Strong Breeze Wind Project

Invenergy LLC

Public Community Meeting
Invenergy LLC is a Qualified Applicant

- Invenergy LLC qualified to participate in the IESO Large Renewable Procurement - Request for Proposals (LRP I RFP) in 2015
- The IESO is procuring 300 MW of wind in this RFP
- Invenergy is preparing to submit a proposal for the Strong Breeze Wind Project
- The proposal submission deadline is September 1, 2015 and the IESO’s proposal evaluation process will run until November – December 2015
What is Ontario’s Large Renewable Procurement Program?

- In recent years, the Feed-in Tariff (FIT) Program was the vehicle that enabled large renewable energy development in Ontario.
- In June 2013, the Ontario Minister of Energy directed the Independent Electricity Systems Operator (IESO, formerly the Ontario Power Authority, or OPA) to cancel the FIT Program for large renewable energy projects and develop a new competitive procurement process.
- In December 2013, the Minister of Energy released Ontario’s new Long-Term Energy Plan (LTEP), Achieving Balance. Visit www.energy.gov.on.ca/en/ltep to learn more about this plan.
- Consequently, the IESO developed a Large Renewable Procurement (LRP) program in response to this new plan to include a two-phase procurement process:
  - An initial Request for Qualifications (RFQ) process to qualify applicants who wish to participate in the LRP.
  - A Request for Proposal (RFP) process to evaluate the projects proposed by qualified applicants.
Strong Breeze Wind Project

- This Public Community Meeting is for the Strong Breeze Wind Project
- Located in the Municipality of Dutton Dunwich, Ontario
- Estimated maximum name plate capacity of approximately 60 megawatts (MW)
- Proposed Connection Point would be the 230 kilovolt (kV) transmission circuit North of Aberdeen Line and West of Iona Road in Dutton Dunwich, Ontario
Invenergy LLC

- Invenergy LLC headquartered in Chicago with regional offices in Toronto, Denver, Warsaw, Mexico City and Tokyo
- North America’s 6th largest renewable energy generation company (largest independent)
- Developed 9,000 MW+ in North America & Europe, including 980+MW in Canada
- Invenergy is committed to working with communities to develop projects that are successful for everyone involved
Invenergy Canada

- Invenergy has developed the following projects in Canada:
  - Raleigh Wind (78 MW)
  - Le Plateau I and II Wind (138.6 MW and 21.15 MW)
  - Des Moulins I and II Wind (135.7 MW and 21.1 MW)
  - St. Clair Gas (584 MW)
  - Sandringham Solar (10 MW)
  - Woodville Solar (10 MW)
How a wind farm works

1. Rotating generator converts kinetic energy of the wind into electrical energy
2. Transformer increases voltage for transmission to substation
3. Substation increases voltage for transmission over long distances
4. Transmission to grid

Source: The Canadian Wind Energy Association
Your Health

• Wind energy is one of the safest and most environmentally friendly forms of new electricity generation around the world, people have been living, working and enjoying productive lives near wind farms for more than 30 years.

• The balance of scientific evidence and human experience to date clearly concludes that wind turbines are not harmful to human health – in fact, wind energy reduces harmful air emissions and creates no harmful waste products when compared with other sources of electricity.

• This conclusion has been reached by numerous independent reviews of the scientific literature.

Health Canada recently issued results of its comprehensive, two-year study that found “no evidence of a causal relationship between exposure to wind turbine noise and self-reported medical illnesses and health conditions.”

• Specifically, the Health Canada study finds:
  • No evidence to support a link between exposure to wind turbine noise and any of the self-reported illnesses and chronic conditions.
  • No association between multiple measures of stress and exposure to wind turbine noise.
  • No association between wind turbine noise and self-reported or measured sleep quality.
  • No association between wind turbine noise and any significant changes in reported quality of life, or with overall quality of life, and satisfaction with health.
  • While the study did find that some features may cause annoyance in some individuals, Invenergy is committed to mitigating sound and visual issues to the best of its ability through siting and consultation with local residents.

Further details are available on the Health Canada website (hc-sc.gc.ca), then go to: Home > Environmental & Workplace Health > Noise > Wind Turbine Noise.

Source: windfacts.ca
Community Benefits

- Wind energy developments are delivering local benefits and making positive and lasting economic contributions across Canada.
- Host communities are realizing significant economic and social benefits through new municipal tax revenues, additional and stable income for farmers and landowners from land lease agreements.
- Wind energy is creating new high-value jobs, providing employment opportunities for local tradespeople and contractors as well as full-time permanent jobs once the wind farm is operational.
- Wind energy projects bring direct investment in the form of contracts for raw materials and infusion of dollars to local services and retail businesses.
- Give the municipality a regular source of funding for local initiatives through a Municipal Agreement that will be initiated once the wind project is operational.

Source: windfacts.ca
Community Working Group

- Invenergy established a citizen’s working group to act as an advisory committee to Invenergy and the community, while providing a forum for Invenergy to share information on wind energy development.
- The Group is in place to assist Invenergy in its efforts to fully understand the community concerns regarding wind energy development in the area and to help to identify and address any anticipated impacts of wind energy development.
- The Group meets regularly and meeting minutes are posted to the Project website at www.invenergyllc.com/strongbreeze.
Erie Breezes Energy Co-operative

• Established by local community landowners, to work with developers to bring wind energy to the Municipality of Dutton Dunwich
• The Erie Breezes Energy Co-operative is a great opportunity to participate in the wind development process
• Membership in the co-op provides a clear message to your community that you are supportive of a wind energy project in Dutton Dunwich. It also:
  – allows you to bring your voice to increasing widespread understanding of the social, environmental, and economic benefits of community participation in a local renewable energy project
  – shows leadership and raises the profile of wind friendly proponents in the community
  – shows local municipal government that there is a large group of local residents who want to see the project go forward
  – provides an opportunity to share in the profits from the project
• The $100 membership fee provides the opportunity for you to participate in the development of a project that will benefit the entire community
Property Values

- A wind turbine and access lane use as little as 1% of a farm's total acreage. The remaining acreage is free for other uses, such as planting crops.

- Multiple studies have consistently found no evidence that wind energy projects around the world are negatively impacting property values. In fact, wind energy projects provide new sources of stable revenue for municipalities and landowners in the form of taxes and lease payments.

- The Municipal Property Assessment Corporation (MPAC) commissioned a study in 2012 of the effects of Industrial Wind Turbines on the current value of property in proximity to wind turbines. MPAC’s findings concluded that there is no statistically significant impact on sale prices of residential properties in these market areas resulting from proximity to an Industrial Wind Turbine. A copy of the full report can be found at www.mpac.ca/PropertyOwners/IndustrialWindTurbines

- A 2010 study conducted in Chatham-Kent, Ontario, found there was no statistically relevant relationship between the presence of a wind project and negative effects on property values.

- Study of Melancthon Township in the Canadian Journal of Agricultural Economics 62 (2014) 365–392 - “The results of the hedonic models, which are robust to a number of alternate model specifications including a repeat sales analysis, suggest that these wind turbines have not significantly impacted nearby property values. Thus, these results do not corroborate the concerns raised by residents regarding potential negative impacts of turbines on property values.”

Sources:
1. 2012 Assessment Base Year Study—Impact of Industrial Wind Turbines on Residential Property Assessment in Ontario (MPAC 2012)
2. Wind Energy Study—Effect on Real Estate Values in the Municipality of Chatham-Kent (Canning Consultants Inc. and John Simmons Realty Services Ltd., February 2010)
Cost of Wind Energy

• New wind energy is more cost-competitive than other newly built sources of energy, such as: coal with carbon capture and storage, small hydro, or new nuclear power.
• The fuel that turns wind turbine blades (the wind) is free. The price of electricity produced by wind turbines is predetermined for the entire life of the wind farm.
• This long-term cost certainty of wind farms helps to stabilize electricity rates, providing important protection for consumers.
• Unlike many other sources of energy generation, the cost of building wind energy continues to decline, with dramatic drops over the past three years.
Construction Process

1. Survey and consult
2. Clear and grade
3. Install road
4. Dig foundation
5. Place rebar and anchor bolts
6. Pour foundation
7. Backfill foundation
8. Dig trench for collection line
9. Lay collection line
10. Repair drain tile
11. Delivery of turbine components
12. Prepare for turbine assembly
13. Erect tower, hub and rotor blades
14. Field reclamation
15. Decompaction of affected soil
16. Commission turbine

Reclaimed laneway
Foundation Construction

Excavation and Seal Slab
Foundation Construction

Rebar and Concrete Base Pour
Foundation Construction

Base and Pedestal
Foundation Construction

Backfilling
Collector Line Construction

Installation overview
Underground Collection System

Cable supply moves in front of installation crew
Underground Collection System

Steps 1 & 2 – trenching machine excavates trench and places cables in trench
Option – Horizontal Directional Drilling is used for public roads and/or water crossings, or significant natural features.
Underground Collection System

Step 3 – small dozer follows behind trencher to backfill trench using compacted native fill
Underground Collection System

Finished trench view
Repair Tile

FIELD ELEVATION

TRENCH 18” WIDE
48” DEEP

FIELD ELEVATION

EXISTING FARM
DRAINAGE TILE

TILE CONNECTOR

NEW HEAVY
DUAL WALL TILE

SOIL BACKFILL
UNDER TILE REPAIR

CABLES FOR TOWER PROJECT

WARNING TAPE PLACED 1’ ABOVE
CABLES FOR TOWER PROJECT

EXISTING FARM
DRAINAGE TILE

TILE CONNECTOR

CABLES ARE PLACED
AT A MINIMUM OF 16”
BELOW DRAINAGE TILE
Deliver Tower Section & Blade
Erect Tower, Hub and Rotor Blades
Commissioned Turbine
Invenergy endeavors to keep members of the Project community informed throughout the Project’s development process by adhering to the community engagement guidelines set by the IESO.

Community Engagement Approach

**Phase I**
Early Community Engagement, and Awareness before IESO qualified applicants
- Initiated discussions with landowners, the Municipality of Dutton Dunwich, the local renewable energy cooperative and other community members
- Built awareness for the Project and wind energy development
- Garnered support for the project
- Met with the Municipality and listened to community concerns
- Secured land option agreements with community members to develop a 60 MW wind project in Dutton Dunwich
- Held annual option holder events

**Phase II: Pre-Contract Award**
Community, Municipal, and Aboriginal Engagement
- Establish a Project website [www.invenergyllc.com/strongbreeze](http://www.invenergyllc.com/strongbreeze)
- Meet with Municipality of Dutton Dunwich
- Identify and engage interested Aboriginal communities
- Post Notice of Public Community Meeting in local newspaper and Project website
- Host a Public Community Meeting
- Post a summary of the Public Community Meeting on Project website
- Established a Community Working Group
- Provide a central email address strongbreezeinfo@invenergyllc.com
- Incorporate feedback from community engagement activities into Project plan and LRP I RFP submission

**Phase III: Post Contract Award**
Renewable Energy Approval (REA) Process – Community, Municipal, and Aboriginal Consultation
- Maintain a Project website [www.invenergyllc.com/strongbreeze](http://www.invenergyllc.com/strongbreeze)
- Respond to a central email address strongbreezeinfo@invenergyllc.com
- Ensure local municipalities are informed about Project activities and milestone dates
- Continue to provide updates to interested Aboriginal communities
- Post results of REA studies and other REA reports to the Project website
- Host at least two public meetings
- Hold regular Community Working Group meetings
- Listen to community concerns and propose reasonable solutions
- Share a summary of community concerns and mitigation plans to address feedback on the Project website
Timeline

Jan – Sept 2015
Fulfill Mandatory
IESO Requirements

Sept 1, 2015
Bid Submission

Nov – Dec 2015
Contract Winners
Announced by IESO

2016
Start permitting
process under
Renewable Energy
Approval (REA)

2017
Submit permit
application to
Ontario Ministry of
Environment

2018
REA permit
determination
made

2019
Construction and
Commercial
Operation

LRP I RFP
Next Steps

• The next step in the process is to prepare a meeting summary report (MSR) for IESO and post it on the project website. The report will be provided to the municipal Clerk (or other designate). The report will document your questions and comments as well as discuss how your input has impacted the project.

• The proponent will include the report in its Large Renewable Project (LRP) proposal submission to IESO in the Fall of 2015 (target). Once the complete proposal is received, IESO will evaluate all proponent proposals and notify selected proponents by the end of 2015 (target). It is expected that successful LRP proponents will commence the Renewable Energy Approval (REA) process that includes additional consultation in 2016.
Thank You For Attending!

• Your attendance at today’s meeting is appreciated. We encourage you to write down your comments or questions and either place them in our comment box, or provide them to a company representative.

• We welcome your feedback and thank you for attending this public community meeting.

• Additional comments following this meeting can be sent to strongbreezeinfo@invenergyllc.com.

• Visit www.invenergyllc.com/strongbreeze for Project updates.