



Grand Bend Wind Farm
Decommissioning Plan Draft Report

**Grand Bend Wind Limited Partnership,
c/o Northland Power Inc.**



NEEGAN BURNSIDE

August 2012

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c/o Northland Power Inc.

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Record of Revisions

Revision	Date	Description
0	August 27, 2012	Initial Draft Submission to Municipal and Aboriginal Communities as well as Selected Government Agencies

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Executive Summary

The purpose of this Report is to explain how Northland proposes to restore the Project location to a clean and safe condition at the end of the life of the Project. Steps will include the retiring of the elements of the renewable energy generation facility, restoring or rehabilitating the land, and prudently handling the excess of materials and waste.

This Decommissioning Plan Report (the "Report") is one component of the REA Application for the Project, and has been prepared in accordance with Item 3, Table 1 of O.Reg 359/09 which sets out specific content requirements including:

- Procedures for dismantling or demolishing the facility;
- Activities related to the restoration of any land and water negatively affected by the facility; and,
- Procedures for managing excess material and waste.

The Siemens SWT-2.3-113 wind turbines utilized in this Project have a typical operational lifespan of approximately 20 to 25 years. This report further describes the decommissioning activities for the wind farm components that will occur at the end of the equipment's useful life. It also discusses requirements in the event that Northland is unable to complete the construction or abandons the project. Given that the Project is located almost entirely on private land, the final site condition and decommissioning requirements will be confirmed with the appropriate landowner, and will conform to local, provincial and federal government policies. Should the economic climate remain viable for wind power at the end of the life span of the equipment, the facility could be "repowered" with new technology. This process may include the replacement and/or upgrading of the Projects components with technology available at the time. Prior to any potential "repowering", Northland will prepare a report detailing the proposed works in accordance with the applicable policies at that time.

The owner of the wind farm, Grand Bend Wind Limited Partnership, will bear the cost of decommissioning and may partially recover monies through the sale and reuse of all project components.

Typically, decommissioning of a wind farm involves the following activities:

- Access roads will be modified back to construction phase standards for transportation of turbine components;
- Dismantling and removal of the wind turbines using a crane, (once disassembled at ground level, within designated laydown areas at the base of each turbine, materials will be broken down into manageable sizes to enable transportation and salvage – e.g., steel);

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- Removal of electrical system (such as underground cables, transformers, interconnections and substation) for salvage or disposal as applicable;
- Removal of foundations and access roads not requested for future purposes, to a depth suitable for the land use;
- Replacement of removed material with clean topsoil to the depth of the surrounding lands, and planting with suitable ground cover (if applicable) dependent on time of year and in consultation with property owner; and,
- Ensuring that there are minimal environmental impacts related to decommissioning activities.

The Project area will be restored to its pre-development state, subject to environmental requirements and the requests of the landowners. A description of the existing natural features of the Project area is provided within the Natural Heritage Assessment Report/Environmental Impact Study.

If required, Northland will develop a Rehabilitation Plan for the Project area, which will be designed to restore habitat in areas that were affected by the wind farm infrastructure. This plan will be developed in consultation with the appropriate agencies, prior to the decommissioning of the Project area. It is expected that a Rehabilitation Plan will include, but not be limited to:

- All equipment, foundations and imported material (including roads) will be removed from site in accordance with applicable governmental policies;
- Any excavation or trench activities will be backfilled and graded to the surrounding ground elevations;
- Any compacted subsoil within agricultural land will be ripped prior to replacement of topsoil;
- All areas impacted by surface infrastructure will be replaced with a suitable depth of topsoil matching surrounding areas;
- Any tile drains damaged during decommissioning works will be repaired to preserve agricultural drainage; and,
- Re-vegetation using native plant material and seeds appropriate for the Project site will be used where applicable.

The Rehabilitation Plan will also involve a monitoring period which would allow for the Project area to experience seasonal changes and help determine if additional restoration is required.

Communications plans and a host of other matters relevant to decommissioning are discussed in the report.

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1.0 Introduction

1.1 Background

Grand Bend Wind Limited Partnership, c/o Northland Power Inc. (“Northland”) is proposing to develop, construct and operate a 100 MW wind facility located north of Grand Bend, Ontario. An application for approval is being prepared under Ontario Regulation 359/09 of the *Environmental Protection Act*. The project is classified as a Class 4 Wind facility under the Regulation. The Grand Bend Wind Farm (“the Project”) is located in Huron County, spanning the lower-tier Municipality of Bluewater and Huron South. Portions of the transmission line also traverse the Municipality of Huron East and Municipality of West Perth in Perth County.

The basic project components will include up to 48 turbines (Siemens SWT-2.3-113 direct drive wind turbine generators with a total name plate capacity of 100 MW), turbine access roads, a 36 kV electrical collection system, substation, a new transmission line within municipal road right-of ways (“ROWS”) along Rodgerville Road, Line 17 and Road 183 with connection to the provincial power grid at the 230 kV transmission line south of the Seaforth Transformer Station. During construction temporary components will include crane pads and work/storage areas at the turbine locations and construction of the transmission connections.

Construction of the Project will not commence until Renewable Energy Approval has been obtained. The construction period is estimated to take approximately one year in duration, with commercial operation anticipated in the fall of 2014. It is anticipated that the Project will be operational for at least 20 years. Land lease agreements are in-place with property owners for a period of 20 years, with an option to extend for a further 20 years (in 5 year increments). The future land use of the Project sites is anticipated to remain as agricultural.

1.2 Objective and Scope

The purpose of this Report is to explain how Northland proposes to restore the Project location to a clean and safe condition at the end of the life of the Project. Steps will include the retiring of the elements of the renewable energy generation facility, restoring or rehabilitating the land, and prudently handling the excess of materials and waste.

This Decommissioning Plan Report (the “Report”) is one component of the REA Application for the Project, and has been prepared in accordance with Item 3, Table 1 of O.Reg. 359/09 which sets out specific content requirements as provided in Table 1.1.

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Table 1.1 Decommissioning Plan Report Requirements

Requirements	Completed	Section Reference
Set out a description of the plans for the decommissioning of the renewable energy generation facility including:		
Procedures for dismantling or demolishing the facility	Yes	2.0
Activities related to the restoration of any land and water negatively affected by the facility	Yes	3.0
Procedures for managing excess material and waste	Yes	4.0

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2.0 Decommissioning

The Siemens SWT-2.3-113 wind turbines utilized in this Project have a typical operational lifespan of approximately 20 to 25 years. This report further describes the decommissioning activities for the wind farm components that will occur at the end of the equipment's useful life. Given that the Project is located almost entirely on private land, the final site condition and decommissioning requirements will be confirmed with the appropriate landowner, and will conform to local, provincial and federal government policies. Should the economic climate remain viable for wind power at the end of the life span of the equipment, the facility could be "repowered" with new technology. This process may include the replacement and/or upgrading of the Projects components with technology available at the time. Prior to any potential "repowering", Northland will prepare a report detailing the proposed works in accordance with the applicable policies at that time.

2.1 Decommissioning During Construction (Abandonment of Project)

In the event that Northland is not able to complete construction activities, it is envisioned that the rights to the Project would be sold and the Project would be successfully constructed by the purchasing developer. Should the Project be abandoned, Northland will be responsible for the removal of all equipment, foundations and imported material (including access roads) from the Project area in accordance with applicable municipal, provincial and federal policies. It is possible that landowners will want some of the access roads to remain in place and this will be determined in conjunction with the private property owners. The decommissioning process to be followed and any mitigation measures resulting from the abandonment of the Project will be the same as those detailed below for decommissioning after ceasing operation of the Project.

2.2 Decommissioning After Ceasing Operation

This section of the Report assumes that the Project will be decommissioned after the 20 year power purchase agreement with the Ontario Power Authority concludes. The Proponent will ensure that the Project area will be restored to its pre-construction baseline condition, or as desired by the land owners, and meet the requirements of applicable local, provincial and federal policy.

The owner of the wind farm, Grand Bend Wind Limited Partnership, will bear the cost of decommissioning and may partially recover monies through the sale and reuse of all project components.

Typically, decommissioning of a wind farm involves the following activities:

- Access roads will be modified back to construction phase standards for transportation of turbine components;
- Dismantling and removal of the wind turbines using a crane, (once disassembled at ground level, within designated laydown areas at the base of each turbine, materials will be broken down into manageable sizes to enable transportation and salvage – e.g., steel);
- Removal of electrical system to depth as required (such as underground cables, transformers, interconnections and substation) for salvage or disposal as applicable;
- Removal of foundations and access roads not requested for future purposes, to a depth suitable for the land use;
- Replacement of removed material with clean topsoil to the depth of the surrounding lands, and planting with suitable ground cover (if applicable) dependent on time of year and in consultation with property owner; and,
- Ensuring that there are minimal environmental impacts related to decommissioning activities.

It is expected that decommissioning procedures could take over six months to complete. During this time, signage will be erected and will include a contact phone number to address public concerns. All such communications will be logged as outlined in the Communications Plan of the Design and Operations Report. Should there be a need to notify the general public, newspaper ads and direct / general mail-outs will occur. All decommissioning communications with the public and agencies will be documented and kept on file.

As decommissioning will occur at minimum of 20 years from now, decommissioning activities will be conducted in general accordance with the approach described in this Report, but under consideration of all applicable regulations and technology at that time.

2.3 Equipment Dismantling and Demolishing

Table 2.1 provides the procedures for the disassembling of the Grand Bend Wind Farm Project infrastructure.

Table 2.1 Decommissioning Procedures

Works/Activities	Description
Blade, Generator and Tower Disassembly	All turbine components will be disassembled using reverse engineering. Once craned down the components will be removed from the Project site using transport trucks. Generators, towers, and other saleable parts will be sold for their recyclable resource value. Blades will be recycled if possible and if not they will be disposed of at a licensed waste facility.
Removal of Electrical Gear	Electrical decommissioning will be conducted by certified personnel and will include obtaining the required permits. Lockout/tag out procedures are imperative before de-energizing, isolating, and disconnecting electrical devices, equipment and wiring/cabling. Electrical equipment will be removed from the site on transport trucks for salvage value as a recyclable resource.
Removal of Access Roads	If so desired by the land owners, access roads will be maintained for farming purposes. This decision will be left to the landowner at the time of decommissioning. Any unwanted access roads will be restored as part of the restoration activities described below.
Removal of Concrete Foundations	The foundations will be broken up by heavy machinery to a depth of approximately 1.0 m and removed by dump truck. Procedures outlined in Section 3.0 will be followed for site restoration.
Removal of Distribution Lines	The collector and transmission lines and any underground conduit will be terminated and removed from the ground. Trenches and areas where conduit has been removed will be backfilled and rehabilitated as described below. Conduit will be recycled or disposed of at a licensed landfill within Ontario, and distribution lines will be sold as scrap metal to a recycler. It is possible that the 230 kV transmission line may have continued value for power distribution by others and could be sold for continued use.
Removal of Transformers	After disconnection, all the oil in the transformer will be safely removed by pumping the oil into an industry approved disposal container by an approved hauler to an approved waste management facility. The container will be sealed to prevent spills during transportation. The empty transformer will be removed and transported off-site by truck. The transformer will be recycled, if possible, or will be disposed of at a licensed waste facility.

3.0 Site Restoration

The Project area will be restored to its pre-development state, subject to environmental requirements and the requests of the landowners. A description of the existing natural features of the Project area is provided within the Natural Heritage Assessment Report/Environmental Impact Study.

If required, Northland will develop a Rehabilitation Plan for the Project area, which will be designed to restore habitat in areas that were affected by the wind farm infrastructure. This plan will be developed in consultation with the appropriate agencies, prior to the decommissioning of the Project area.

It is expected that a Rehabilitation Plan will include, but not be limited to:

- All equipment, foundations and imported material (including roads) will be removed from site in accordance with applicable governmental policies;
- Any excavation or trench activities will be backfilled and graded to the surrounding ground elevations;
- Any compacted subsoil within agricultural land will be ripped prior to replacement of topsoil;
- All areas impacted by surface infrastructure will be replaced with a suitable depth of topsoil matching surrounding areas;
- Any tile drains damaged during decommissioning works will be repaired to preserve agricultural drainage; and,
- Re-vegetation using native plant material and seeds appropriate for the Project site will be used where applicable.

The Rehabilitation Plan will also involve a monitoring period which would allow for the Project area to experience seasonal changes and help determine if additional restoration is required.

Should decommissioning works be required within or near watercourses and/or aquatic habitat, alternatives will be discussed with the appropriate agencies to determine any site specific mitigation. Mitigation and monitoring measures implemented during construction will be utilized for the decommissioning of the Project area unless otherwise indicated.

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During the operation of the wind farm, strict spill prevention procedures will be implemented, although there is still the potential through the routine operation, maintenance, and decommissioning process for spills to occur. Should soil contamination occur as a result of a spill, the impacted soils will be delineated, excavated and removed. The contaminated material will be disposed at an appropriate Ministry of the Environment (“MOE”) approved facility. The removed soils will be replaced with compatible material. It is the intent of Northland that hazardous materials or wastes such as used lubricating oils will not be stored at the turbine sites during operation of the wind farm. Provided the equipment is operated and maintained in-line with industry best practices there should be no significant environmental liabilities associated with cleanup or remediation. As noted above, the costs for removal of any project related infrastructure will be the responsibility of the owner of the Project or the purchaser of the reusable materials.

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4.0 Management of Excess Materials, Waste and Soils Replacement

The decommissioning of the Project area will result in the production of waste and excess materials. Waste streams will be disposed of in accordance with municipal, provincial and federal regulations. All excess materials and waste will be transported off-site by transport trailer or dump truck, as required, by a licensed hauler to facilities within the province of Ontario. Management of the waste streams may include:

- Generator, Tower, Electrical Gear and Wiring – sold for appropriate scrap value to a certified scrap metal facility;
- Blades – disposed of at an appropriately licensed waste facility within Ontario. Should the option exist, the blades may be recycled;
- Concrete and Aggregate – sent to a certified recycling facility;
- Transmission line utility poles – reclaimed and reused or recycled if possible; and,
- Soil management – subsoil and topsoil replacement will be required in former turbine and access road locations as agreed with landowners. Subsoils will be ripped prior to replacement of soil to restore its agricultural condition. It is possible that some tile drainage repairs or replacements may be necessary as well.

Any hazardous wastes that are used on site, such as used lubricating oils, will be removed in accordance with O.Reg. 347 and disposed of at a licensed facility. As previously noted, all wastes will be transported by a licensed hauler.

Care must be taken during the transport, management and replacement of soils and drainage repairs or replacement to avoid any sedimentation of local drains and water bodies. Appropriate erosion and sediment control measures will be employed to mitigate potential adverse effects to water bodies.

5.0 Other Considerations

5.1 Emergency Response and Communications Plans

Emergency Response and Communications Plans will be implemented through all phases of the Project, as described in the Design and Operations Report. The purpose of these plans is to ensure members of the community, Aboriginal communities, local municipalities and government ministries are kept apprised of pertinent Project activities, in addition to any emergencies in the unlikely event that one should occur.

The potential emergency situations during decommissioning are the same as those identified during construction and operation. Further details of these emergencies and the associated response procedures are outlined in the Design and Operations Report.

All decommissioning staff will be trained in emergency response and communication plan procedures.

5.2 Public, Municipal and Aboriginal Community Notification

Northland will create a Communications Plan that clearly outlines a process for two-way communication with all stakeholders. At all times, the Communications Plan will be available on the Project website and at the Parts and Storage building. Each local municipality will also be supplied with contact information to direct stakeholder communications and complaints to the appropriate personnel who can implement the proper procedures.

All non-emergency communications will be disseminated through a variety of media avenues to keep stakeholders apprised of Project updates and activity. Where applicable, these avenues will include:

- Project website;
- newspaper notices;
- construction signage; and,
- email and/or letters.

Project updates will include any legally required notices as well as any information that Northland and/or the Contractor considers relevant to inform the public of and ensure their safety.

5.3 Other Approvals

The authorities having jurisdiction will be contacted prior to decommissioning works to ensure the appropriate road user agreements and permits are in place. This

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decommissioning plan report will be updated six months prior to decommissioning activities to ensure proper notification takes place with the appropriate stakeholders of that time.

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6.0 Conclusion

Neegan Burnside has prepared the Grand Bend Wind Farm Decommissioning Report for Northland in accordance with O.Reg. 359/09. This report has been prepared by Burnside for the sole benefit of Northland, and may not be re-produced by any third party without the express written consent of Northland.

Respectfully submitted,

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