**Draft For Comment** 



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Prepared By Morrison Hershfield Limited





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**REA Package Reference Tabs** 

Tab 1: Study Area Map Tab 2: Site Plan Tab 3: Land-Use Maps

# PREAMBLE

The proposed HAF Wind Energy Project by **Vineland Power Inc.**, the proponent is subject to *Ontario Regulation 359/09* Renewable Energy Approvals (REA) under Part V.0.1 of the *Ontario Environmental Protection Act* and is seeking a *Renewable Energy Approval* from the Ministry of the Environment (MOE). This Project Description Report is a required document under the REA and is available from the proponent upon request. This document has been filed with the MOE in accordance with S.14 of the REA.



# **1.0 PROJECT DESCRIPTION REPORT**

### **1.1 Project Proponent – Vineland Power Inc.**

IPC Energy (IPC), the developer, on behalf of the proponent, **Vineland Power Inc**., is proposing to develop the **HAF Wind Energy Project**, located south of the Community of Tweedside, in the Township of West Lincoln, in Niagara Region, Ontario. IPC has retained Morrison Hershfield Limited (MH) to undertake the Renewable Energy Approval and the required environmental studies. Vineland Power Inc. is focused on wind energy development in the Province of Ontario. More information on the HAF Wind Energy Project can be found at: <u>www.hafwindenergy.ca</u>

### **1.2 Project Developer – IPC Energy Inc.**

IPC Energy is an Ontario based corporation formed in 2004 to provide wind power solutions to famers and local business groups. It is 100% Canadian owned with its shareholders committed to delivering efficient and cost effective solutions in an environmentally and technically responsible manner. IPC Energy is a fully capable wind park developer covering all phases of the project life cycle from development, to construction and management. IPC is composed of a team of qualified engineers that provide civil, electrical and wind resource assessment to ensure projects provide maximum value with minimum impact on communities and the environment. IPC is developing nine projects that have submitted applications under the initial Feed In Tariff (FIT) program under the Green Energy and Economy Act and has a significant pipeline of projects at various stages of development in Canada and abroad. More information on IPC can be found at: www.ipcenergy.ca.

The study team may be contacted as follows:

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# **1.3 Purpose of the Project**

The purpose of the HAF Wind Energy Project is to assist the:

- → Government of Canada in fulfilling its international commitments, while promoting a sustainable development initiative
- → Government of Ontario in achieving its Green Energy Strategy and environmental commitments, while assisting with the Government's coal-fired generation reduction program
- → Government of Ontario in fulfilling its goals and principles of establishing a clean and healthy environment, economic growth, and strong communities for the long-term (Provincial Policy Statement)
- → Development of stable, long-term electricity pricing for Ontario consumers
- $\rightarrow$  Stimulation of economic and sustainable development in Niagara Region
- → Encouragement of innovative and economically viable solutions to climate change

# 1.4 Energy Source, Classification and Name Plate Capacity

The HAF Wind Energy Project will convert the energy in the wind into electricity using wind turbine generators which will then feed into the Hydro One distribution system. This facility is classified as a **Class 4 Wind Facility** under the Renewable Energy Approval (REA) and is subject to the requirements of O.Reg 359/09. The proposed HAF Wind Energy Project has a name plate capacity of 9.0 megawatts (MW). The location of the Project and components are shown on project mapping provided in **Tabs 1-3 (Study Area, Site Plan, Land Use)**.

# **1.5 Project Location and Land Ownership**

The proposed HAF Wind Energy Project is located in south-western Ontario, in the Township of West Lincoln, in Niagara Region. The Project Area is located south of the community of Tweedside, west of the community of Smithville, and east of the community of Woodburn.

More specifically, the Study Area is bound by:

- → Mud Street
- → S. Grimsby Road 10
- → Regional Road 1
- → Short Road
- $\rightarrow$  Twenty Road
- → Caistor Centre Road
- → Consession Road 5
- → Abingdon Road
- → Regional Road 65
- → Westbrook Road



**Figure 1:** View of the Project Area, a Characteristic View of the Study Area

- → Regional Road 20
- → Regional Road 8

The landscape of the study area consists of an area of approximately 4808 ha and is generally agricultural in land use. Project components will be installed on privately-owned agricultural lots within the study area. **Tabs 2-3 (Site Plan )** presents the project location and boundaries. The land inside the project area is generally flat, with an elevation of 190 m to 197 m above mean sea level. Within the Project Area, streams are relatively small, some only seasonal. All wind turbines are to be placed in open agricultural fields adhering to the required setbacks from residences, natural heritage, water, and other features required under the REA. Most of these fields are tilled and planted seasonally with crops such as corn, oats, and soybeans. Field sizes vary considerably. The landscape is fragmented with open fields, roads, fences, planted crops and vegetation, and settlement areas. Figure 1, above, shows a characteristic view of the study area.

# 1.6 Project Facilities, Equipment and Technology

The major components of the project are as follows:

- → Meteorological Tower
- → It is anticipated that five (5) turbines will be built. The **Vestas V100, 1.8 MW** turbine model has been selected as the preferred model.
- → Collector systems, nacelle mounted transformers and a collection system to connect to the Hydro One distribution system. Nacelle mounted 690v/27.6 kV step up transformers located in the nacelle housing of each turbine. Buried 27.6kV electrical collector system, switching station, and ancillaries.
- $\rightarrow$  Turbine access roads
- $\rightarrow$  Temporary staging areas for erection of wind turbines
- → A small Supervision Control and Data Acquisition (SCADA)/operations building located at the switching station site
- $\rightarrow$  Maintenance Building

#### **1.6.1 Meteorological Tower**

A meteorological tower was installed within the study area to monitor wind speed, wind direction, temperature and humidity. The meteorological tower is approximately 60 m in height and was installed in April, 2010. The tower will remain for the duration of the Project to monitor wind turbine performance and environmental conditions. The tower is supported by guy wires.

#### **1.6.2 Wind Turbines**

The Vestas V100, 1.8 MW turbine has been selected as the preferred model for this project. It is anticipated that five (5) turbines will be installed. The Wind Turbine Specification Report provides greater detail on the model selected.

All turbines at the HAF Wind Energy Project will meet Transport Canada and NAVCanada requirements for aviation safety/lighting. Further details about the wind turbine model proposed can be found in the Wind Turbine Specifications Report.

#### 1.6.3 Access Roads and Crane Pads

Access roads, most likely made of packed gravel, will be required to access each wind turbine location. The placement of these roads will seek to minimize impacts on the environment while providing for effective maintenance access to each turbine location. The transportation of machinery, turbine components and other equipment will be done over the existing municipal roads as far as possible. During the construction phase, each wind turbine's access road will end at a crane pad where the turbine will be constructed. The crane will only be required during construction of the turbine. The crane pad will be made of the same material as the access roads. The land used for the crane pad will be restored through standard industry practices and as per applicable rules and regulations at the end of the construction phase. The access roads will be compliant with Ontario and municipal regulations and will be built to support the weight of the equipment and heavy machinery required to build each wind turbine location.

#### 1.6.4 Collector System, Switching Station and Distribution Line

The energy from the Project will be collected via underground cabling and directed to a switching station. The switching station will connect directly to the local distribution system. The turbines will connect to the Hydro One distribution system. The power will be generated at approximately the 27.6 kV voltage level at the turbine, then stepped up to a local 27.6 kV collection system level by nacelle-mounted transformers located in the nacelle housing of each turbine.

### **1.6.4.1 Collector System**

The power generated at each of the wind turbine generators is transported through the collector system. The collector system consists of buried cables. In some cases, there may be some shared use with existing Hydro One lines and poles. The collector system will be built to Ontario standards.

### 1.6.4.2 Switching Station, Communications and SCADA

The switching station will be a chain-linked fenced area measuring approximately 1/4 acres. Within the fenced area, a switching station with a small pre fabricated building for SCADA will be equipped with full Supervision Control and Data Acquisition (SCADA) capabilities. Beside the maintenance building, there will be a switching gear. The maintenance building will have a gravel shoulder surrounding it. The overhead cables coming out of the switching station will attach onto dead-end poles from the fenced area for the switching station and will then attach to a metering pole. Only trained personnel will be permitted within the fenced in enclosure of the switching station.

### **1.6.4.3 Distribution System**

Electricity collected at the switching station will be transferred to NPEI's distribution grid. A distribution line will be built to connect the station to the NPEI grid. An appropriate

protection system, as per the best industry practices as well as utility guidelines will be provided.

#### **1.6.5 Operations and Maintenance Building**

An operations building will be located within the fenced area of the switching station for the purpose of housing switches, DVAR, metering, and Supervision, Control and Data Acquisition (SCADA). There will be no permanent staff presence; therefore, a sanitation system will not be required. Only trained personnel will be permitted within the fenced in enclosure, including the maintenance building. An additional storage building will be located to the southwest of Turbine 4 and will be used to store spare parts and maintenance tools.

## **1.7 Project Activities**

This project includes <u>four</u> main phases:

- 1) Development Phase;
- 2) Construction Phase;
- 3) Operations Phase; and,
- 4) Decommissioning Phase.

The following sections, 1.6.1 to 1.6.4, present an overview of each phase's activities. Details on these phases can be found in the Consultation Report, Construction Plan Report, Design and Operations Report and Decommissioning Plan Report.

#### **1.7.1 Development Phase**

This phase of the Project includes all of the assessments and plans required under the Renewable Energy Approvals (REA) requirements and best management practices. These generally include: the land acquisition, wind resource assessment, feasibility study, community relations, permitting, project description, public and agency consultation, natural heritage assessment, cultural heritage assessment, archaeological assessment, noise assessment, environmental impact assessment, construction plan, design and operations report, and decommissioning plan. The Development Phase is a critical step towards ensuring that the project achieves the Purpose outlined in Section 1.2. IPC is committed to deliver efficient and cost competitive energy in an environmentally responsible manner.

The Development Phase is not specifically discussed in the technical reports of the Renewable Energy Approval package, except where relevant for discussions around consultation, design, and environmental considerations for the project.

#### **1.7.2 Construction Phase**

This phase of the Project includes all activities from initial work planning, to testing of the wind energy project before commissioning. The main activities during this phase includes site prospecting, transportation, new road building, installation of wind turbines including concrete foundations, crane pads, and installation of the electrical networks and switching

station. Further details on the Construction phase are found in the **Construction Plan Report**.

#### **1.7.3 Operations Phase**

The operation phase's activities mainly relate to regular maintenance, operation and examination of the Project's facilities. On average, two visits are planned each year per turbine for routine maintenance; however, additional visits may be required. More significant operations and maintenance tasks are planned at 5, 10, and 15 years intervals, as dictated by the life-cycle of the components. A major overhaul after 10 years of operation is generally required. Further details on the Operations phase are found in the **Design and Operations Report**.

#### **1.7.4 Decommissioning Phase**

The decommissioning phase of the project includes the disassembly, dismantling, and restoration of each wind turbine location. This will take place once the life cycle of the facility has expired. The decommissioning of the HAF Wind Energy Project may require the dismantling of the components making up the wind energy project, such as the turbines, their concrete foundations, the switching station and the underground electrical network. Decommissioning will take place in accordance with the laws and regulations in effect. Further details on the Decommissioning phase are found in the **Decommissioning Plan Report**.

# **1.8 Environmental Effects that May Result from the Project**

#### **1.8.1 Preliminary Records Review and Pre-Consultation**

During the Development Phase of the project a Preliminary Records Review and Pre Consultation with Agencies was undertaken. The purpose of this was to obtain preliminary information about the potential environmental effects that may result from the project. This required that the proponent understand the proximity of the project to environmental components. During this period, the proponent obtained the locations of environmental features and developed an understanding of the geography of project location. This data was incorporated into the various reports and maps of this project.

**Tabs 1 to 3 of the Renewable Energy Approval Package** shows the proposed study area, site plan, and land use. Further environmental studies have informed the proponent's understanding of the existing environmental components and thus the potential environmental effects as the REA progresses. The following reports provide additional guidance and illustrative mapping of the project location in proximity to identified significant natural features and water bodies:

- **Natural Heritage Assessment Report:** The Natural Heritage Assessment provides and inventory of the natural heritage features in proximity to the project location. Including, herpetofauna, plants, vegetation, wildlife, bats, and birds. The report determines the significance of environmental features.
- **Environmental Impact Study (EIS) Report:** The EIS describes how the project may interact with the environment and describes environmental impacts. The report prescribes mitigation and protection measures for significant natural features. The EIS is required where any part of the project location is located in or within 120 metres of a significant natural feature.
- Water Assessment and Impacts Report: The Water Assessment and Impacts Report describes the water resources in proximity to the project location and describes how these resources may be impacted by the proposed project. The report also provides mitigation and environmental protection measures to protect water resources and fish and aquatic habitat.
- **Environmental Effects Monitoring Plan (EEMP) Report:** The EEMP provides a monitoring plan for environmental effects. The purpose of the EEMP is to provide a framework monitoring and determining the environmental effects of the project during construction, operation and maintenance, and decommissioning.

# The land use maps and natural heritage maps show known and assessed environmental components, such as:

- Natural Heritage Resources
  - o Waterbodies
  - o Wetlands
  - Bird Nesting Sites
  - Wildlife Habitat

- Woodlands
- Valley Lands
- Areas of Natural and Scientific Interest
- Environmentally Significant Areas
- Conservation Reserves
- Provincial Parks
- Noise Receptors
- Provincial and Local Roads
- Areas Protected under Provincial Plans & Policies

#### **1.8.2 General Summary of Environmental Effects**

The potential effects of constructing, operating, maintaining, and decommissioning a wind energy project can typically be mitigated through known and accepted practices. Other REA documents describe how this project will reduce or mitigate these potential environmental concerns. The Project Description Report will **identify and describe** which environmental effects that may result from the project. This informed the following reports/studies and guided the proponent to addressing known and potential environmental effects.

The potential environmental impact concerns that may result from the project are typical of concerns related to wind energy facilities in agricultural areas. These concerns generally relate to three Environmental Components: **natural heritage**, the **socio-economic environment**, **cultural heritage and archaeological resources**.

In order to assess this, the proponent undertook a four season natural heritage assessment, cultural heritage assessment, archaeological Stage 1 and Stage 2 assessments, and public and agency consultation to understand the socio-economic landscape.

#### **1.8.3 Role of Consultation in Determination of Effects**

Consultations with land-owners, federal and provincial agencies, and utilities will take place to inform and describe these potential environmental effects. Consultations are an essential tool to ensuring that developers obtain environmental data that contributes to our understanding of the impacts of wind energy development. The analysis of these environmental and social effects, amongst several others, along with proposed mitigation and monitoring plans will be discussed in detail in the forthcoming reports required subject to the REA process.

### **1.8.4 Summary Table of Potential Environmental Effects**

**Table 1**, found on the following pages, describes the Potential Negative Environmental Effects of the Proposed Wind Energy project. The table divides these effects into environmental components and provides additional information where applicable. The purpose of **Table 1** is to:

- provide guidance on directing future environmental assessment of the project
- identify necessary environmental studies and reporting requirements
- identify consultation avenues and provide fodder for future discussions with stakeholders
- identify potential negative environmental effects of the project and offer a lens from which to approach each environmental component
- offer a framework to organizing future environmental protection and mitigation measures.

<u>Environmental Component</u>	Additional Information	Potential Effects
Natural Heritage Resources Natural heritage resources include fea habitat, provincial parks, and conserv	<ul> <li>atures such as wetlands, waterbodies, waterbodies, Each of these features may Waterbodies, Fish and Aquatic Habitat</li> <li>The project will not impact a ground water seepage area The project is not anticipated to involve the storage of or consumption of water</li> <li>The project will not require the alteration of surface water runoff patterns</li> <li>Sedimentation and erosion control measures were included in the Construction Plan and Environmental</li> </ul>	woodlands, valleylands, wildlife y be categorized into one or more of
	<ul> <li>Effects Monitoring Plan</li> <li>Where the project interacts with watercourses and waterbodies, a Water Assessment is required.</li> <li>A Water Assessment and Impacts Report has been prepared.</li> </ul>	

Energy Project		
<u>Environmental Component</u>	Additional Information	Potential Effects
<b>Fish and Aquatic Habitat</b> This includes all fish and aquatic habitat including those of a seasonal or intermittent nature. This includes all areas where plants, animals and other aquatic organisms live or have the potential to live and find adequate amounts of food, water, shelter, and space to sustain their population, including an area where a species concentrates at a vulnerable point in its life cycle (i.e. spawning or reproduction) and an area that is important to a migratory or non- migratory species.	<ul> <li>A Water Assessment and Impacts Report was prepared as part of this study.</li> <li>The project must be setback from water courses and thus fish habitat</li> <li>No shoreline/riparian works are anticipated as part of this project</li> <li>Large quantities of toxic or hazardous materials are not typically found in the proposed facilities; small qualities are self-contained inside wind turbines or securely stored in a designated facility</li> </ul>	<ul> <li>Materials associated with turbines, including oils and lubricants may be spilled during construction, operation, maintenance, or decommissioning and impact water resources, fish, and aquatic habitat</li> <li>Roads and electrical infrastructure crossing watercourses could impact fish and fish habitat.</li> </ul>
Wildlife and Terrestrial Habitat This includes all areas where terrestrial plants, animals and other organism live or have the potential to live and find adequate amounts of food, water, shelter, and space to sustain their population, including an area where a species concentrates at a vulnerable point in its life cycle and an area that is important to a migratory or non- migratory species.	<ul> <li>Wildlife and Habitat studies were undertaken as part of the Natural Heritage Assessment; these studies conformed to MNR requirements.</li> <li>The project facilities will not be located in significant wildlife habitat (including known bat hibernacula) and designated natural areas</li> </ul>	<ul> <li>The project could cause temporary disturbance to wildlife due to noise and dust</li> <li>Impact to wildlife from entering the construction area</li> <li>Erosion/Siltation</li> <li>Accidental Spills</li> <li>Establishment of invasive and disturbance tolerant non-native species near the natural feature</li> <li>Behavioral avoidance or mortality to wildlife, including: <ul> <li>Birds;</li> <li>Bats;</li> </ul> </li> </ul>
	ludes: land uses and resources; areas p ovincial and local infrastructure; publi	
Land Use and Resources (including, Aboriginal Land Uses and Resources) Refers to land use as defined in the Planning Act (R.S.O. 1990). Includes all lands with in 300 meters of the project location. Land uses and resources include: aggregate	<ul> <li>Consultation with land- owners, municipalities, and any aboriginal parties has taken place during this study and will continue to do so.</li> <li>The project takes place on lands that are optioned to the proponent</li> </ul>	<ul> <li>The project could have a negative effect on residential commercial, or institutional land uses in proximity to the site</li> <li>The project may impact aboriginal land uses; consultation with Indian and</li> </ul>

Energy Project		
Environmental Component	Additional Information	Potential Effects
resources, landfill sites, petroleum wells, recreation areas, forest resources, aboriginal land claims, telecommunication (radio/radar), transportation, aerodromes, etc.	<ul> <li>The existing land use for the project location is generally agricultural in nature</li> <li>Aboriginal land uses may be found in, or proximity to, the study area</li> <li>The proposed project location does not possess potential for contamination</li> <li>Consultation with NavCanada and Transport Canada is part of this process</li> </ul>	<ul> <li>Northern Affairs Canada may be required.</li> <li>The project may impact telecommunications and aerodrome facilities; consultation with NavCanada and Transport Canada will be required.</li> </ul>
Areas Protected under Provincial Plans and Policies Includes those areas that are defined under the Oak Ridges Moraine Conservation Plan Area, Niagara Escarpment Plan Area, Lake Simcoe Watershed Plan Area, and Green Belt Act.	<ul> <li>The Niagara Escarpment Plan Area remains outside of the study area.</li> <li>Consultation with the Niagara Peninsula Conservation Authority and Regional Municipality of Niagara will take place during this study.</li> </ul>	• The project is not anticipated to impact the Oak Ridges Moraine Conservation Plan Area, Niagara Escarpment Plan Area, Lake Simcoe Watershed Plan Area, and Green Belt Act regulated areas.
Noise Refers to noise receptors as a location at which a discharged noise from a renewable energy generation facility is received. O.Reg 359/09 subsection (4) defines this term.	<ul> <li>A Noise Assessment Study has been conducted as part of this study.</li> <li>Wind turbines are known to produce noise and a noise assessment will be undertaken as part of the REA process</li> <li>Setbacks from sensitive noise receptors are required as part of the REA; wind facilities may not be located in proximity to these receptors</li> </ul>	• The project may emit noise and effect sensitive noise receptors
Air, Odour, Dust Includes emissions in to the atmosphere that include: nitrogen dioxide, sulphur dioxide, suspended particulates, emissions of green house gasses (GHGs: CO2, Methane), and other odours and dust.	• On a net basis the project will enhance air quality by reducing GHG emissions from alternative energy sources	• During construction and decommissioning of the facility air quality will be temporarily affected by emissions produced from construction machinery. These emissions include elevated levels of nitrogen dioxide, sulphur dioxide, suspended particulates, emissions of GHGs (CO2, Methane), and other odours and dust.

Environmental Component	Additional Information	Potential Effects	
Provincial and Local Infrastructure	• MTO and local municipalities will be contacted to ensure that provincial and local transportation infrastructure requirements are followed.	<ul> <li>During construction and decommissioning provincial and local roads may be effected by the movement of construction equipment and turbine materials</li> <li>Local water, sanitary, and stormwater facilities will not be impacted.</li> </ul>	
Public Health and Safety	• The project will comply with provincial health and safety laws and standards	• Public health and safety will not be impacted by the proposed undertaking	
<b>Aesthetics and Landscape</b> Refers to the visual aesthetics and landscape character of the land.	• While rural in nature, the landscape of the study area is largely dominated by industrial/commercial agriculture	• The project may effect the aesthetics of the landscape by transforming it to a more industrial vista	
<b>Economy and Livelihoods</b> Refers to the economic activities and employment found in the study area and includes the cultural nature of employment in shaping human identities.	<ul> <li>The project will produce economic activity in Niagara Region and in Ontario</li> <li>The project is a community power project as the proponent is organized in Niagara Region</li> </ul>	• The project may effect the production of economic activity in the area or compete with local industries	
<b>Social Justice</b> Refers to the pursuit of a fair and just society. This is characterized by a proportionate distribution of resources where no social group exploits another. Significant net imbalances may diminish the socio- economic goals of the project.	<ul> <li>The project is a community power project where the proponents live and work in close proximity to the proposed facilities</li> <li>The proposal seeks to provide a net benefit to the local, regional, and provincial socio-economic environment</li> </ul>	• The project may provide a disproportionate distribution of resources to one social group or community within society	
Cultural Heritage and Archae	Cultural Heritage and Archaeological Resources		
Archaeology and Human History These refer to sites within the meaning of O.Reg 170/04 made under the Ontario Heritage Act. These include the historical and material remains of past human activities and inform us about past conditions	<ul> <li>A Stage 1 and Stage 2 Archaeological Assessment was undertaken to determine the archaeological potential</li> <li>The study conformed to MTC requirements.</li> </ul>	• The project may disturb archaeological remains which speak to the human history of the area during construction	

<u>Environmental Component</u>	Additional Information	Potential Effects
Heritage Resources Refers to real property that is of a cultural heritage value or interest and may include buildings, structures, landscape, or other real property.	<ul> <li>A Cultural Heritage Assessment was completed to determine cultural value before any facilities are constructed</li> <li>The study conformed to MTC requirements.</li> </ul>	• The project will not impact heritage resources.
	• The proposal does not include any proposed modification or impacts to known protected properties or heritage resources	

## References

- Ontario Ministry of the Environment (MOE), 2010. *Technical Bulletin One. Guidance for preparing the Project Description Report, as part of an application under O.Reg.359/09.* Draft Document posted for public comment on the Environmental Registry March 1, 2010. Queen's Printer for Ontario. PIBS 7436e.
- Ontario Ministry of the Environment (MOE), 2009. *Ontario Regulation 359/09 Renewable Energy Approvals Under Part V.).1. of the Act. O.Reg.359/09.* Consolidation Period: September 24, 2009 to September 30, 2009. Filed October 1, 2009. Queen's Printer for Ontario.