVi	J+52	0.0	Kqd
J+21	0.5	XIQmin	J+53	0.0	Xqd
J+22	1.45	XIQmax	J+54	0.0	Kwi
J+23	$0.5 \times 10^{-1}$	Tv	J+55	$0.25 \times 10^{-2}$	Dbwi
J+24	$0.5 \times 10^{-1}$	Tp	J+56	1.0	Tlpwi
J+25	1.0	Fn	J+57	5.5	Twowi
J+26	0.15	Tpav	J+58	0.1	urIwi
J+27	0.96	FRa	J+59	-1.0	drIwi
J+28	0.996	FRb	J+60	0.1	Pmxwi
J+29	1.004	FRc	J+61	0.0	Pmnwi
J+30	1.04	FRd			
J+31	1.0	PFRa			
ICONS	Value	Description	ICONS	Value	Description
M		Remote bus # for voltage control	M+5	0	FRFLG
M+1	0	Memory	M+6	0	PQFLAG
M+2	0	PFAFLG	M+7	0	Q-droop branch From Bus
M+3	1	VARFLG	M+8	0	Q-droop branch To Bus
M+4	0	APCFLG	M+9	0	Q-droop branch circuit ID

### WGUSTC - Wind Gust and Ramp Model

CONS	Value	Description	CONS	Value	Description
J	9999	T1g	J+3	9999.0	T1r
J+1	5.0	Tg	J+4	9999.0	T2r
J+2	30.0	MAXG	J+5	30.0	MAXR
ICONS	Value	Description	ICONS	Value	Description
M		Generator bus #	M+2	0	Flag to mark the end of ramp
M+1	1	Generator ID			

### GEWTA – Wind Turbine Aerodynamics Model

CONS	Value	Description	CONS	Value	Description
J	20.0	$\lambda_{max}$	J+5	1.225	$\rho$
J+1	0.0	$\lambda_{min}$	J+6	50.0	Radius
J+2	27.0	PITCHmax	J+7	91.3	GB_ratio
J+3	-4.0	PITCHmin	J+8	1200	Synchr
J+4	0.0	Ta			
ICONS	Value	Description	ICONS	Value	Description
M		Machine Bus #	M+2	0	Memory
M+1	1	Machine ID			

### GEWTP - Pitch Control Model

CONS	Value	Description	CONS	Value	Description
J	0.30	Tp	J+5	-4.0	min
J+1	150.00	Kppt	J+6	27.0	max
J+2	25.0	Kipt	J+7	-10.0	d/dt min
J+3	3.0	Kpc	J+8	10.0	d/dt max
J+4	30.0	Kic	J+9	1.0	Pref
ICONS	Value	Description	ICONS	Value	Description
M		Machine Bus #	M+2	0	Memory
M+1	1	Machine ID			

### GEWTPT – Plotting Output Variables as VARs Model

ICONS	Value	Description	ICONS	Value	Description
M		Machine Bus #	M+1		Machine ID

### VTGDCA – Under Voltage Generator Bus Disconnection Relay Model (for voltage < 0.15 pu)

CONS	Value	Description	CONS	Value	Description
J	0.15	VL	J+2	0.02	TP
J+1	5.0	VU	J+3	$0.8 \times 10^{-1}$	TB
ICONS	Value	Description	ICONS	Value	Description
M		Bus number where voltage is monitored	M+3	0	Delay flag
M+1		Bus number of generator bus where relay is located	M+4	0	Time-out flag
M+2	1	Generator ID	M+5	0	Timer status

VTGDCA – Under Voltage Generator Bus Disconnection Relay Model (for 0.15 pu<voltage < 0.3pu)

CONs	Value	Description	CONs	Value	Description
J	0.3	VL	J+2	0.7	TP
J+1	5.0	VU	J+3	$0.8 \times 10^{-1}$	TB
ICONs	Value	Description	ICONs	Value	Description
M		Bus number where voltage is monitored	M+3	0	Delay flag
M+1		Bus number of generator bus where relay is located	M+4	0	Time-out flag
M+2	1	Generator ID	M+5	0	Timer status

VTGDCA – Under Voltage Generator Bus Disconnection Relay Model (for 0.3 pu<voltage < 0.5pu)

CONs	Value	Description	CONs	Value	Description
J	0.5	VL	J+2	1.1	TP
J+1	5.0	VU	J+3	$0.8 \times 10^{-1}$	TB
ICONs	Value	Description	ICONs	Value	Description
M		Bus number where voltage is monitored	M+3	0	Delay flag
M+1		Bus number of generator bus where relay is located	M+4	0	Time-out flag
M+2	1	Generator ID	M+5	0	Timer status

VTGDCA – Under Voltage Generator Bus Disconnection Relay Model (for 0.5 pu<voltage < 0.75pu)

CONs	Value	Description	CONs	Value	Description
J	0.75	VL	J+2	1.7	TP
J+1	5.0	VU	J+3	$0.8 \times 10^{-1}$	TB
ICONs	Value	Description	ICONs	Value	Description
M		Bus number where voltage is monitored	M+3	0	Delay flag
M+1		Bus number of generator bus where relay is located	M+4	0	Time-out flag
M+2	1	Generator ID	M+5	0	Timer status

VTGDCA – Over Voltage Generator Bus Disconnection Relay Model (for 1.1 pu<voltage < 1.15pu)

CONs	Value	Description	CONs	Value	Description
J	0.0000	VL	J+2	1.0	TP
J+1	1.1000	VU	J+3	$0.8 \times 10^{-1}$	TB
ICONs	Value	Description	ICONs	Value	Description
M		Bus number where voltage is monitored	M+3	0	Delay flag
M+1		Bus number of generator bus where relay is located	M+4	0	Time-out flag
M+2	1	Generator ID	M+5	0	Timer status

VTGDCA – Over Voltage Generator Bus Disconnection Relay Model (for voltage > 1.15pu)

CONs	Value	Description	CONs	Value	Description
J	0.0000	VL	J+2	0.1	TP
J+1	1.1500	VU	J+3	$0.8 \times 10^{-1}$	TB
ICONs	Value	Description	ICONs	Value	Description
M		Bus number where voltage is monitored	M+3	0	Delay flag
M+1		Bus number of generator bus where relay is located	M+4	0	Time-out flag
M+2	1	Generator ID	M+5	0	Timer status

### 3. Fault Level Assessment

Fault level studies were completed by Hydro One to re-examine the effects of the change in McLean’s Mountain generator technology on fault levels at existing facilities in the area. Details of the study assumptions can be found in the original McLean’s Mountain SIA.

The following table summarizes the symmetric and asymmetrical fault levels near McLean’s Mountain and corresponding breaker ratings under normal operating conditions. Under normal operating conditions, Manitoulin load and McLean’s Mountain wind farm would be supplied from Martindale.

Short Circuit Levels: Normal S2B Operating Conditions										
Bus	Wind Farm O/S				Wind Farm I/S				Breaker Ratings	
	Total Fault Current (kA)				Total Fault Current (kA)				Symm (kA)	Asymm (kA)
	Symm		Asymm		Symm		Asymm			
	3-ph fault	L-G fault	3-ph fault	L-G fault	3-ph fault	L-G fault	3-ph fault	L-G fault		
Martindale 115 kV	14.306	17.462	16.679	21.430	14.639	17.881	17.033	21.901	19.20	22.70
Martindale 230 kV	17.552	18.993	20.399	23.032	17.762	19.546	20.624	23.658	41.10	46.20
Algoma 115 kV	10.127	11.876	11.275	13.862	10.112	11.870	11.256	13.852	39.30	45.50
Algoma 230 kV	8.140	7.394	9.320	9.180	8.117	7.402	9.292	9.183	39.40	46.20
Domtar Espanola 115 kV	2.482	1.229	2.787	1.233	2.476	1.191	2.781	1.195	7.3	7.9
McLean’s Mountain 115 kV	N/A	N/A	N/A	N/A	1.578	1.680	1.663	1.841	unknown	unknown

The results show that the fault levels in the surrounding area of the McLean’s Mountain wind farm area are within the symmetrical and asymmetrical breaker ratings. It should be noted that the asymmetrical current for an L-G fault is marginally within the asymmetrical breaker capability at Martindale 115 kV ( $21.901/22.70=0.96$ ). The following study was performed to determine the short circuit levels at Martindale 115 kV for the condition in which S2B is supplied entirely by Martindale (i) with McLean’s out of service and (ii) with McLean’s in-service.

Short Circuit Levels: S2B supplied entirely Martindale 115 kV										
Bus	Wind Farm O/S				Wind Farm I/S				Breaker Ratings	
	Total Fault Current (kA)				Total Fault Current (kA)				Symm (kA)	Asymm (kA)
	Symm		Asymm		Symm		Asymm			
	3-ph fault	L-G fault	3-ph fault	L-G fault	3-ph fault	L-G fault	3-ph fault	L-G fault		
Martindale 115 kV	14.949	18.095	17.357	22.119	15.127	18.363	17.530	22.401	19.20	22.70

As shown from the results, if S2B is supplied by Martindale and with the McLean’s wind farm in-service, the fault levels at Martindale are still within the interrupting capabilities of the Martindale 115 kV breakers ( $22.401/22.70=0.99$ ). Therefore, it can be concluded that the increases in fault levels due to the proposed change in McLean’s Mountain wind farm generator technology will not exceed the interrupting capabilities of the existing breakers on the IESO-controlled grid.

## 6. System Impact Studies

### 6.1 Protection Impact Assessment

Hydro One has confirmed that the proposed change in turbine technology will not change the findings or conclusions presented in the original Protection Impact Assessment. The revised Protection Impact Assessment can be found in **Appendix B**.

### 6.2 Reactive Power Compensation

Market Rules require that generators inject or withdraw reactive power continuously (i.e. dynamically) at a connection point up to 33% of its rated active power at all levels of active power output except where a lesser continually available capability is permitted by the IESO.

The Market Rules accepts that a generating unit with a power factor range of 0.90 lagging and 0.95 leading at rated active power connected via a main output transformer impedance not greater than 13% based on generator rated apparent power provides the required range of dynamic power at the connection point.

Typically, the impedance between the WTG and the connection point is larger than 13%. However, provided the WTG has the capability to provide a reactive power range of 0.90 lagging power factor and 0.95 leading power factor at rated active power, the IESO accepts the WF to compensate for the full reactive power requirement range at the connection point with switchable shunt admittances (e.g. capacitors and reactors). Where the WTG technology has no capability to supply the full dynamic reactive power range at its terminal, the shortfall has to be compensated with dynamic reactive power devices (e.g. SVC).

This section of the SIA indicates how McLean’s Mountain can meet the Market Rule requirements regarding reactive power capability, but the applicant is free to deploy any other solutions which result in its compliance with the Market Rule.

It is the applicant’s responsibility to ensure that the WF has the capability to meet the Market Rule requirement at the connection point and be able to confirm this capability during the commission tests.

#### 6.2.1 Dynamic Reactive Power Compensation

The following summarizes the IESO required level of dynamic reactive power and the available capability of the GE 2.5-103 from the GE document “Technical Documentation Wind Turbine Generator Systems GE 2.5 Electrical Grid Data”

	Rated Voltage	Rated Active Power	Reactive Power Capability/Turbine
IESO Required	690 V	2.5 MW	$Q_{gen} = \text{Sqrt}[(2.5/0.9)^2 - (2.5)^2] = 1.21 \text{ Mvar}$
			$Q_{abs} = \text{Sqrt} [(2.5/0.95)^2 - (2.5)^2] = 0.822 \text{ Mvar}$
GE 2.5-103 Capability	690 V	2.5 MW	$Q_{gen} = 1.21 \text{ Mvar}$
			$Q_{abs} = 1.21 \text{ Mvar}$

The GE 2.5-103 generators can deliver the IESO required dynamic reactive power to the generator terminal at rated power and at rated voltage. Thus, the IESO has determined that there is no need to install any additional dynamic reactive power compensation device.

## 6.2.2 Static Reactive Power Compensation

In addition to the dynamic reactive power requirement identified above, the WF has to compensate for the reactive power losses within the facility to ensure that it has the capability to inject or withdraw reactive power up to 33% of its rated active power at the connection point. In the case of McLean’s Mountain, the facility will need to have the capability to inject or withdraw 19.8 Mvar (60 x 0.33) at the connection point. As mentioned above, the IESO accepts this compensation to be made with switchable shunt admittances.

Load flow studies were performed to calculate the need for static reactive compensation, based on the equivalent parameters for the WF provided by the connection applicant.

Load flow studies were performed to evaluate the reactive power capability in lagging p.f. of the generation facility under the following assumptions:

- typical voltage of 123 kV at the connection point;
- maximum active power output from the equivalent WTG;
- maximum reactive power output (lagging power factor) from the equivalent WTG, unless limited by the maximum acceptable WTG terminal voltage;
- maximum acceptable WTG voltage is 1.1 pu;
- the main step-up transformer ULTC is available to adjust the LV voltage as close as possible to 1 pu voltage.

The following table shows the capacitor requirement for McLean’s Mountain (i) assuming that the ULTC can operate automatically within the range of 114 kV to 136 kV (ii) assuming that the ULTC operates at a fixed tap of 125 kV and (iii) assuming that the ULTC operates at a fixed tap of 123.6 kV.

Operation	Collector Bus Voltage (kV,pu)	Generator Terminal Voltage (pu)	Static Compensation (Mvar)	115/34.5 kV Tap Position (kV)	PCC Reactive Power injection (Mvar)	PCC Voltage (kV)
ULTC	34.3 kV (0.994 pu)	1.04 pu	8 Mvar	134.6 kV	20.2 Mvar	123 kV
Fixed tap	36.5 kV (1.06 pu)	1.10 pu	8 Mvar	125 kV	19.9 Mvar	
	36.9 kV (1.07 pu)	1.11 pu	8 Mvar	123.6 kV	20.1 Mvar	

As shown, in all three cases a static capacitor of 8 Mvar is required to obtain the required reactive power injection at the PCC. However, it should be noted that operation at a fixed tap position of 123.6 kV would require the generator terminal voltage to be at 1.11 pu, which is outside its normal operating range of 0.9 pu to 1.10 pu. Based on the GE 2.5-103 steady state voltage tolerances, if the terminal voltage is sustained between 1.10 and 1.15 pu for at least 1 second, the turbines would trip. Therefore, the facility will not be capable of injecting reactive power at 33% of its active rated power value at a fixed tap position of 123.6 kV.

Load flow studies were performed to evaluate the reactive power capability in leading p.f. of the generation facility under the following assumptions:

- typical voltage of 123 kV at the connection point;
- minimum (zero) active power output from the equivalent WTG;
- maximum reactive power consumption (leading power factor) from the equivalent WTG, unless limited by the minimum acceptable WTG terminal voltage;
- minimum acceptable WTG voltage is 0.9 pu;
- the main step-up transformer ULTC is available to adjust the LV voltage as close as possible to 1 pu voltage.

The following table shows the reactor requirement for McLean’s Mountain (i) assuming that the ULTC can operate with the range of 114 kV to 136 kV (ii) assuming that the ULTC operates at a fixed tap of 125 kV and (iii) assuming that the ULTC operates at a fixed tap of 123.6 kV.

Operation	Collector Bus Voltage (kV, pu)	Generator Terminal Voltage (pu)	Static Compensation (Mvar)	115/34.5 kV Tap Position (kV)	PCC Reactive Power injection (Mvar)	PCC Voltage (kV)
ULTC	34 kV (0.986 pu)	0.95 pu	0 Mvar	114 kV	-30.6 Mvar	123 kV
Fixed tap	31.4 kV (0.911 pu)	0.88 pu	0 Mvar	125 kV	-21.7 Mvar	
	32.0 kV (0.928 pu)	0.9 pu	0 Mvar	123.6 kV	-19.8 Mvar	

As shown, in all three cases no static compensation is required to obtain the required reactive power withdrawal at the PCC. It should be noted that operation at a fixed tap position of 125 kV would require the generator terminal voltage to be at 0.88 pu, which is outside the normal operating range of 0.9 pu to 1.10 pu. Based on the GE 2.5-103 steady state voltage tolerances, if the terminal voltage is sustained between 0.9 pu to 0.85 pu for at least 10 minutes, the turbines would trip. Therefore, the facility will not be capable of withdrawing reactive power at 33% of its active rated power value at a fixed tap position of 125 kV.

Therefore, to ensure that collector bus voltages are close to nominal values and to ensure that generator terminal voltages are within continuous operating ranges under the entire reactive power operating range, McLean’s Mountain will need to employ the ULTC capabilities of its 115/34.5 kV transformer such that its full tap range can be achieved.

The IESO’s reactive power calculation used the equivalent electrical model for the WTG and collector feeders as provided by the connection applicant. It is very important that the WF has a proper internal design to ensure that the WTG are not limited in their capability to produce active and reactive power due to terminal voltage limits or other facility’s internal limitations. For example, it is expected that the transformation ratio of the WTG step up transformers will be set in such a way that it will offset the voltage profile along the collector, and all the WTG would be able to contribute to the reactive power production of the WF in a shared amount.

Based on the equivalent parameters for the WF provided by the connection applicant, an amount of +8 Mvar of static reactive power compensation is required to be installed at the WF collector bus to meet the reactive power requirements at the connection point.

The connection applicant has the obligation to ensure that the WF design and the reactive power compensation system takes into account the real electrical parameters and real limitations within the WF facility.

It is necessary to supply the static reactive compensation in small enough steps to have operational flexibility over the entire range of active power output from the wind turbines. The amount of static reactive power compensation should be shared between at least two switchable shunt capacitors.

### 6.2.3 Static Reactive Power Switching

A switching study was carried out to investigate the effect of the new LV shunt capacitor banks / reactor on the voltage changes. It was assumed that the largest capacitor step size is 4 Mvar. To reflect the reasonable restrictive system conditions, the voltage change study assumed that the Martindale T22 transformer was out of service pre-switching.

Capacitor at LV kV bus	LV bus voltage	ICG connection point
Pre-switching	33.4 kV	119.8 kV
Post-switching	34.7 kV	122.6 kV
$\Delta V$	3.89%	2.34%

The IESO requires the voltage change on a single capacitor switching to be no more than 4 % at the any point in the ICG. The results show that switching a single capacitor of 4 Mvar produces less than 4 % voltage change at the connection point. A subsequent study with the switching of an 8 Mvar capacitor shows that the ICG connection point voltage would reach 125.6 kV, which translates to a 4.8% voltage change. Hence, the capacitor bank is required to have two steps of 4 Mvar each in order to observe the system voltage change requirements on shunt switching.

## 6.3 Wind Farm Management System

If the generation facility connects to the IESO-controlled grid, the IESO requires that the facility assists maintaining voltage in the high voltage system. It is expected that the wind farm controls the voltage at a point as close as possible to the connection point to values specified by the IESO. This requires that wind farms possess the ability to supply sufficient dynamic reactive power to the high voltage system during voltage declines.

The generation facility shall regulate automatically voltage at a point whose impedance (based on rated apparent power and rated voltage) is not more than 13% from the highest voltage terminal based within  $\pm 0.5\%$  of any set point within  $\pm 5\%$  of rated voltage. If the AVR target voltage is a function of reactive output, the slope  $\Delta V / \Delta Q_{max}$  shall be adjustable to 0.5%.

The Wind Farm Management System (WFMS) must coordinate the voltage control process. The IESO recommends the following two voltage control schemes:

*Recommendation #1*

- (1) All WTGs control the PCC voltage to a reference value. A control slope is applied for reactive power sharing among the WTGs as well as with adjacent generators.
- (2) Capacitor banks are automatically switched in/out to regulate the overall WTGs’ reactive generation to around zero output.
- (3) WF main transformer ULTC is adjusted to regulate the collector bus voltage (LT bus voltage) such that it is within normal range;

*Recommendation #2*

- (1) The capacitor banks are automatically switched in/out according to the WF active power output. A sample capacitor switching scheme is shown in the following table.

P - overall WF active power output	Capacitor banks to be switched on
$0 < P < P_1$	(No capacitor)
$P_1 < P < P_2$	$C_1$
$P_2 < P < P_3$	$C_1+C_2$
.....	.....
$P_N < P < P_{MAX}$	$C_1+C_2+\dots+C_N$

- (2) All WTGs control the PCC voltage to a reference value. A control slope is applied for reactive power sharing among the WTGs as well as with adjacent generators.
- (3) WF main transformer ULTC is adjusted to regulate the collector bus voltage (LT bus voltage) such that it is within normal range;

The proponent has indicated to the IESO that they will implement a voltage control scheme consistent with “Recommendation 1.”

Prior to McLean’s Mountain’s in-service date, the proponent must submit a “Voltage Control Document” describing the functionalities of the Wind Farm Management System, including the coordination between the automatic capacitor switching and generator reactive power production to control the voltage at a desired point. This document must also contain the settings of the automatic capacitor switching scheme. If the Wind Farm Management System is unavailable, the IESO requires each generator to control its own terminal voltage.

The proponent must also demonstrate in this document that the functionalities of the Wind Farm Management System will be in line with the “Recommendation 1” control scheme described above.

## 6.4 Thermal Analysis

The thermal analysis from the original analysis was repeated with the new GE machines. For each scenario, the pre-contingency active power output of McLean’s Mountain facility was at 60 MW and the reactive power output of the facility ranged from 5 Mvar to 7.2 Mvar depending on the scenario. Study results showed there were no significant changes in results or conclusions.

## **6.5 Voltage Analysis**

The voltage analysis from the original analysis was repeated with the new GE machines. For each scenario, the pre-contingency active power output of McLean's Mountain facility was at 60 MW and the reactive power output of the facility ranged from 5 Mvar to 7.2 Mvar depending on the scenario. Study results showed there were no significant changes in results or conclusions.

## 6.6 Transient Analysis

The transient stability analysis that was conducted along with the original SIA was repeated using the GE 2.5-103 model provided the applicant. Seven contingencies were studied under the normally operated condition where Manitoulin and McLean's Wind Farm are supplied by Martindale 115 kV and four contingencies were studied under the configuration where Manitoulin and McLean's Wind Farm are transferred to Algoma. In all eleven cases, minimum S2B load was assumed. For more details on these configurations, please refer to the original SIA report.

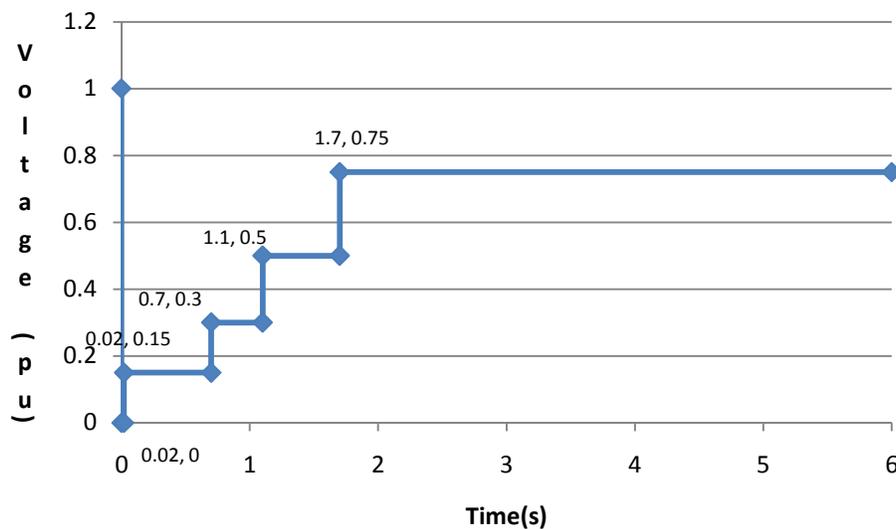
ID	Contingency	Voltage (kV)	Location	LLG Fault MVA	Fault Clearing Time (ms) <sup>1</sup>	
					Near	Remote
<i>Normally operated S2B configuration at minimum S2B load            Maclean's Mountain Pre-contingency Output: Pgen = 60 MW Qgen=2.1 Mvar            Maclean's Mountain PCC voltage controlled at 121 kV</i>						
SC1	LLG fault on L1S	115 kV	Martindale	655-j8700 MVA	200 ms	616 ms
SC2	LLG fault on S5M	115 kV	Martindale	655-j8700 MVA	200 ms	200 ms
SC3	3phase fault on X503E	500 kV	Hanmer	N/A	166 ms	191 ms
SC4	LLG fault on X74P	230 kV	Hanmer	1769-j22618 MVA	183 ms	216 ms
SC5	LLG fault on X27A	230 kV	Hanmer	1769-j22617 MVA	183ms	249 ms
SC6	LLG fault on S22A	230 kV	Martindale	2206 -j14215 MVA	200 ms	216 ms
SC7	LLG fault on L1S	115 kV	Crystal Falls	60.57-345.96 MVA	216 ms	600 ms
<i>Manitoulin and McLean's Wind Farm transferred to S2B Algoma supply at minimum S2B load            Maclean's Mountain Pre-contingency Output: Pgen= 60 MW Qgen= -6.3 Mvar            Mclean's Mountain PCC voltage controlled at 121 kV</i>						
SC8	3phase fault on X503E	500 kV	Hanmer	N/A	166 ms	191 ms
SC9	LLG fault on X74P	230 kV	Mississagi	781-j6952 MVA	183 ms	216 ms
SC10	LLG fault on X27A	230 kV	Algoma	611-j4983 MVA	216 ms	216 ms
SC11	LLG fault on S22A	230 kV	Algoma	611-j4983 MVA	183 ms	233 ms

The transient responses can be found in **Appendix A** of the report. It can be concluded from the results that, with McLean's Mountain Wind Farm in-service, none of the simulated contingencies caused transient instability or undamped oscillations.

## 6.7 Low Voltage Ride Through Capability

The following table shows the LVRT II protection settings obtained from the GE 2.5-103 PSS/E Model (Reference: GE Document “Modeling of GE Wind Turbine-Generators for Grid Studies Version 4.5”). These setting points are plotted in **Figure 2** to yield the LVRT under voltage protection limit curve.

Voltage Range (pu of base voltage)	Fault Ride Through Duration Time (s)
$V < 0.15$ pu	0.02
$0.15$ pu $< V < 0.30$ pu	0.7
$0.30$ pu $< V < 0.5$ pu	1.1
$0.5$ pu $< V < 0.75$ pu	1.7

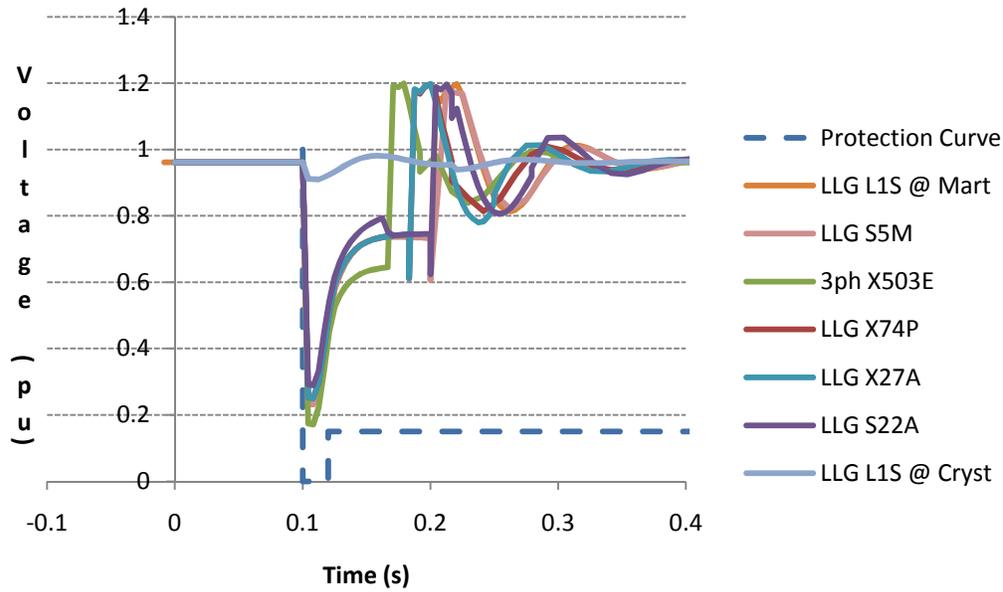


**Figure 2: GE 2.5-103 LVRT II Model Settings**

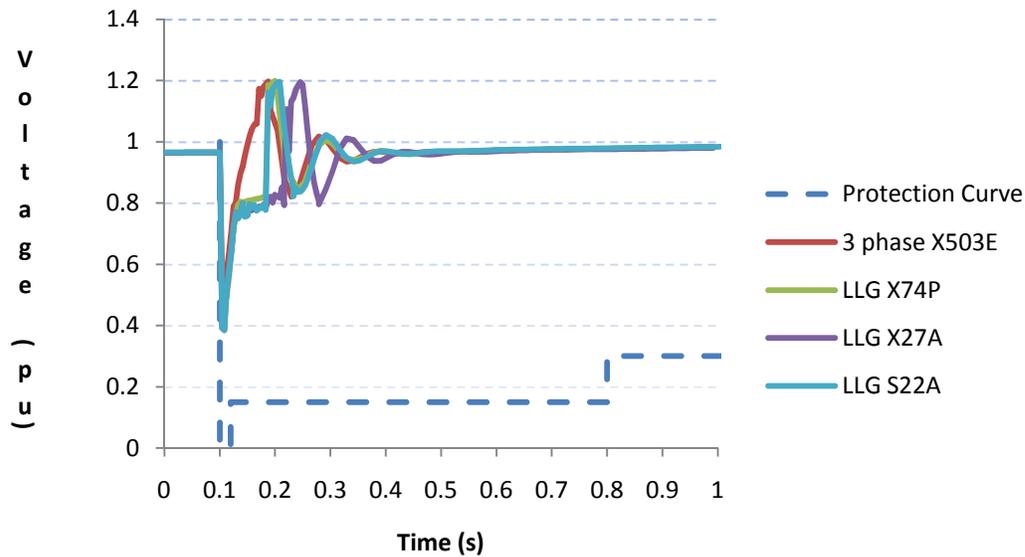
During low voltage ride through, as long as the generator terminal voltage is above the curve shown in **Figure 2**, the turbine will remain connected.

It is expected that no change to the above LVRT settings are required for the implementation of McLean’s Mountain.

In order to examine the need for low voltage ride through (LVRT) capability, the terminal voltage of the wind generator was monitored for all eleven contingencies. The variation of the terminal voltage of the new generation facility is plotted in **Figure 3** below for the SC1 to SC7 contingencies and **Figure 4** below for the SC7 to SC11 against the LVRT protection curve. Note, as the fault was applied at  $t=0.1$ s, each timeout setting was shifted by 0.1s. It can be seen that the voltage response is well above the LVRT protection curve. Therefore, fault ride through capability of the proposed wind turbines is adequate.



**Figure 3 – McLean’s Wind Farm Terminal Voltage Vs LVRT Protection Curve (SC1 to SC7)**



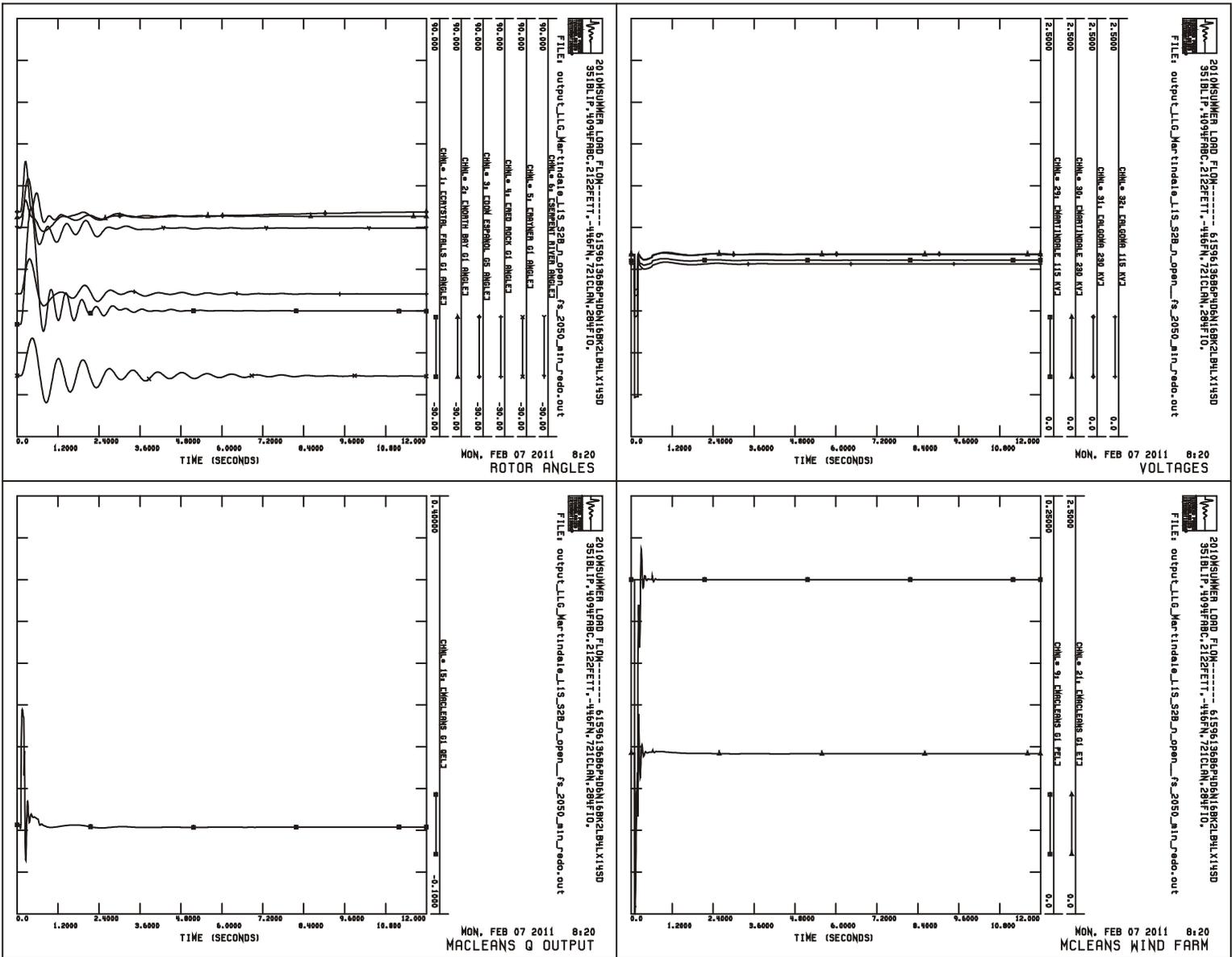
**Figure 4 – McLean’s Wind Farm Terminal Voltage vs LVRT Protection Curve (SC8 to SC11)**

The LVRT capability must be demonstrated during commissioning by monitoring several variables under a set of IESO specified field tests and the results should be verifiable using the PSS/E model.

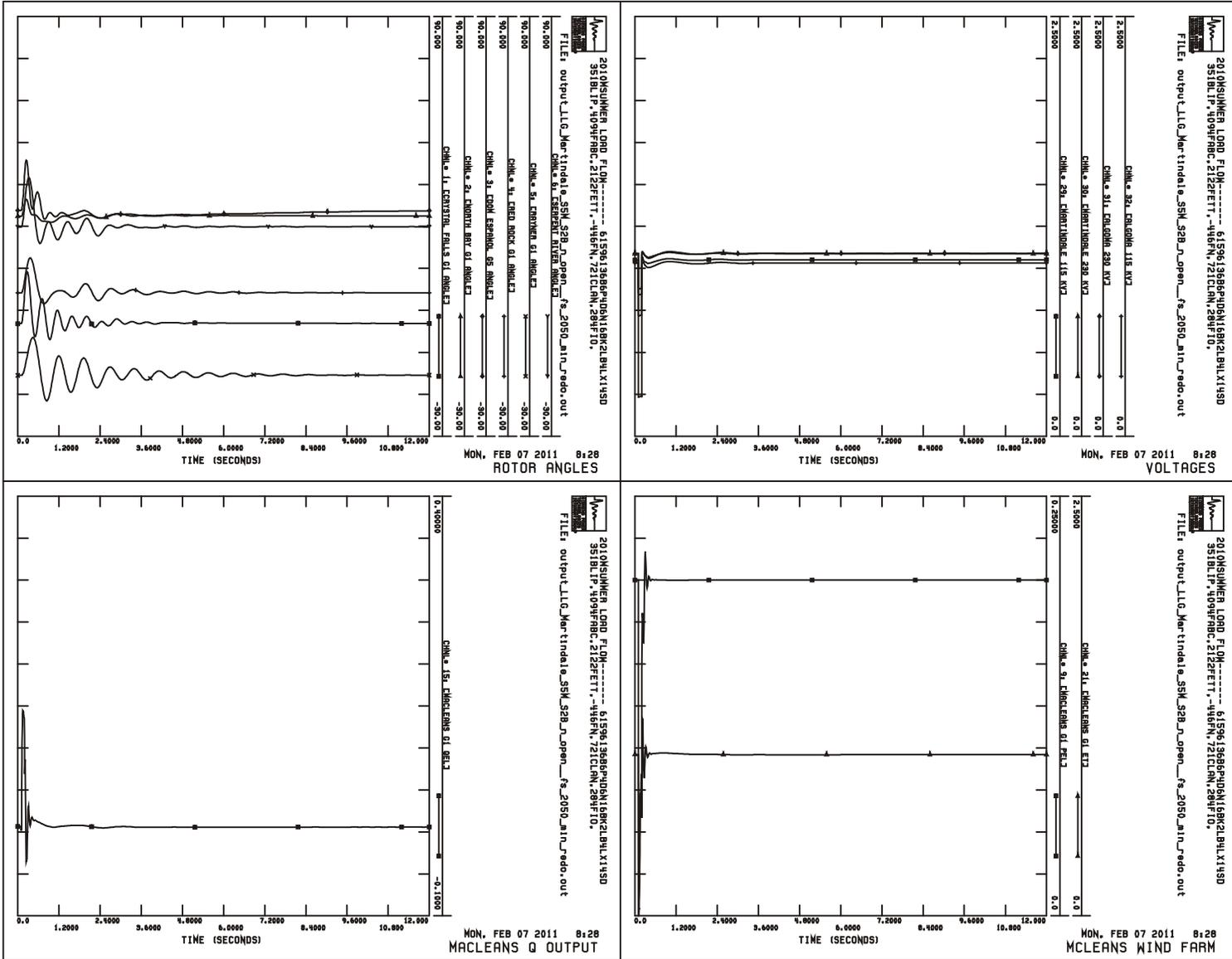
The new generating facility is required to ride-through routine switching events and design criteria contingencies assuming standard fault detection, auxiliary relaying, communication, and rated breaker interrupting times, unless disconnected by configuration.

## **Appendix A: Diagrams for Transient Simulation Results**



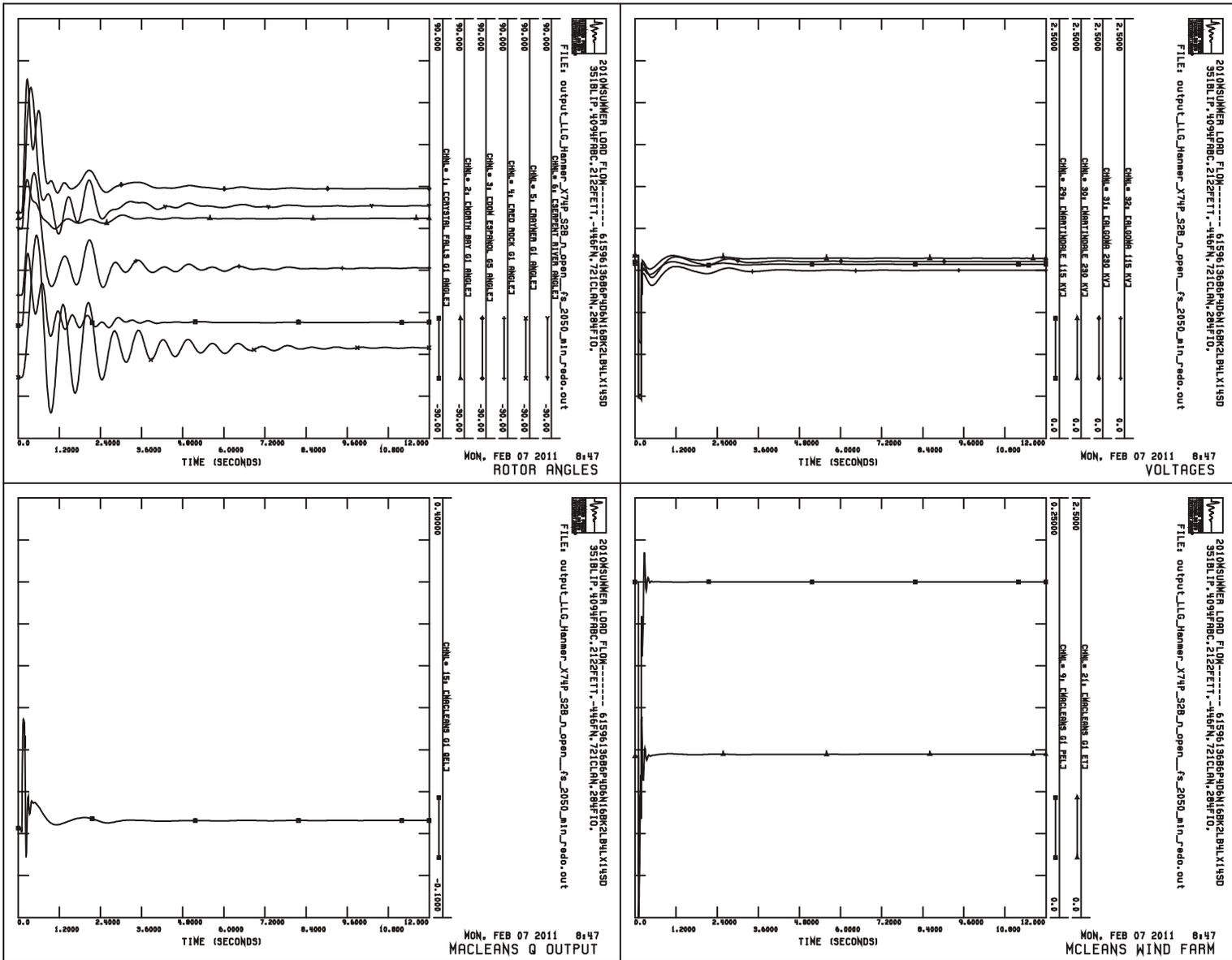


SC1 – McLean’s and Manitoulin on Martindale Supply: LLG Fault on L1S at Martindale 115 kV

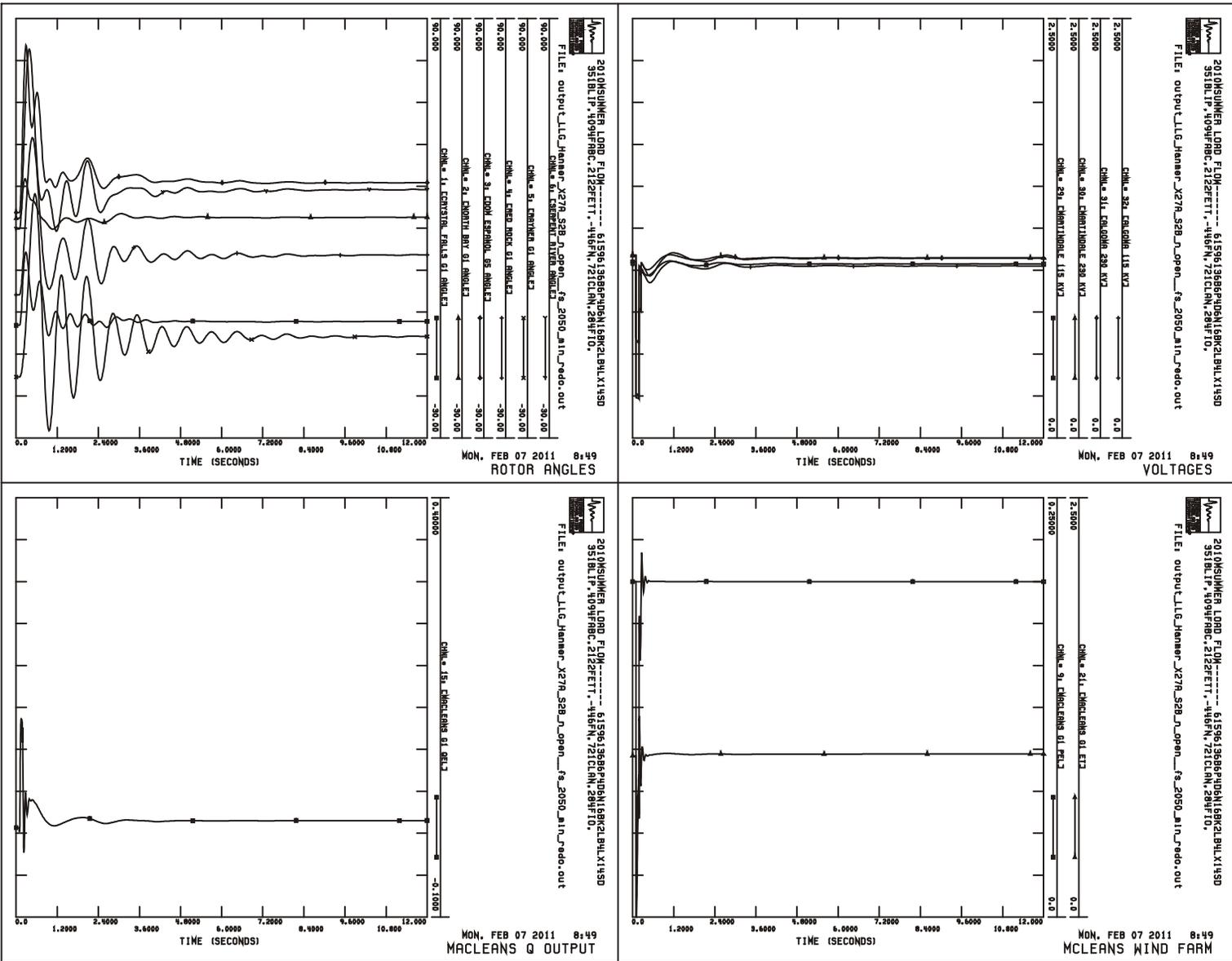


SC2 - McLean's and Manitoulin on Martindale Supply: LLG Fault on S5M at Martindale 115 kV

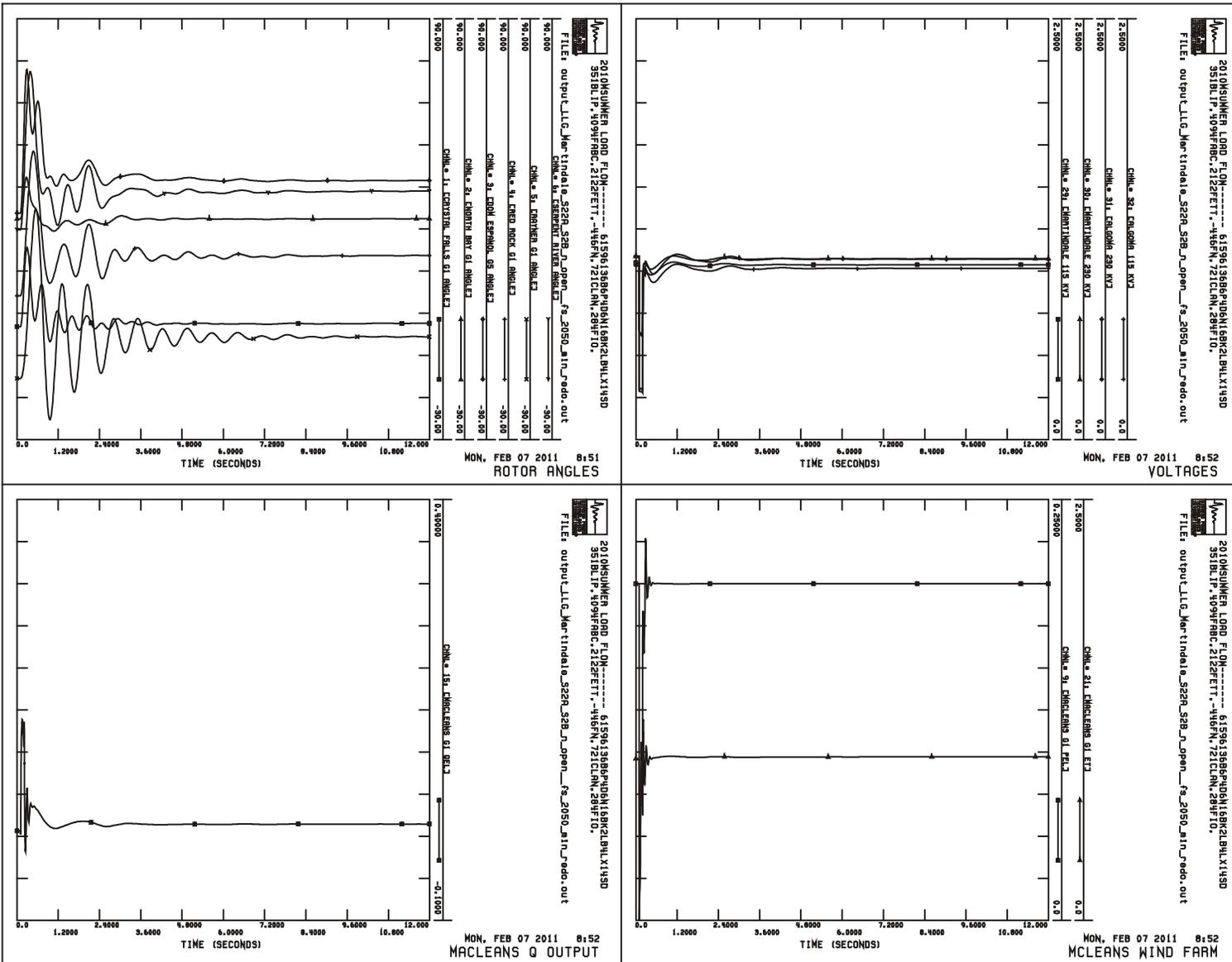




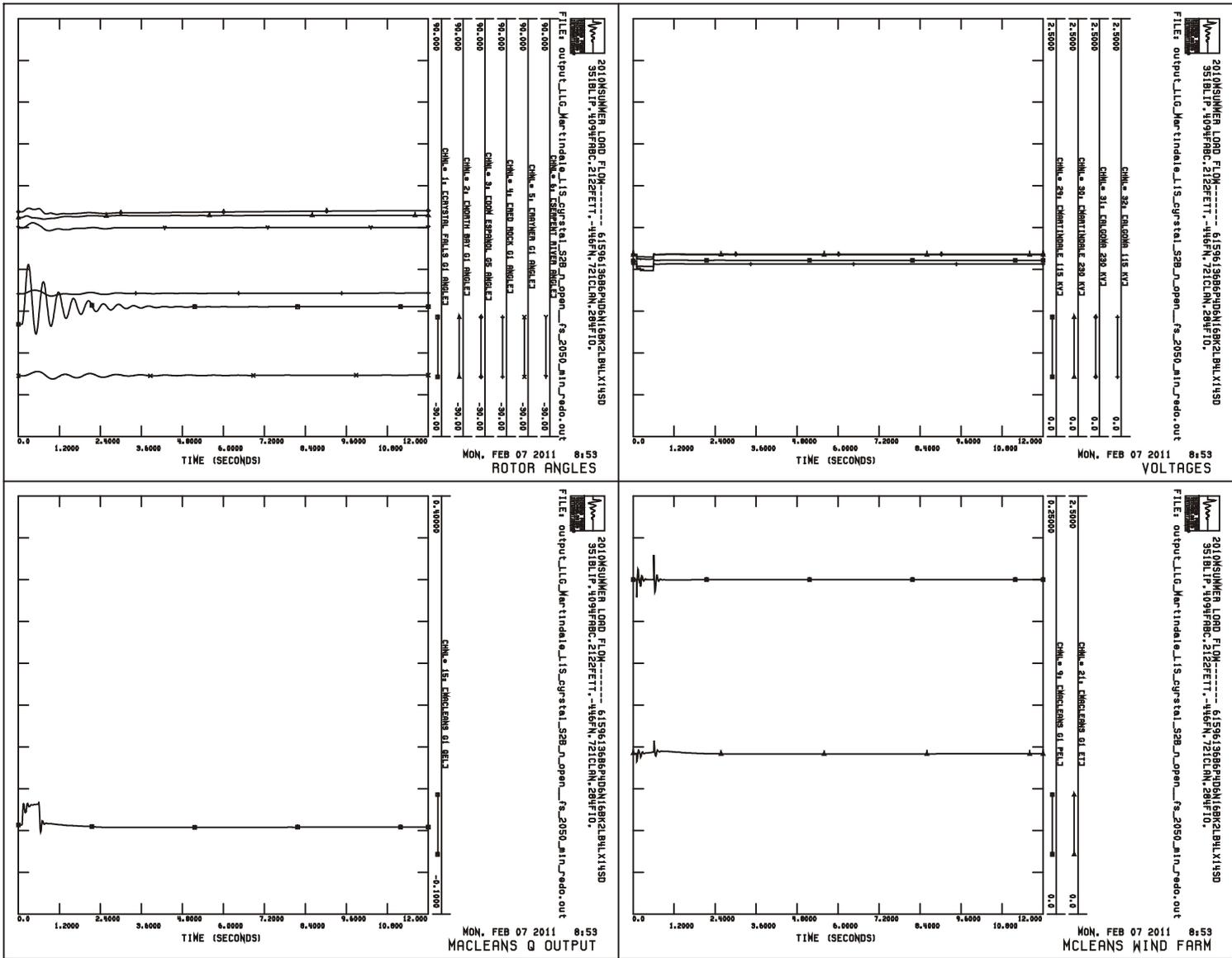
S4 - McLean's and Manitoulin on Martindale Supply: LLG Fault on X74P at Hanmer 230 kV



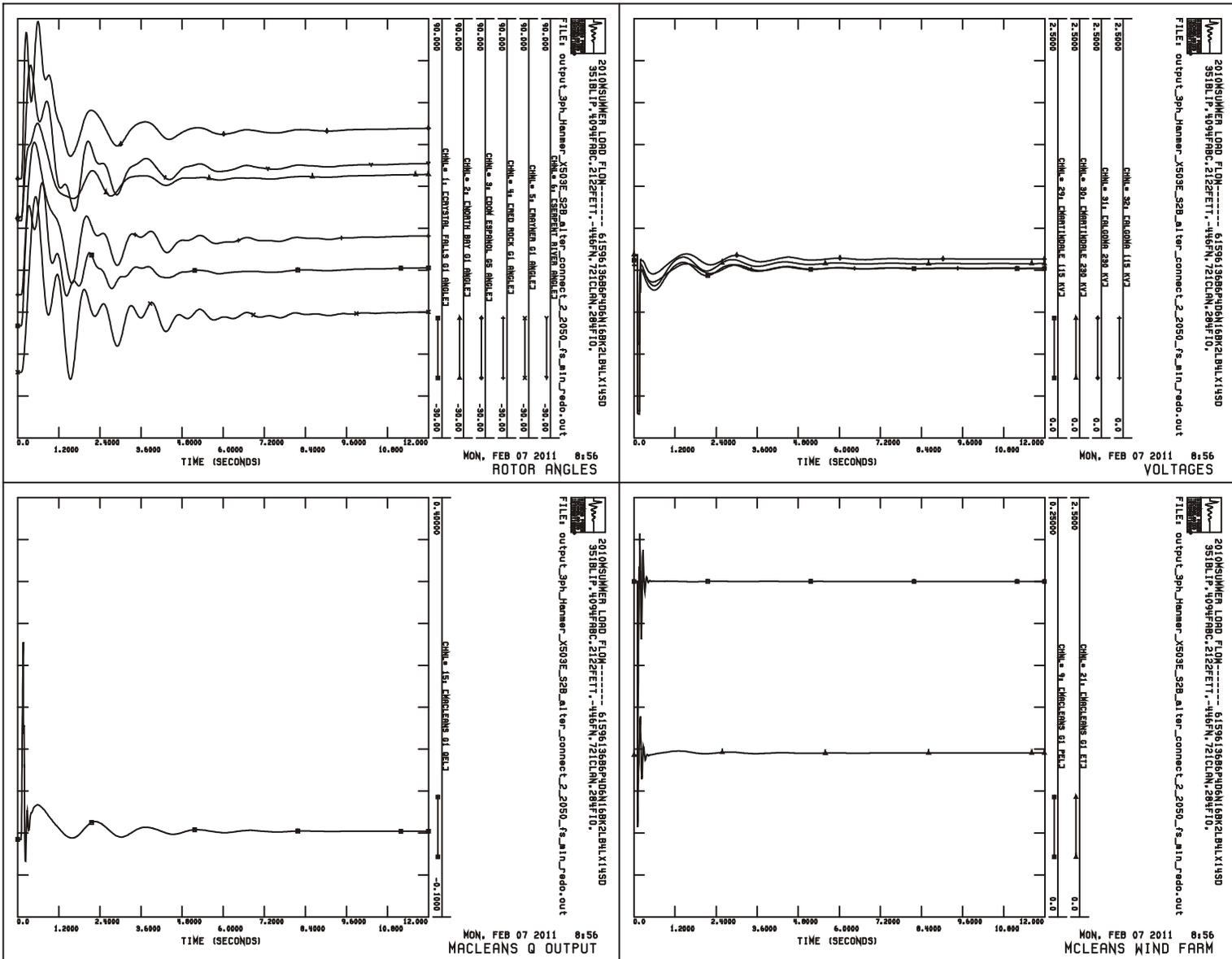
S5 - McLean's and Manitoulin on Martindale Supply: LLG Fault on X27A at Hanmer 230 kV



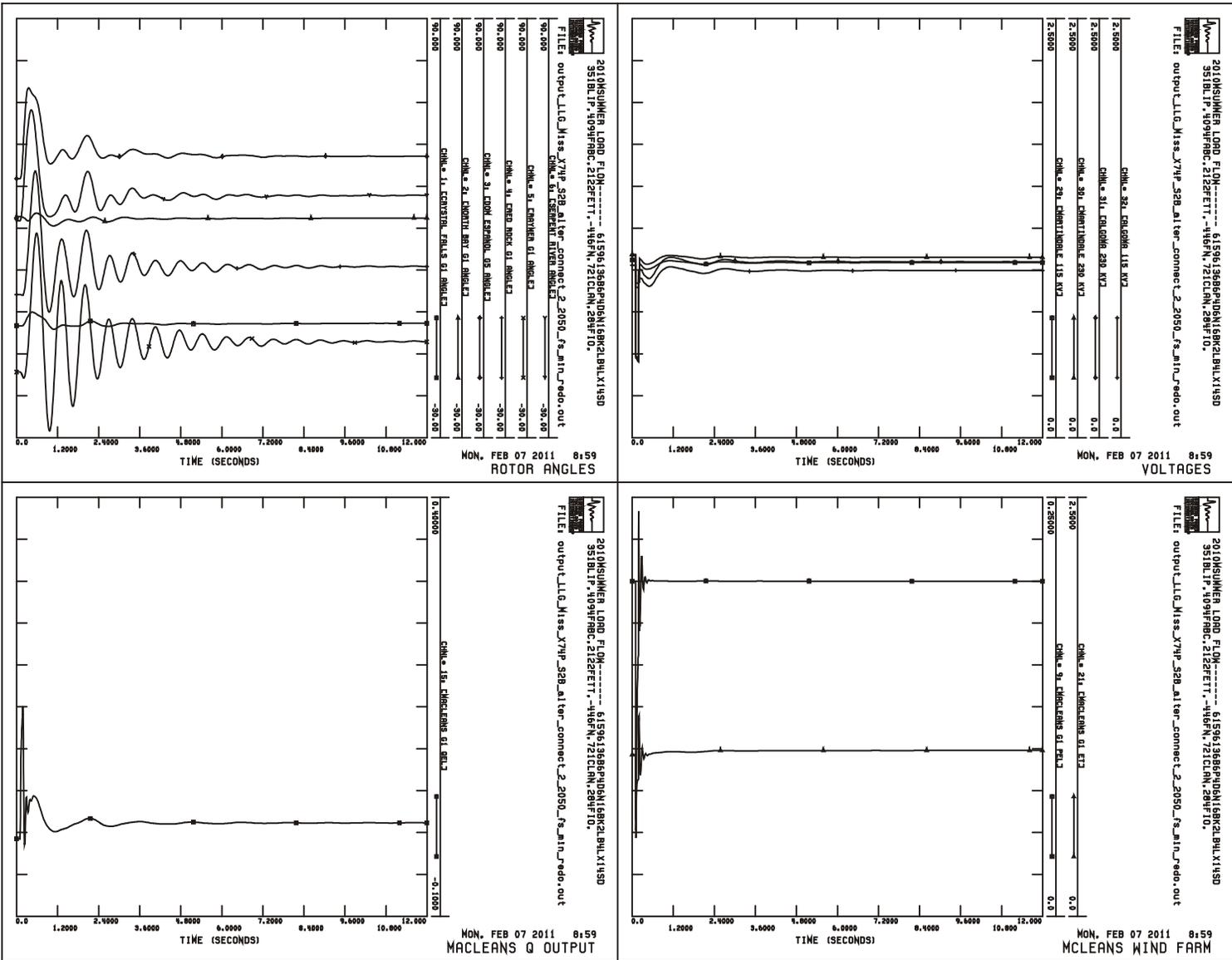
S6 - McLean's and Manitoulin on Martindale Supply: LLG S22A at Martindale 230 kV



S7 - McLean's and Manitoulin on Martindale Supply: LLG L1S at Crystal Falls 115 kV

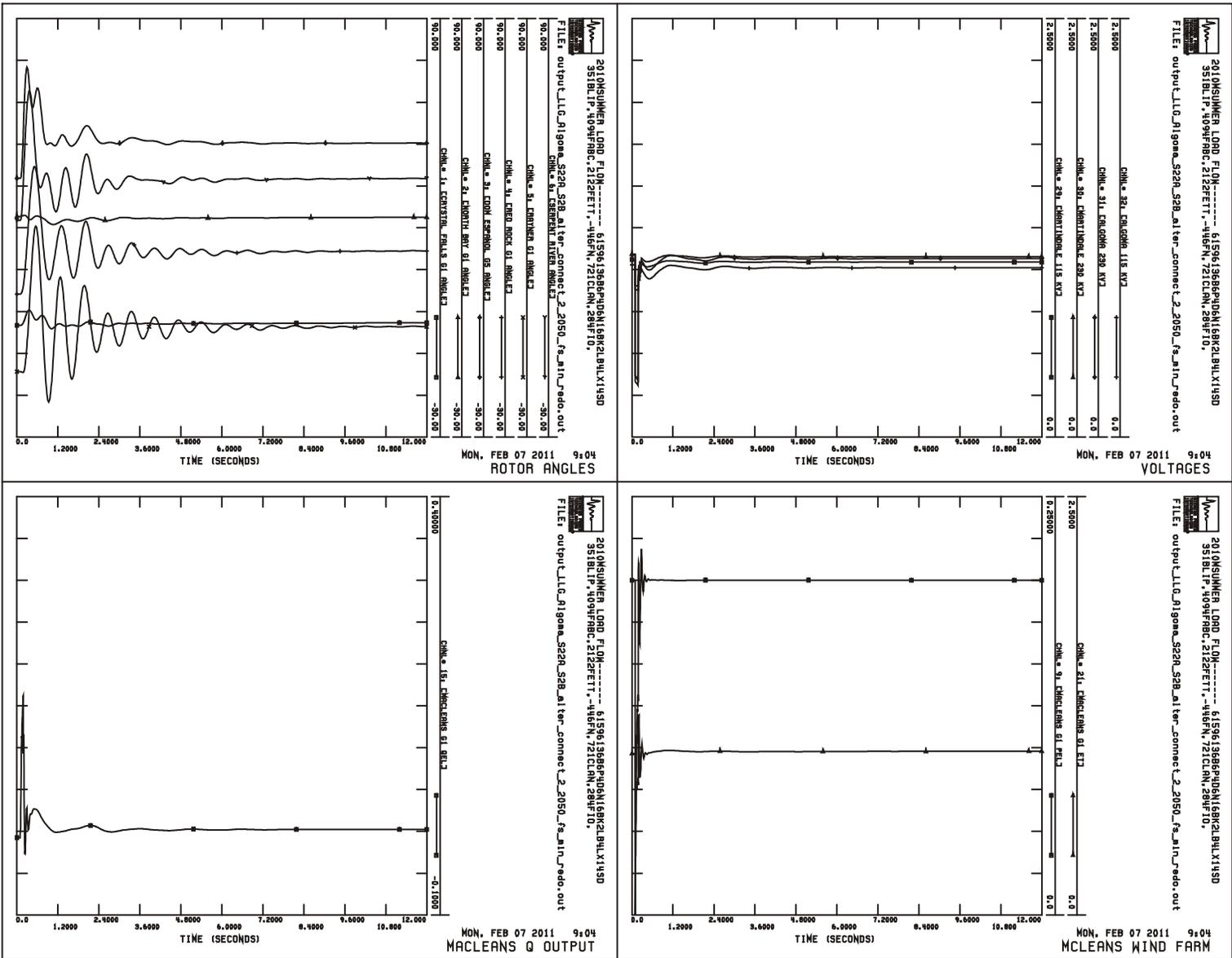


S8 - McLean's and Manitoulin on Algoma Supply: 3 Phase Fault on X503E at Hanmer 500 kV



S9 - McLean's and Manitoulin on Algoma Supply: LLG fault on X74P at Mississagi 230 kV





S11 - McLean's and Manitoulin on Algoma Supply: Scenario S4: LLG Fault on S22A at Algoma 230 kV

# **Appendix B: Protection Impact Assessment**



Hydro One Networks Inc.  
483 Bay Street  
Toronto, Ontario  
M5G 2P5

**Protection Impact Assessment  
Maclean's Mountain Windfarm  
60 MW Wind  
Generation Connection**

Date: February 10, 2011 R4  
P&C Planning Group Project # PCT-113

Prepared by:

Hydro One Networks Inc.

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## Disclaimer

This Protection Impact Assessment has been prepared solely for the IESO for the purpose of assisting the IESO in preparing the System Impact Assessment for the proposed connection of the proposed generation facility to the IESO-controlled grid. This report has not been prepared for any other purpose and should not be used or relied upon by any person, including the connection applicant, for any other purpose.

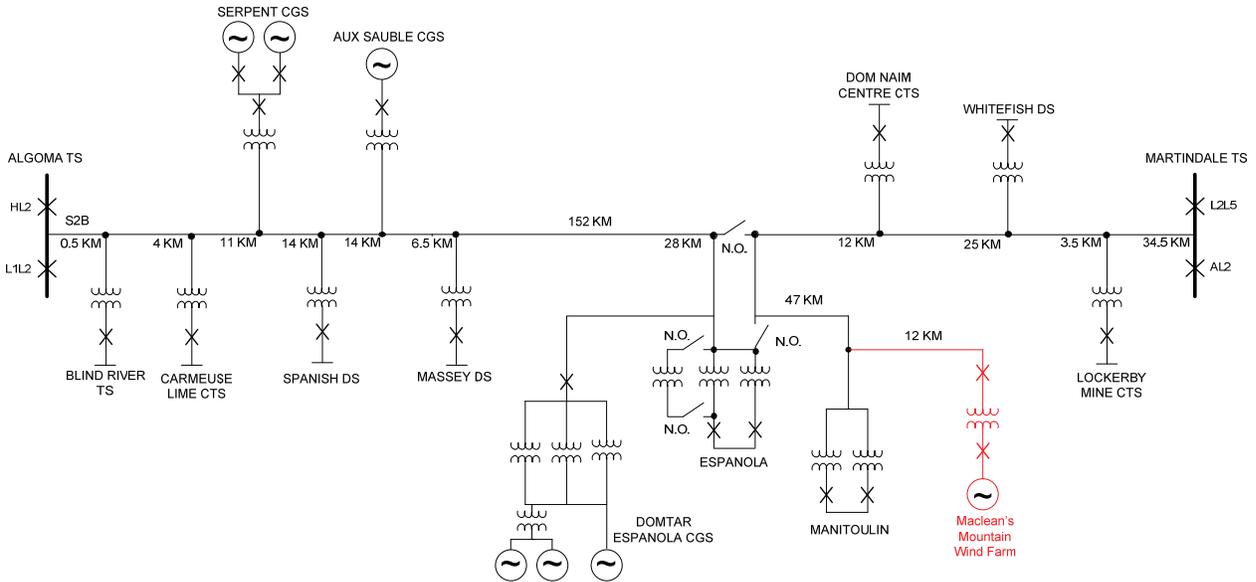
This Protection Impact Assessment was prepared based on information provided to the IESO and Hydro One by the connection applicant in the application to request a connection assessment at the time the assessment was carried out. It is intended to highlight significant impacts, if any, to affected transmission protections early in the project development process. The results of this Protection Impact Assessment are also subject to change to accommodate the requirements of the IESO and other regulatory or legal requirements. In addition, further issues or concerns may be identified by Hydro One during the detailed design phase that may require changes to equipment characteristics and/or configuration to ensure compliance with the Transmission System Code legal requirements, and any applicable reliability standards, or to accommodate any changes to the IESO-controlled grid that may have occurred in the meantime.

Hydro One shall not be liable to any third party, including the connection applicant, which uses the results of the Protection Impact Assessment under any circumstances, whether any of the said liability, loss or damages arises in contract, tort or otherwise.

## Revision History

Revision	Date	Change
R0	July 1, 2010	Draft
R1	July 14, 2010	Added Section 2.2.4
R2	Aug 4, 2010	Revised Section 2.2
R3	Sept 3, 2010	Revised executive summary
R4	Feb 10, 2011	Change of Wind Generators and respective settings

**EXECUTIVE SUMMARY**



**Figure 1: MacLean’s Mountain Windfarm Connection to HONI Transmission System**

It is feasible for MacLean’s Mountain Windfarm to connect the proposed 60 MW generation at the location in Figure 1 as long as the proposed changes are made:

**PROTECTION HARDWARE**

- Due to connection of the new MacLean’s Mountain Windfarm generating facility, the electromechanical relays at Martindale and Algoma TS must be replaced with microprocessor based relays having multiple setting groups. Multiple setting groups are required to accommodate several operating conditions: namely, with the line sectionalizer at Espanola TS open/closed and the S2B circuit connected to Martindale TS or Algoma TS.

**PROTECTION SETTING**

- The updated protections will function as the existing ones in a Direct Underreaching Scheme for Zone 1 and Direct Overreaching Scheme for Zones 2 and 3. The existing Zone 2 and Zone 3 reaches will be extended to cover the maximum apparent impedance due to the connection of the MacLean’s Mountain Windfarm. Time delay settings will need to be reviewed to ensure proper coordination.

## TELECOMMUNICATIONS

- New communications will be required between MacLean's Mountain Windfarm and Martindale TS (normal supply terminal) for transfer trip and GEO signals. When the entire circuit is supplied from Algoma TS only, the MacLean's Mountain Windfarm will need to be taken offline. If MacLean's Wind Farm requires to be connected under this operating condition, communications (transfer trip and GEO) must be established to Algoma TS.

**McLean's Mountain Wind Limited Partnership**  
**Exhibit I**  
**Tab 1**  
**Schedule 6**

**INTERCONNECTION: CONNECTION IMPACT ASSESSMENT ADDENDUM**



Hydro One Networks Inc.  
483 Bay Street  
Toronto, Ontario  
M5G 2P5

**ADDENDUM**  
**CUSTOMER IMPACT ASSESSMENT**  
  
**Proposed 60 MW**  
**McLean's Mountain Wind Farm**  
**Generation Project**

Revision: 0

Date: March 16, 2011

Prepared by:

A handwritten signature in black ink, appearing to read "Khurram Makhdoom".

Khurram Makhdoom  
Transmission System Development  
Hydro One Networks Inc.

Approved by:

A handwritten signature in black ink, appearing to read "Ibrahim El Nahas".

Ibrahim El Nahas  
Transmission System Development  
Hydro One Networks Inc.

Issued by:

Transmission System Planning Department  
System Development Division  
Hydro One Networks Inc.

**CUSTOMER IMPACT ASSESSMENT**  
Proposed 60 MW McLean’s Mountain Wind Farm Project

**Disclaimer**

This addendum to Customer Impact Assessment was prepared based on preliminary information available about the connection of the proposed McLean’s Mountain Wind Farm Project. It is intended to highlight significant impacts, if any, to affected transmission customers early in the project development process and thus allow an opportunity for these parties to bring forward any concerns that they may have including those needed for the review of the connection and for any possible application for leave to construct. Subsequent changes to the required modifications or the implementation plan may affect the impacts of the proposed connection identified in this Customer Impact Assessment. The results of this Customer Impact Assessment and the estimate of the outage requirements are also subject to change to accommodate the requirements of the IESO and other regulatory or municipal authority requirements.

Hydro One Networks shall not be liable to any third party which uses the results of the Customer Impact Assessment under any circumstances whatsoever, for any indirect or consequential damages, loss of profit or revenues, business interruption losses, loss of contract or loss of goodwill, special damages, punitive or exemplary damages, whether any of the said liability, loss or damages, arises in contract, tort or otherwise.

**Addendum**

**CUSTOMER IMPACT ASSESSMENT  
PROPOSED 60 MW MCLEANS MOUNTAIN WIND FARM PROJECT**

A customer impact assessment study was issued on October 22, 2010 that covered the impact of the proposed McLean’s Mountain Wind Farm Project (MMWFP) on the Hydro One Networks Inc. (Hydro One) system in the area. The primary focus of this study was to identify the impact on the transmission connected customer facilities and ensure that the voltage performance at these facilities meets the planning criteria. The study also assisted in determining if any transmission system upgrade will be required to integrate the proposed generation during possible system conditions.

Subsequently on January 25<sup>th</sup> 2011 Northland Power Inc. has applied to revise their generation connection application for the McLean’s Mountain wind farm under Ontario Power Authority’s (OPA) Feed-In-Tariff (FIT) program. The original application was to install 33 Vestas V90, 1.8MW wind turbine generators which has changed to 24 G.E turbines of 2.5 MW each connecting to Hydro One’s S2B 115 kV circuit. This change in number and size in turbines resulted in a minor change in project size from 59.4 MW to 60 MW. Looking into the new parameters of the proposed turbines and equipment in the revised application by Northland Power Inc. and conducting preliminary analysis it was concluded that there will be no significant change in the analysis results and thus no changes in the findings of the already issued customer impact assessment. Thus the results and requirements listed in the already issued customer impact assessment for the McLean’s Mountain wind farm hold and the assessment is not required to be revised as a result of this change.

**McLean's Mountain Wind Limited Partnership**  
**Exhibit I**  
**Tab 1**  
**Schedule 7**

**INTERCONNECTION: NOTICE OF CONDITIONAL APPROVAL**

March 15, 2011



Mr. John W. Brace  
President & CEO  
30 St. Clair Ave. West, Suite 1700  
Toronto, Ontario  
M4V 3A1

Dear Mr. Brace :

***McLean's Mountain Wind Farm  
Notification of Addendum of Conditional Approval to Connection Proposal  
CAA ID Number: 2010-386***

Thank you for the updated information regarding the proposed *McLean's Mountain Wind Farm*.

From the new information provided, we have concluded that the proposed changes at *McLean's Mountain Wind Farm* will not result in a material adverse impact on the reliability of the integrated power system.

The IESO is therefore pleased to grant **conditional approval** for the modification detailed in the attached addendum to the System Impact Assessment (SIA) report. Any material changes to your proposal may require re-assessment by the IESO in accordance with Market Manual 2.10, and may nullify your conditional approval.

**Final approval** to connect the facility to the IESO-controlled grid will be granted upon successful completion of the IESO Market Entry process including, without limitation, satisfactory completion of the requirements set out in the addendum to the SIA report. During this process you will be expected to demonstrate that you have fulfilled the requirements and that the facility you have installed is materially unchanged from the proposal assessed by the IESO. Please refer to the 'External Guidelines for Connection to the IESO' attachment in your approval email for key steps in the Market Entry process. In order to initiate this process, please contact Market Entry at [market.entry@ieso.ca](mailto:market.entry@ieso.ca) at least eight months prior to your energization date.

For further information, please contact the undersigned.

Yours truly,



Michael Falvo  
Manager – Market Facilitation  
Telephone: (905) 855-6209  
Fax: (905) 855-6319  
E-mail: [mike.falvo@ieso.ca](mailto:mike.falvo@ieso.ca)  
cc: IESO Records

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All information submitted in this process will be used by the IESO solely in support of its obligations under the *Electricity Act, 1998*, the *Ontario Energy Board Act, 1998*, the *Market Rules* and associated policies, standards and procedures and in accordance with its licence. All information submitted will be assigned the appropriate confidentiality level upon receipt.

**ENVIRONMENTAL MATTERS**

An Environmental Study Report (“ESR”) for MMWF was completed by Dillon Consulting Limited (“Dillon”) and released in July 2009 for a thirty day public review, as part of the former Environmental Assessment process dictated by provincial and federal environmental regulatory requirements. The overall conclusion of the ESR was that the MMWF Project and Transmission Line can be constructed, operated and decommissioned without any significant impacts to the environment, including the natural and social environment.

Pursuant to the *Green Energy Act, 2009* and based on the fact that the MMWF Project is being developed under the FIT program, MMWF requires approval under Ontario Regulation 359/09 – Renewable Energy Approval (“**REA**”). The REA approval process replaces approvals formerly required under the *Environmental Assessment Act, Planning Act, and Environmental Protection Act*. Under the REA Regulations, MMWF is a “Class 4” wind facility. As part of its REA Application, The Applicant has prepared a series of reports, all of which have been written in accordance with Ontario Regulation 359/09, the Ontario Ministry of Natural Resources’ (MNR) Approval and Permitting Requirements Document for Renewable Energy Projects (September 2009) and Ministry of Energy and Infrastructure’s draft Technical Bulletins (March 2010). Reports will be posted on the MMWF website and is being submitted to the Ministry of Environment (MOE) as required under the REA process. The various reports will be also available for public viewing via the NEMI. The reports available for public review and comment include:

- Project Description Report;
- Construction Plan Report;
- Design and Operations Report;
- Noise Study Report, Natural Heritage Assessment Reports (Records Review, Site Investigation, Evaluation of Significance, and Environmental Impact Statement (EIS));
- Water Bodies Assessment Summary Report;
- Archaeological Assessment Reports (Stage 1 and 2);
- Cultural Heritage Self-Assessment Report;
- Decommissioning Report;
- Consultation Report;
- Property Line Setback Report;
- Wind Turbine Specifications Report;
- Environmental Management and Protection Plan (EMPP);

**McLean's Mountain Wind Limited Partnership**  
**Exhibit J**

- Post-Construction Monitoring Plan; and
- other supporting documents.

The Applicant issued the Final REA Application Submission in September, 2011. The REA Application will be posted on the Applicant's website once it is available on the Ministry of Energy's EBR. The Applicant will advise the Board of the exact location once posted.

**McLean's Mountain Wind Limited Partnership**  
**Exhibit K**  
**Tab 1**  
**Schedule 1**

**OTHER**

The following table lists other permits and/or approvals required for the Transmission Facilities:

<b>Item</b>	<b>Description</b>	<b>Permit</b>	<b>Authority</b>	<b>Status</b>
1	Underwater Crossing	Navigable Waters Protection Act	Transport Canada	Application was submitted in Q3, 2011 (with draft alignment plan/drawings). Application to be resubmitted once alignment for marine cable crossing has been finalized.
2	Underwater Crossing	Work Permit	MNR	Application was originally submitted in 2010. Application to be resubmitted once alignment for marine cable crossing has been finalized.
3	Underwater Crossing	Fisheries Act Authorization	DFO	Application was submitted in 2010. Application to be resubmitted upon completion of detailed blasting plan and finalized alignment for marine cable crossing.
4	Underwater Crossing	Species at Risk	MOE	Applicant's consultant preparing Species at Risk application, to be completed by end of October, 2011.
5	Sub-station, overhead transmission line, transition station and connection / switching station.	REA	MOE	Application submitted; pending review by MRN.

Attached as **Exhibit K, Tab 1, Schedule 2** to this Application is a comfort letter from the MNR to the applicant dated November 15, 2011, whereby the MNR acknowledges that the applicant has applied for a Work Permit to allow the applicant to cross the North Channel between Manitoulin Island and Goat Island using a submarine cable. In its letter, the MNR states that it expects to provide the requested authorization for the Work Permit once all of the required information has been received.

**McLean's Mountain Wind Limited Partnership**  
**Exhibit K**  
**Tab 1**  
**Schedule 2**

**COMFORT LETTER FROM MINISTRY OF NATURAL RESOURCES**

**Ministry of Natural Resources**  
Sudbury District  
Espanola Area Office  
Northeast Region  
Regional Operations Division  
148 Fleming Street  
Espanola ON P5E 1R8  
Tel.: 705-869-1330  
Fax: 705-869-4620

**Ministère des Richesses naturelles**  
District de Sudbury  
(Bureau d' Espanola)  
Région Nord-Est  
Division des opérations régionales  
148 rue Fleming  
Espanola ON P5E 1R8  
Tél. : 705-869-1330  
Télééc. : 705-869-4620



November 15, 2011

McLean's Mountain Wind L.P.  
30 St. Clair Ave. West, Suite 1200  
Toronto ON M4V 3A1

Attention: Gordon Potts, P.Eng.

Dear Mr. Potts:

SUBJECT: North Channel, Submarine Cable Tenure

The Ministry of Natural Resources (the "MNR") understands that McLean's Mountain Wind L.P. (the "Proponent") is developing a 60 MW wind farm on Manitoulin Island. The MNR further understands that the Proponent intends to connect the wind farm to a Hydro One transmission line located on Goat Island, adjacent to Manitoulin Island, by way of a 115 kV transmission line to be constructed by the Proponent.

The Proponent has applied to the MNR for a Work Permit to allow for the Proponent to cross the North Channel between Manitoulin Island (near Little Current) and Goat Island using a submarine cable through which the 115 kV transmission line will run. The work permit request is currently being reviewed by the MNR, and the MNR expects to provide the requested authorization for the work permit, provided all of the required information is submitted.

Upon approval of the work permit and completion of the installation of the submarine cable, this office will issue tenure for this submarine cable to the Proponent.

If you have any questions with regards to this information, please contact me at 705-869-4298.

Yours truly,

A handwritten signature in black ink, appearing to read "Brian Riche".

Brian Riche  
Espanola Area Supervisor

Telephone: 705-869-4298  
Fax: 705-869-4620  
Email: [brian.riche@ontario.ca](mailto:brian.riche@ontario.ca)