

Wind Energy Centres

Bluewater • Goshen • Jericho

Welcome!

NextEra Energy Canada and Canadian Green Power welcome you to the [Goshen Wind Energy Centre](#) Open House.

We are here to:

- » Describe our project
- » Provide you with information on the Renewable Energy Approvals process
- » Answer your questions
- » Consider your comments
- » Make the draft Project Description Report available to you



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NextEra Energy Canada and Canadian Green Power welcome you to the [Jericho Wind Energy Centre](#) Open House.

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A Leader in Clean Energy

NextEra Energy Canada is part of NextEra Energy Resources.

We are:

- » a leading global generator of renewable energy
- » the largest generator of both wind and solar power in North America operating wind energy facilities for 21 years
- » the operator of nearly 9,000 turbines producing approximately 18,000 megawatts of generating capacity in North America
- » headquartered in Juno Beach, Florida with Canadian operations based in Burlington, Ontario

Our wind centres in Canada

- » Quebec: Mount Copper Wind Energy Centre
- » Nova Scotia: Pubnico Point Wind Energy Centre
- » Ontario projects under development:
 - Wellington County: Conestogo Wind Energy Centre
 - Haldimand County: Summerhaven Wind Energy Centre



Did you know that NextEra Energy Resources....

- began developing renewable projects in 1989
- has approximately 4,500 employees in North America

www.NextEraEnergyResources.com

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Canadian Green Power: NextEra Energy Canada's Local Partner

Canadian Green Power Investment & Management Services Inc. is dedicated to enabling Ontario to become self-sufficient in the development and production of clean, green energy.

- » is an independently owned wind power development company headquartered in Guelph, Ontario
- » works closely with local landowners to determine potential locations for wind turbines and negotiate the safe and respectful access to landowner property
- » has been active in the project area since 2005

Over 200 local landowners are currently participating in the NextEra Energy Canada/CGP wind project collaboration.

www.canadiangreenpower.com



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Why is Southwestern Ontario a great choice for wind energy?

Wind developers favour Southwestern Ontario for two main reasons:

1. strong and consistent wind levels, particularly around the Great Lakes
 2. available and adjacent electricity transmission
-
- » wind data has been collected in Project Study Area since 2007 measuring wind speeds at 40 metres, 50 metres and 60 metres
 - » wind speeds are viable for wind energy generation
 - » region is well serviced by existing transmission lines that have available capacity
 - » existing transmission lines can transport electricity to the surrounding communities and larger urban centres



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Benefits of Wind Power

Clean and Efficient

- » minimal greenhouse gas emissions - fully offset after six months of operation
- » efficient and reliable
- » complements agricultural operations
- » does not use water
- » low environmental impact
- » free, renewable energy source

Economic Benefits for the Local Economy

- » requires manufacturing of some components
- » 4-6 full time jobs per project
- » direct income to landowners
- » 200-300 construction jobs

Price Stability

- » helps stabilize the cost of power
- » decentralizes power production
- » no fuel cost
- » electricity produced domestically

Reliable Supply

- » project cost/benefit considers the wind “capacity factor” derived from wind modeling and monitoring
- » results in accurate predictions of energy production



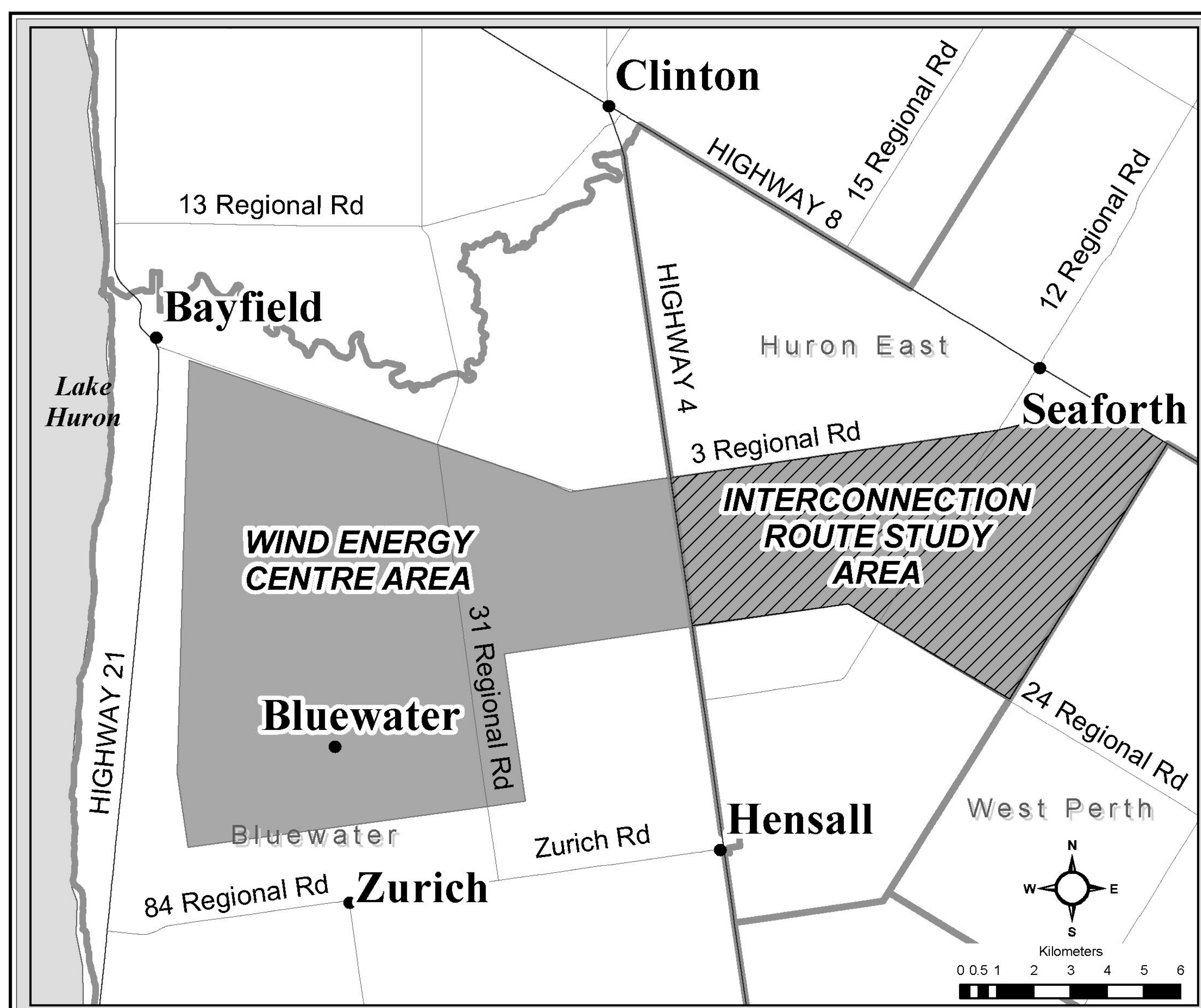
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The Project: Bluewater

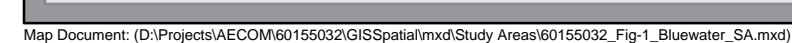
- » proposed Bluewater Wind Energy Centre project is planned to be located on private lands east of Highway 21 between Bayfield and Zurich in Huron County
- » project categorized as a Class 4 wind facility and will generate up to 90 MW of electricity, enough to power 22,500 homes.
- » project infrastructure will include:
 - up to 60 GE model or up to 39 Siemens model wind turbine generators
 - new turbine access roads
 - buried and overhead electrical collector lines
 - transformer substation and shared operations building

Bluewater Wind Energy Centre Study Area



Existing Features:

Bluewater Wind Energy Centre Study Area



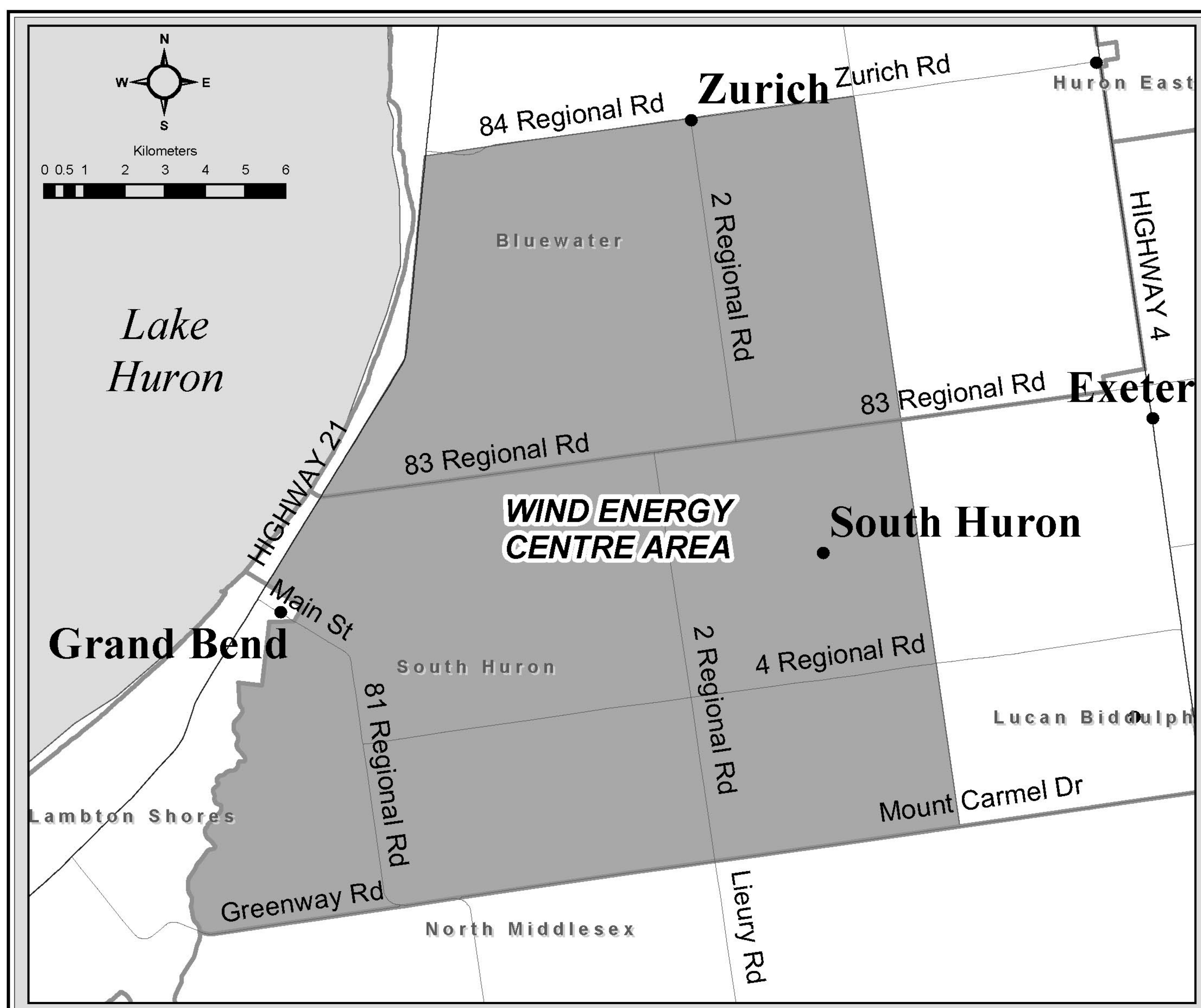
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The Project: Goshen

- » proposed Goshen Wind Energy Centre project is planned to be located on private lands east of Highway 21 between Zurich and Mount Carmel Drive in Huron County
- » project is categorized as a Class 4 wind facility and will generate up to 160 MW of electricity, enough to power 40,000 homes
- » project infrastructure will include:
 - up to 106 GE model or up to 69 Siemens model wind turbine generators
 - new turbine access roads
 - buried and overhead electrical collector lines
 - transformer substation and shared operations building

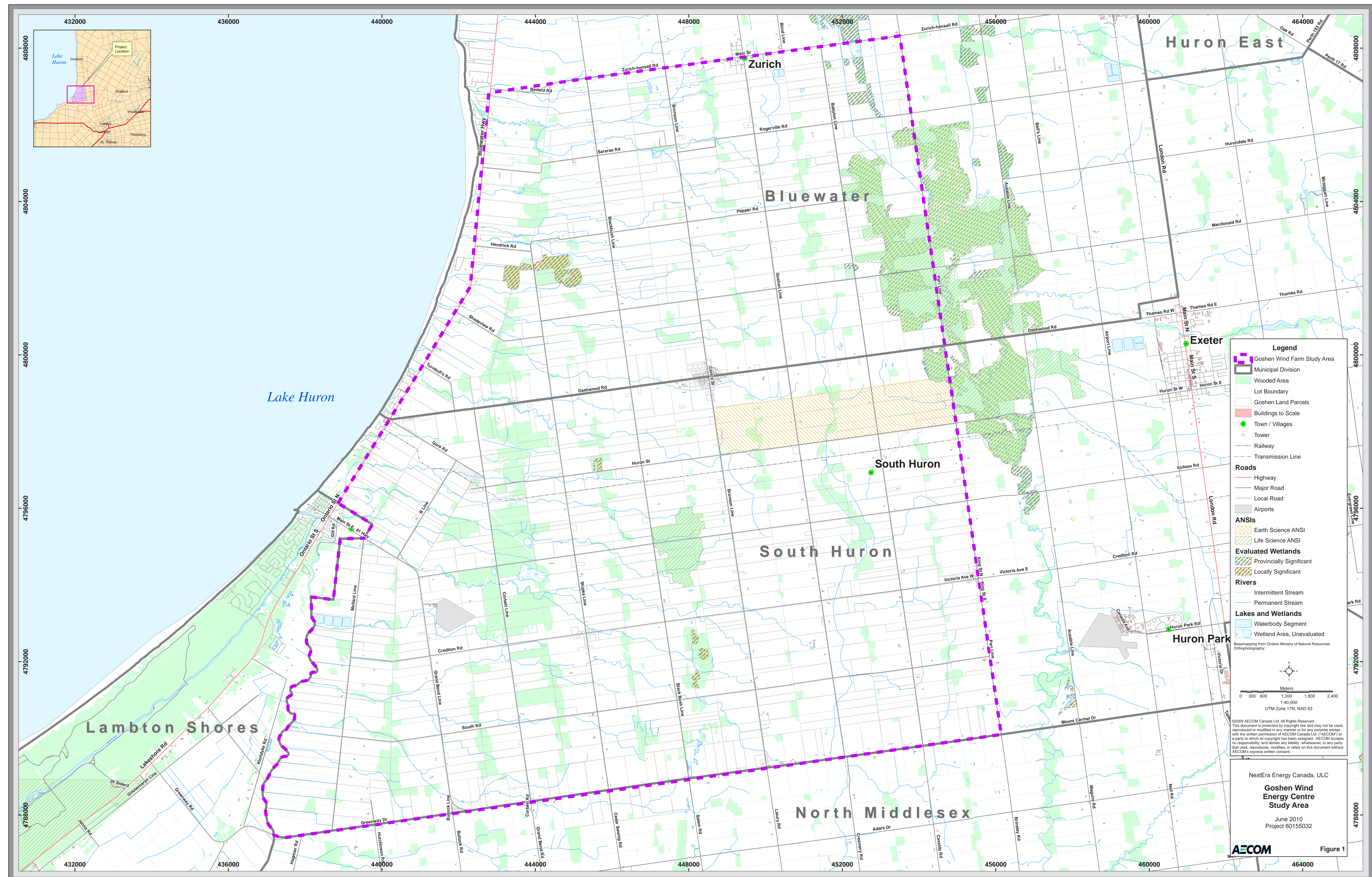
Goshen Wind Energy Centre Study Area



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Existing Features: Goshen Wind Energy Centre Study Area



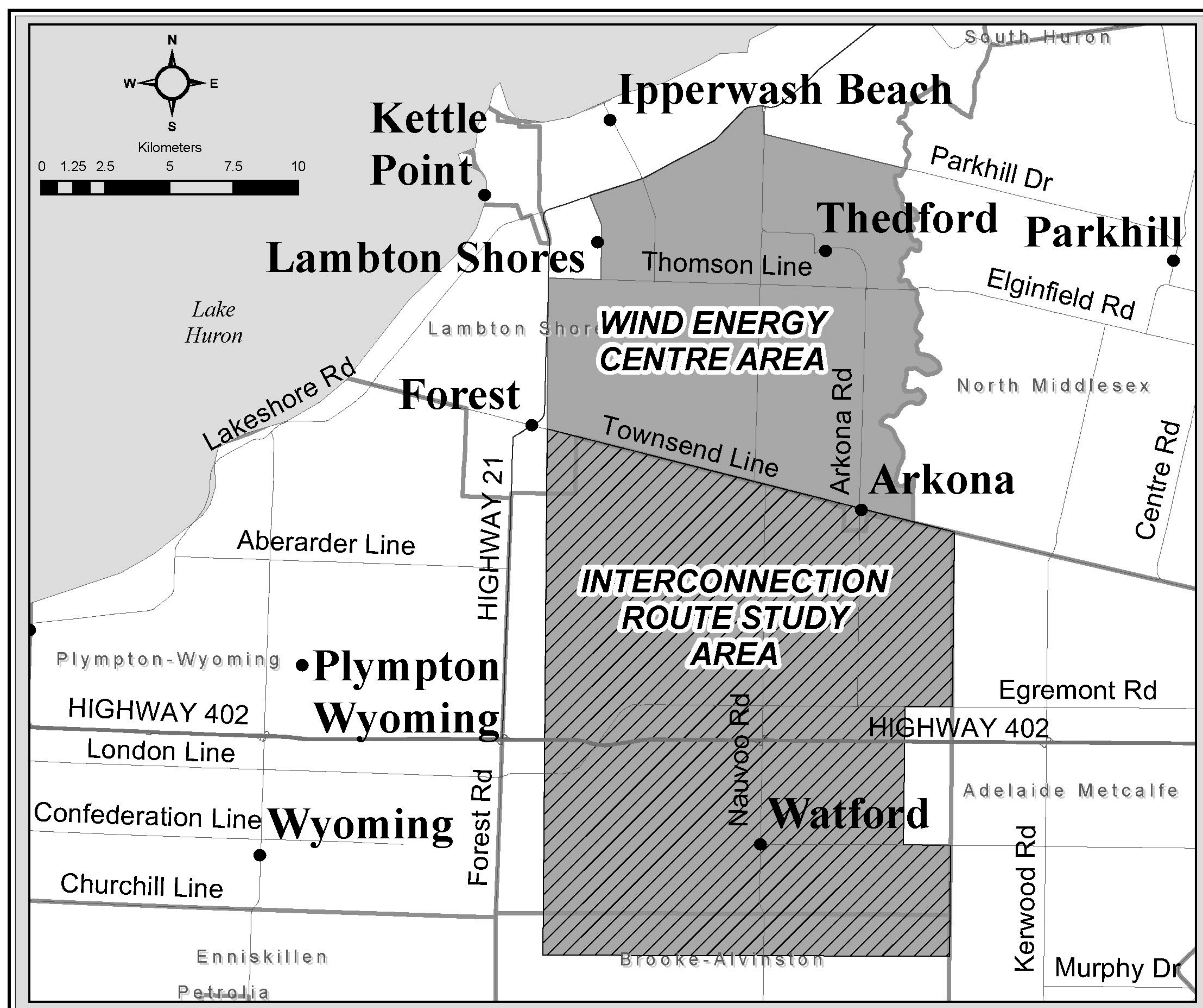
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The Project: Jericho

- » proposed Jericho Wind Energy Centre is planned to be located on private lands southeast of Highway 21 between Thedford, Forest and Arkona in Lambton County
- » project is categorized as a Class 4 wind facility and will generate up to 230 MW of electricity, enough to power 57,000 homes
- » Project infrastructure will include:
 - up to 153 GE model or up to 100 Siemens model wind turbine generators
 - new turbine access roads
 - buried and overhead electrical collector lines
 - transformer substation and shared operations building

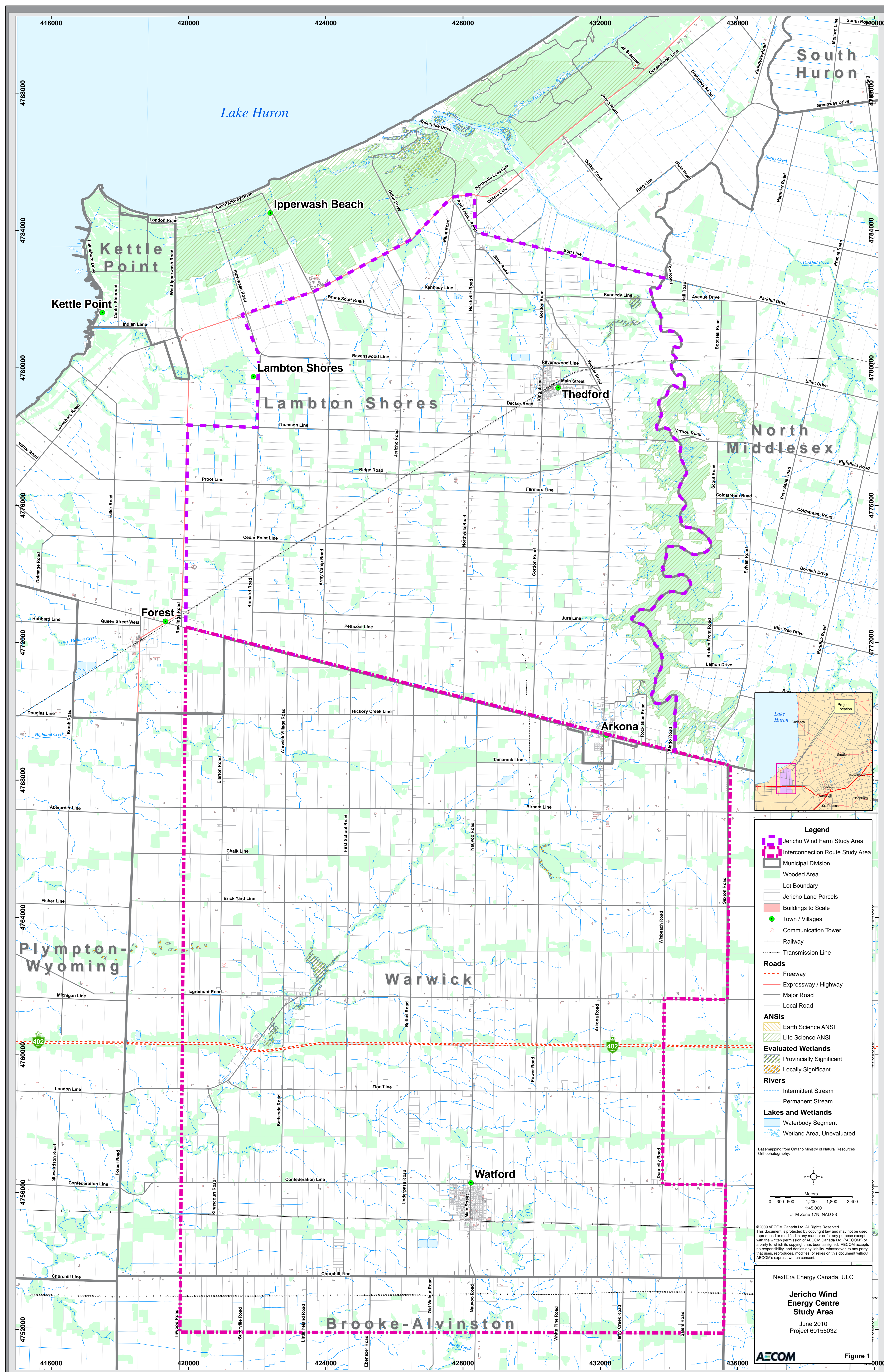
Jericho Wind Energy Centre Study Area



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Existing Features: Jericho Wind Energy Centre Study Area



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Renewable Energy in Ontario



The Green Energy and Green Economy Act

- » developed to stimulate green economy in Ontario and create up to 50,000 jobs

Key components:

- » a provincial obligation to purchase green energy
- » priority grid access for renewable energy projects
- » long-term fixed-price power contracts
- » streamlined regulatory and approvals process

Provincial Green Energy Initiatives and the Feed in Tariff Program (FIT):

- » Feed in Tariff (FIT) Program, recently launched by the Ontario Power Authority, is North America's first comprehensive guaranteed pricing structure for renewable electricity production
- » FIT offers stable prices and long-term contracts to green energy projects that encourages investment in renewable energy and economic development across the Province

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Ontario's Renewable Energy Approval Process

- » Renewable Energy Approval (REA) process, outlined in Ontario Regulation 359/09, is required for larger wind power projects under Ontario's Green Energy Act
- » NextEra Energy Canada and CGP will submit a Renewable Energy Approval application to the Ontario Ministry of the Environment (MOE) for each project
- » MOE will assess application for completeness and decide whether to issue approval
- » Other agencies, including the Ministry of Natural Resources (MNR), the Ministry of Transportation (MTO), the Ministry of Tourism and Culture (MTC) and local conservation authorities also provide input

Reports included in application:

- Archaeological Assessment
- Construction Plan
- Consultation
- Decommissioning
- Design and Operations
- Natural Heritage
- Noise Study
- Project Description
- Wind Turbine Specifications



Study progress:

- » environmental studies are currently underway and we expect to release the above-noted reports in draft format in the fall of 2010
- » please note that the draft Project Description Reports are available online at:

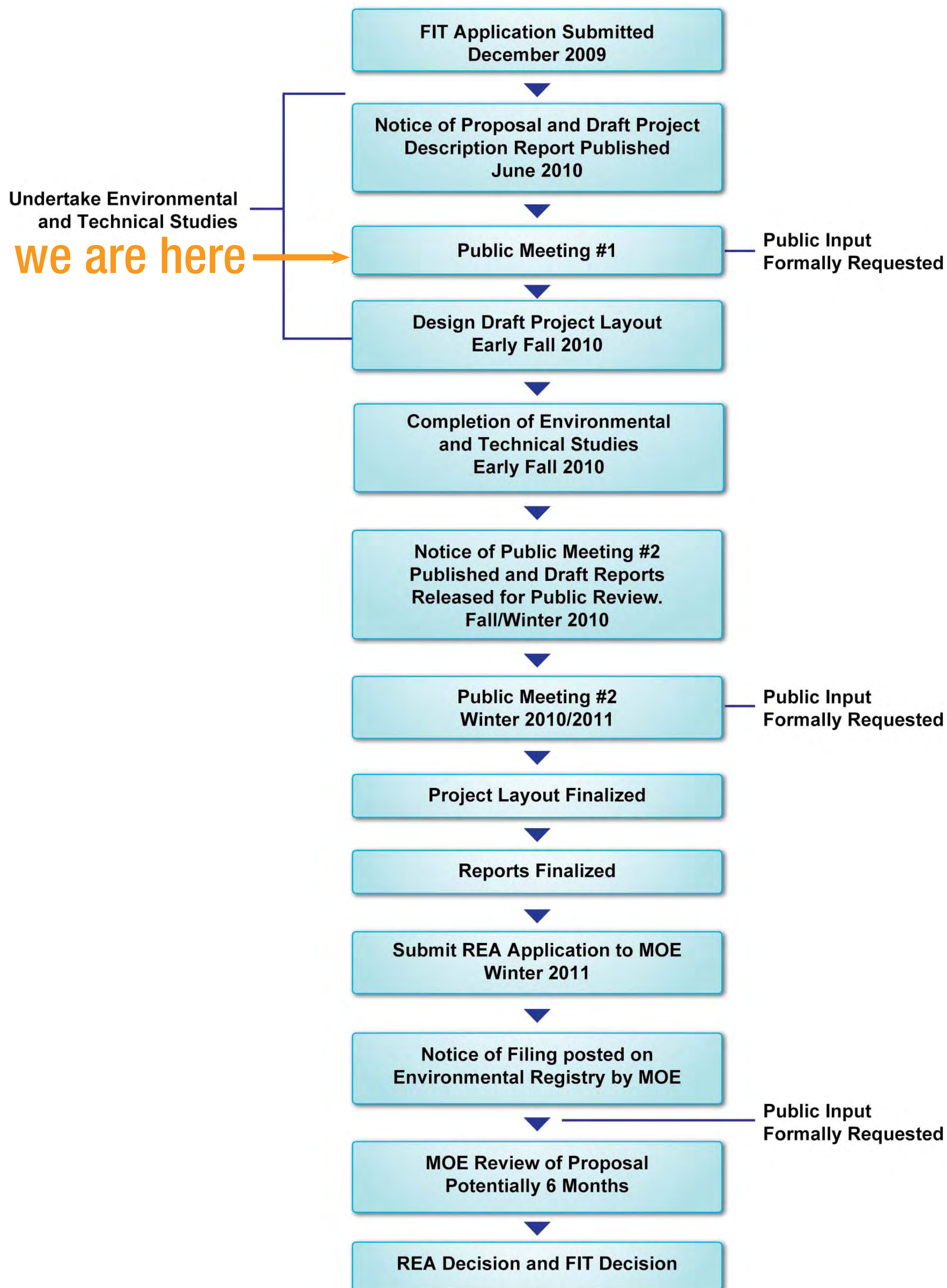
www.CanadianWindProposals.com



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Renewable Energy Approvals Process



We welcome stakeholder comments
throughout the REA process.



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Aboriginal Engagement

- » Ontario Regulation 359/09 has specific requirements for Aboriginal consultation
- » Ontario Power Authority's Feed in Tariff program reinforces the importance of Aboriginal consultation
- » Canada's Constitution Act, 1982, recognizes the rights of Aboriginal peoples (First Nation, Inuit and Métis)
- » Project proponents are delegated the "procedural aspects" of Aboriginal consultation
- » Aboriginal consultation may include environmental, archaeological, cultural and spiritual issues
- » NextEra Energy Canada will work collaboratively with Aboriginal communities and leadership as required by law and good practice to:
 - offer meaningful information about its projects
 - seek information that helps ensure good planning to avoid or minimize impacts
 - openly discuss issues, interests and concerns
 - seek workable and mutually acceptable solutions
 - foster relationships of mutual respect

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Land Use

- » majority of lands in the Project Study Area are agricultural
- » other land uses include non-farm residences, businesses and woodlots
- » industrial, commercial, and institutional land uses will be identified through the municipal consultation as part of the REA Process
- » lands along the lakeshore, particularly west of the Project Study Areas and Highway 21 are generally permanent / seasonal residences

Agricultural land use and wind turbines work well together:

- turbines and access roads use very little space
- a single turbine, together with its access road, will take up on average only 1.0 – 1.5% of a typical 40 hectare farm parcel
- open space provides optimal wind regimes
- turbines are generally located at the rear of properties
- access roads typically improve access to rear portions of properties and fields



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Archaeology and Heritage



- » archaeological assessment must be conducted if the project may have an effect on archaeological resources
- » at least two stages of archaeological resource assessments may be required for the proposed project

Stage 1 Archaeological Assessment:

- » provides a description and evaluation of all features with archaeological potential in the Project Study Area
- » evaluation is based on information gathered about the study area's geography, history, current land use, and any previous archaeological research within the area
- » recommends whether further studies (i.e. a Stage 2 Archaeological Assessment) are required

Stage 2 Archaeological Assessment:

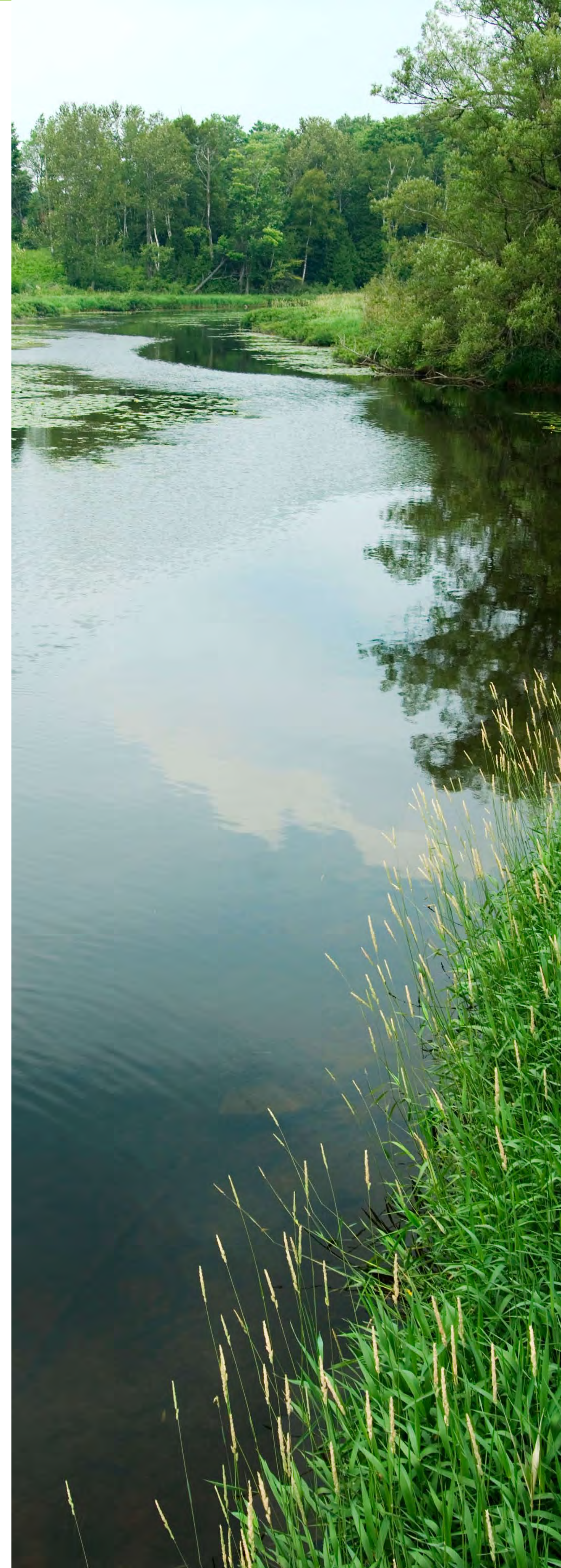
- » provides an inventory of all archaeological sites present in the study area by surveying the proposed locations of project infrastructure
- » If archaeological resources are recovered within the areas surveyed, additional fieldwork may be required by the Ministry of Culture as part of a follow-up Stage 3 or Stage 4 archaeological assessment

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Natural Heritage: Water

- » aquatic features within 120 m of proposed turbines, access roads or underground cables are assessed for potential effects
- » all watercourses in the Project Study Area are mapped using Ontario Base Mapping and refined based on field surveys
- » aquatic field work will confirm the mapped drainage features and will examine proposed watercourse crossings and locations of other proposed infrastructure in proximity to watercourses
- » design of access road watercourse crossings will ensure no disruption of flow to downstream areas and no barriers to fish passage
- » will obtain all applicable permits from the appropriate approval agencies (Ausable-Bayfield Conservation Authority, St. Clair Region Conservation Authority, and the Ministry of Natural Resources)



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Natural Heritage: Birds

- » avian (bird) studies are required as part of Renewable Energy Approval process
- » study team will identify baseline conditions to describe the time and locations used by birds in study area to evaluate potential effects
- » bird surveys will include Spring Bird Migration Surveys, Breeding Bird Surveys, Fall Bird Surveys and Winter Bird Surveys
- » study protocol meets or exceeds the requirements of the Canadian Wildlife Service's Environmental Assessment Guidelines for Wind Turbines and Birds (Environment Canada, 2007)

Key questions to be addressed by the bird studies:

- What species use the Project Study Area during the winter, the breeding season, and in the spring and fall migration?
- Where within the Project Study Area do birds live and what habitats do they use?
- Are there key habitat features that increase the probability of bird use in specific areas?
- Does an individual species or group exhibit distinctive behaviour patterns over specific areas?



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Natural Heritage: Bats

Bat monitoring will take place during the summer of 2010 during peak periods of residential bat activity.

Study steps:

- first step: identify natural features that could be significant bat habitat
 - next step: through-the-night acoustic monitoring and evening visual surveys
 - final step: use study findings to determine wind turbine setbacks from woodlands and other natural features for bats
- » bat monitoring is being completed in accordance to the Ontario Ministry of Natural Resources “Bats and Bat Habitats: Draft Guidelines for Wind Power Projects (March 2010)” and in conjunction with Natural Heritage Assessment requirements of the Renewable Energy Approvals process
- » Ministry of Natural Resources is also consulted during the development of the bat monitoring protocol for each wind energy centre



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Noise Studies

Noise studies will be prepared to help us decide on final turbine layouts.

Noise Study

Step 1: Identify points of reception – people who may be affected by operating turbines

» points of reception are typically nearby houses

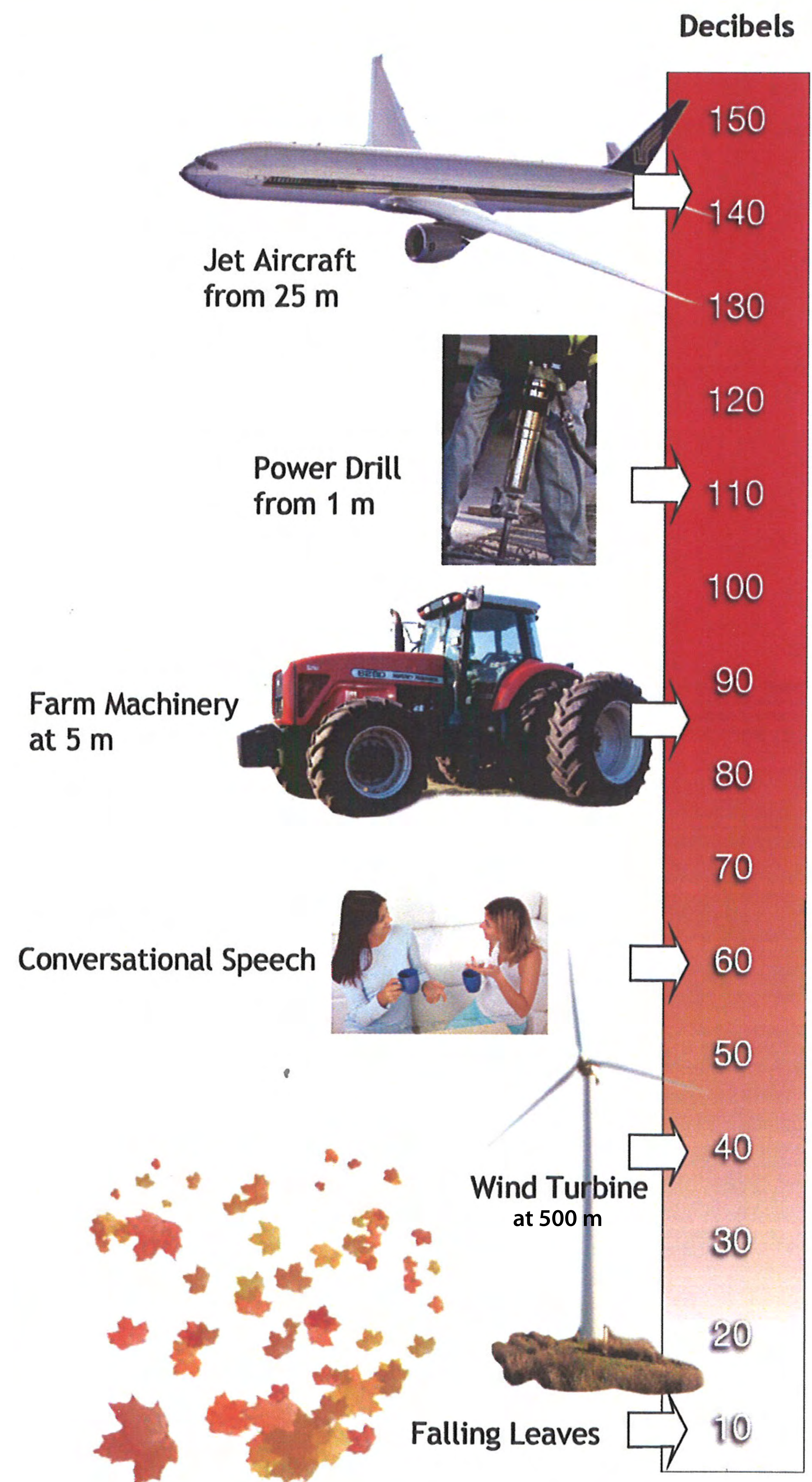
Step 2: Obtain wind turbine specifications and noise emission ratings from the manufacturer

Step 3: Using initial wind turbine layouts, predict the noise levels generated at points of reception using a noise prediction model

» the noise model will show us the overall noise levels generated from all project turbines

Step 4: Using noise model results, turbine layouts will be revised as necessary to ensure that the final turbine layouts meet all applicable noise guidelines

» the study is reviewed by the Ministry of Environment to ensure compliance



Renewable Energy Approval Requirements (O.Reg. 359/09)

- » wind turbines will be set back from receptors by at least 550 m
- » turbines must meet provincial noise limits as outlined in Ministry of the Environment publication 4709e "Noise Guidelines for Wind Farms"

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Noise Study

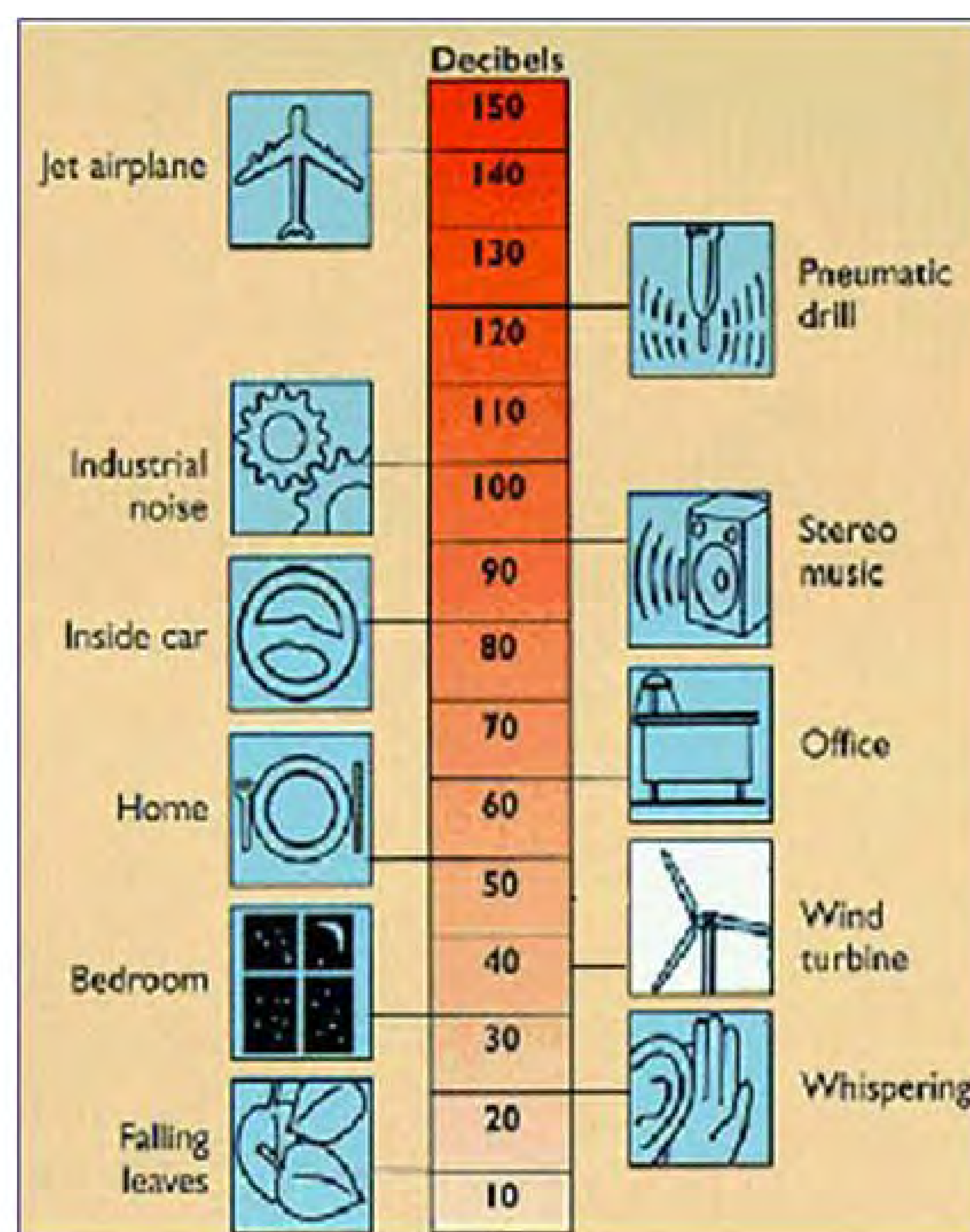
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Comparing Sound Levels



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Turbine Specifications

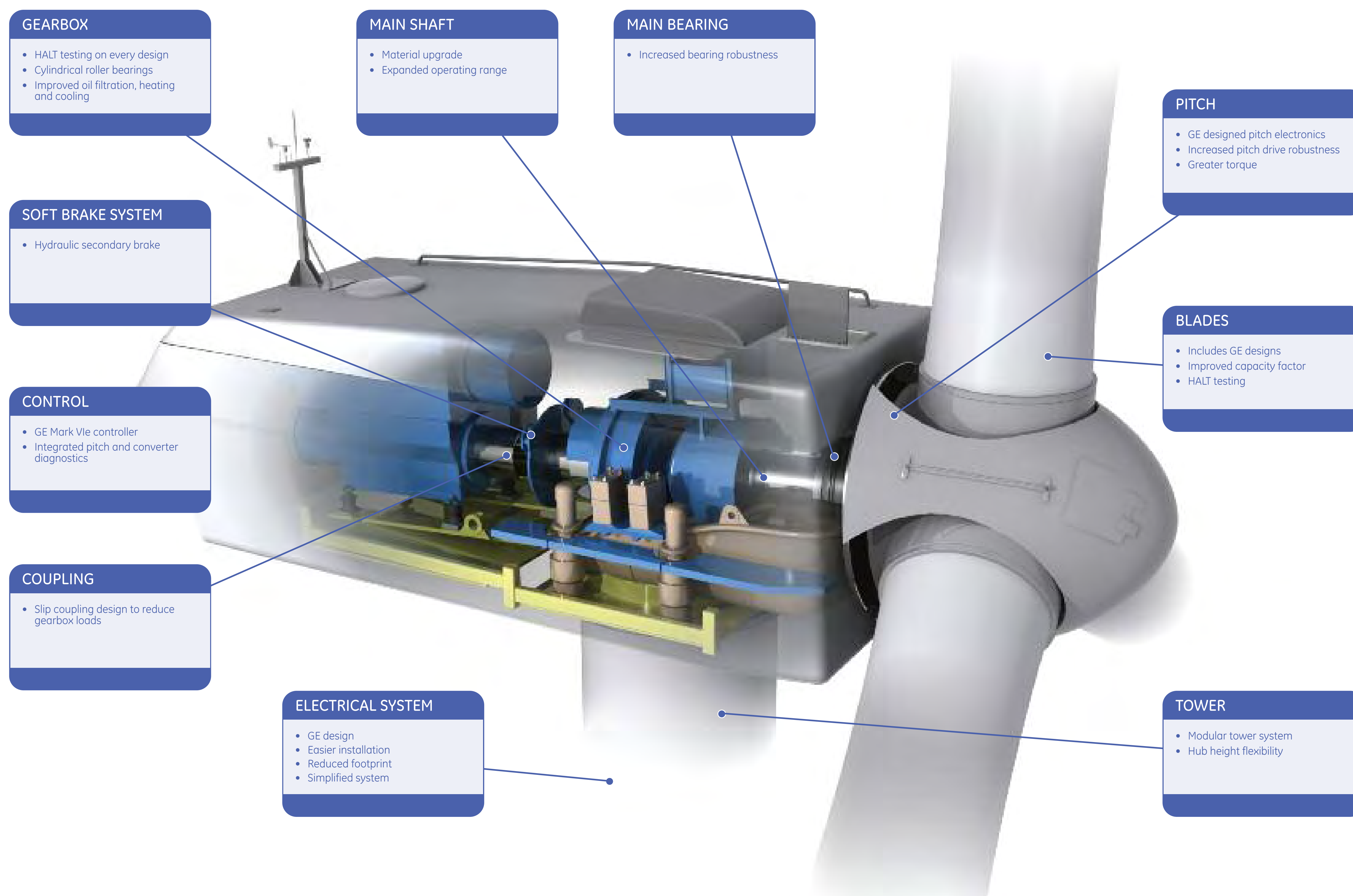
GE 1.5 MW Wind Turbine

Leading reliability and availability performance

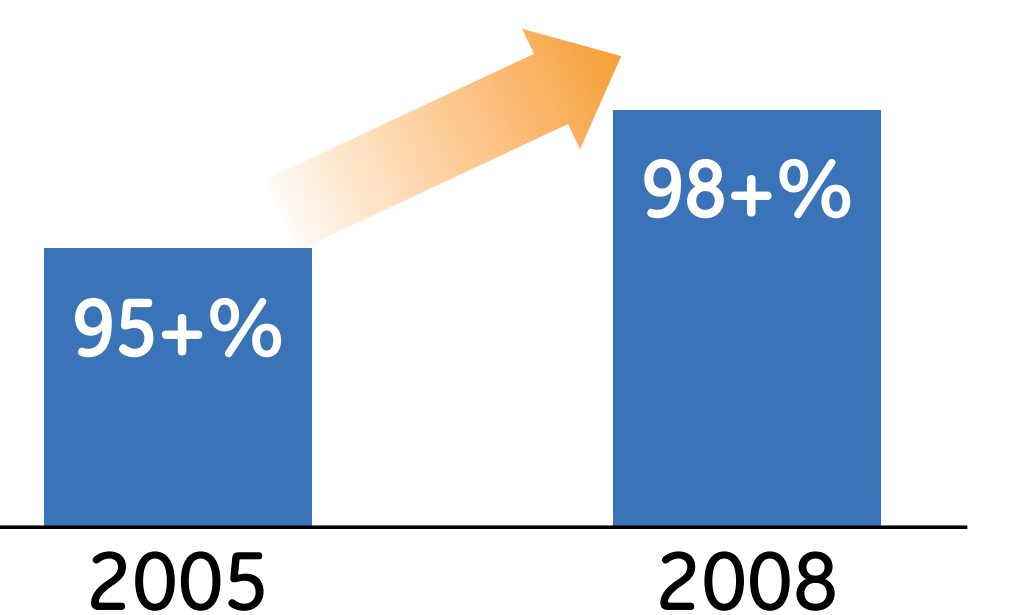
GE's 1.5 MW wind turbine and services are designed to set the industry standard for product reliability and availability performance. GE's continual investments in technology, established infrastructure, research capabilities and globally recognized business processes allow GE to create and deliver customer value by maximizing energy capture and return on investment. This is evident through our model year performance trend where availability performance significantly improves each year.

Delivering reliability through advanced technology

To optimize turbine reliability and availability, GE focuses on reducing the number of downtime faults, and providing faster Return-to-Service (RTS). Our rigorous design and testing process—including specialized 20-year fatigue testing and Highly Accelerated Life Testing (HALT)—reflects our ongoing investment in key turbine components.



1.5 model year availability



Technological expertise

GE Infrastructure

Energy

- Controls, materials, power electronics
- Fulfillment and logistics capability
- Efficient supply chain management

Aviation



Aerodynamic and aero-acoustic modeling expertise

Rail



Gearbox and drive train technologies

GE Global Research

- Energy conversion
- Material sciences
- Smart grids

This is an example of the type of technology that may be used for the projects.

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Construction Plan

Turbine siting and surveys

- » site preparation will include final turbine siting and surveys
- » during these surveys, boundaries of turbines sites will be staked and existing buried infrastructure will be located and marked

Access roads

- » Municipal and Provincial roads will be used for transportation of equipment to the construction sites
- » minor modifications may be required to some of the existing roads (e.g., widening the turning radius) for equipment transportation
- » any road damage will be repaired
- » new access roads will typically be 11 m wide during the construction phase and reduced to 6 m during the operations phase
- » the disturbed area will have the topsoil replaced from stockpiled material and will be reseeded in consultation with the landowner
- » no permanent paved roads will need to be constructed for the turbines
- » equipment will be delivered by truck and trailer as needed throughout the construction phase and stored at temporary laydown sites surrounding each turbine



Cranes lift a rotor to be installed on the nacelle at the top of the tower.



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Construction Plan

Electrical Collector System:

- » this system consists of a mixture of underground cables, overhead lines, pad mounted transformers and a substation
- » underground cables will be used on private property and above ground collector lines will run along road right-of-ways
- » ploughing and trenching will be used to install the underground cables
- » the cabling will be buried at a depth that will not interfere with normal agricultural practices and maps of cable locations will be provided to the landowners

Wind Turbines:

- » foundations will be made of a wooden frame and poured concrete reinforced with steel rebar to provide strength
- » each foundation will require an excavation of approximately 20 metres by 20 metres and 3 metres deep
- » only the tower base portion of the foundation will be left above ground
- » the turbine is then anchored to the foundation by large bolts set in concrete
- » total turbine assembly and installation will typically require 4 - 5 days per site
- » following commissioning, the surrounding area will be returned to its original state

Operations Building:

- » this building will be constructed on privately held lands. It will be used to monitor the day-to-day operations of the wind farm and to support maintenance efforts
- » potable water will be supplied by a well or through the municipal water system and if required, a septic bed will be constructed for the disposal of sewage
- » both will be constructed in accordance with applicable municipal and provincial standards



Construction equipment moves soil as part of the site preparation process.



A cement truck delivers cement to a foundation.



A wind turbine component, known as a nacelle, is lifted from a truck.



Blades are transported to the site for assembly with the wind turbine.



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Operations and Maintenance

NextEra Energy believes in “prevention” versus “event response” through component condition and performance assessment.

- » experienced operations and maintenance managers on site
- » on-going training and mentoring programs to maintain safe and efficient operation
- » site staff supported by centralized maintenance and environmental staff
- » supported by 24/7 fleet monitoring and diagnostic centre
- » local operations team available to answer your questions and address concerns



Fleet Performance and Diagnostics Centre

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Decommissioning Plan

- » project is expected to be operational for 25+ years
- » plan needs to be in place now to remove all turbines to the top of the foundations after 25 years
- » repair, refurbishment and replacement of turbines is typical of a preventative maintenance program
- » options exist other than decommissioning

Components to be removed:

- turbines
 - underground cables
 - overhead lines and poles
 - substations
-
- » the top one metre of turbine foundations will be removed and replaced with clean fill and stockpiled with topsoil
 - » areas will be reseeded where appropriate
 - » access road removal will be dependent on the requirements of the landowner

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Thank You for Attending!

- » thank you for attending this evening's Public Open House
- » your input is important to us: please fill out an [exit questionnaire](#) and either leave it with us tonight or mail it to us using the contact information below
- » should you have any further questions or comments, please do not hesitate to contact us at any point in this process, either by email at:

Bluewater.Wind@nexteraenergy.com

Goshen.Wind@nexteraenergy.com

Jericho.Wind@nexteraenergy.com

- » Phone: 1-877-257-7330
- » Mail: Tom Bird
Environmental Services Project Manager
NextEra Energy Canada
5550 North Service Road, Suite 205
Burlington, ON, L7L 6W6

Project updates available at:

www.canadianwindproposals.com

