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North Kent Wind Community Liaison Committee Open House

CLC Meeting #2

Country View Golf Course
25393 St Clair Rd, Dover Centre

November 16, 2017



Agenda

- Review of CLC Meeting #1
- Project Summary
- Construction
- Traffic Management
- Water Well Updates

Review of CLC Meeting #1

- Confirmation of Summary
- Action Items:
 - Respond to emails from the public
 - Release Survey forms to property owners
 - Provide final site layout map

North Kent Wind Project Summary



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Project Overview

- North Kent Wind is a joint venture limited partnership owned by affiliates of Pattern Development, Samsung Renewable Energy, Bkejwanong First Nation and Entegrus.
- 100 MW wind power project
- 20-year power purchase agreement from the IESO
- Energy equivalent to the annual electricity needs of 35,000 Ontario homes
- Estimated \$5 million over 20 years in taxes, with \$3 million directly to Chatham-Kent
- Over \$500,000 in local building permit fees
- 12-month construction period with average of 200 workers on-site
- Currently 50% of workers on-site are from Chatham-Kent and 100% are from Ontario
- Approximately 10 on-site, full-time operations jobs, in addition to continued use of local contractors
- Chatham-Kent community benefit contribution of \$4 million



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Project Study Area and Layout



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Local Economic Benefits

- Over 20 years, North Kent Wind will inject more than \$40 million of direct spending into the Chatham-Kent economy.
- **Job Creation**
 - Average of 200 workers on-site
 - Approx. 180 workers are currently on-site with 50% from Chatham-Kent and 100% from Ontario
 - Approx. 10 full-time workers will operate and maintain the facility, in addition to the continued use of local contractors
 - Subcontractors will be engaged to conduct civil work – grading, excavation, and concrete –electrical work and mechanical assembly
 - During operations, the site will use a variety of local vendors to provide maintenance services for communications, the O&M building, roads, substation and truck fleets



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Construction



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Wind Turbines

- Turbine Manufacturer: Siemens Energy
- Number of Turbines: 34
- Turbine model: Siemens SWT-3.2-113
- Rated wind speed: 12 to 13 m/s
- Hub height: 99.5 m
- Blade length: 55 m
- Turbine blades manufactured in Tillsonburg
- Turbine towers manufactured in Windsor



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Examples of Types of Local Contractors Used for North Kent Wind Project Construction

- Road building and turbine site grading
- Substation civil work
- Foundation excavation and backfill
- Road maintenance and repair
- Concrete/Aggregate supplier
- Electricians
- O&M Facilities
 - Foundations and site concrete
 - Rebar fabrication
 - Steel Erection and Procurement
 - Building Construction (framing, carpentry, drywall, flooring, plumbing, electricians, communications, masonry, HVAC, etc.)
 - Landscaping
- Security, fencing, water, power, sanitation facilities, etc.



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Target Construction Schedule*

| Construction Task | Start | Finish |
|-----------------------------------|----------------|-----------------|
| Site Clearing | Feb, 2017 | May, 2017 |
| Access Roads | May, 2017 | August, 2017 |
| Substation & Switchyard | May, 2017 | November, 2017 |
| Underground Collection System | May, 2017 | December, 2017 |
| Operations & Maintenance Facility | June, 2017 | November, 2017 |
| Turbine Foundations | June, 2017 | November, 2017 |
| Turbine Deliveries | October, 2017 | December, 2017 |
| Turbine Installation | October, 2017 | January, 2018 |
| Turbine Commissioning | November, 2017 | February, 2018 |
| Land Restoration | May, 2018 | September, 2018 |



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*Represents our ideal project timeline and subject to change.

Upcoming Construction/ Commissioning

- Piling for all foundations is complete
- Turbine foundations will be completed by the end of November
- Turbine deliveries and erection has started
- Turbine commissioning will commence in late- November
- Substation and collection system will be completed and energized in December 2017 and January 2018

The current schedule is subject to weather conditions and construction constraints.



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Traffic Management Plan

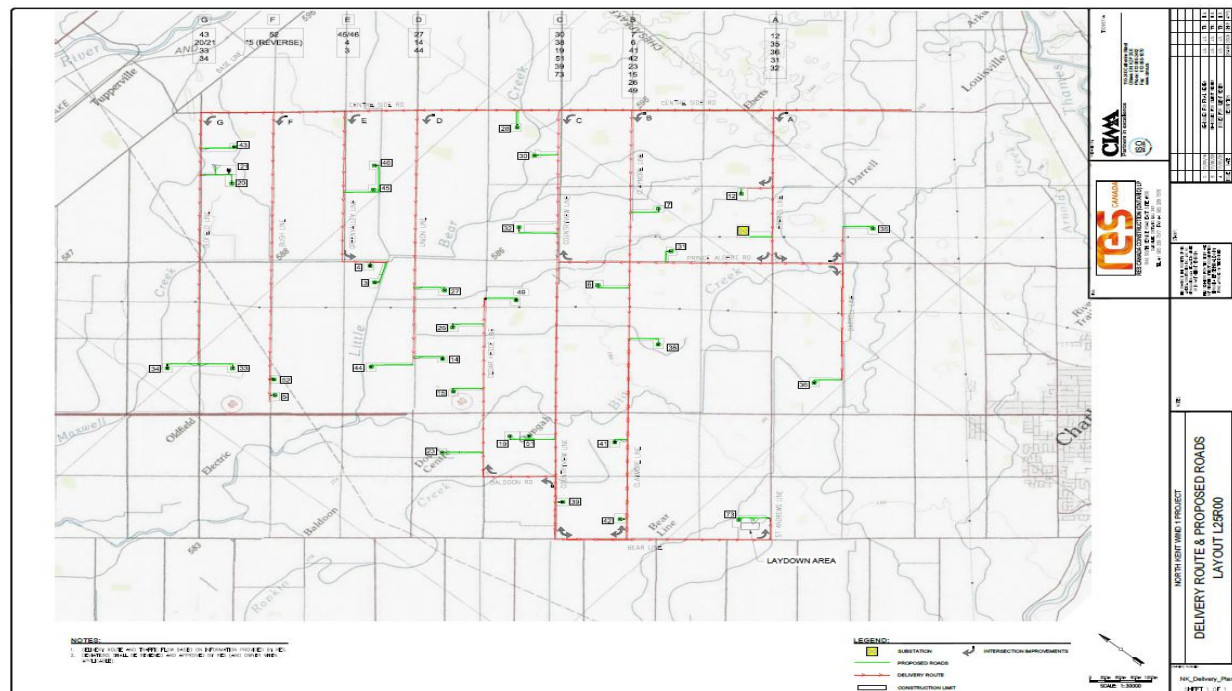


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Traffic Management Overview

- During Construction, a Traffic Management Plan is being implemented to ensure access for deliveries is provided while minimizing impacts to local traffic.
- 17 municipal road intersections have been improved to accommodate larger turning radii for Wind Turbine Generators (WTG) delivery vehicles. These intersections will be restored back once the deliveries are complete.



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Examples of Construction Vehicle Rules

- All Company Site Vehicles, Sub contractors, gravel, cement and float trucks drivers shall operate their vehicles at, or below, the speed limit.
- All gravel trucks must have dump box 100% down before travelling forward.
 - Speed limit
 - 25 km/hr MAX on Turbine Access roads
 - 10 km/hr MAX in the laydown yard
- Seat Belts must be worn at all times in vehicles and equipment
- Obey all site and municipal traffic signs (STOP, YIELD, SPEED LIMITS)
- No parking/turning vehicles around in private driveways or access lanes to farmer fields/pastures. Remember we have to respect everyone in the community and their property.



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Water Well Updates



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Background

- Beginning with the Renewable Energy Approval (REA) process that requires comprehensive analysis of the project area, we conducted assessments to help ensure our activity would not affect groundwater quality at nearby wells
 - Geological and hydrogeological surveys were performed, and site-specific geotechnical investigations confirmed the soil and groundwater conditions at each turbine foundation location
- Some individuals still had concerns about impacts to water wells and appealed the Project's REA. In response to those concerns, North Kent Wind retained scientific experts to study the issues raised
 - The research completed by Golder Associates concluded that construction and operation of the turbines will not cause harm to groundwater quality at the wells or in the broader subsurface groundwater environment
 - The study found there is no plausible mechanism for sediment to be transported tens or hundreds of metres from turbine locations to water supply wells



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REA Requirements

- North Kent Wind's REA included requirements to obtain baseline water quality information and test vibration monitoring data prior to starting construction
- Surveys were mailed to nearly 600 private property owners, responses were received from about 400, and detailed assessments were completed for nearly 200 water wells
- A program to monitor vibrations from construction activity was developed, which included monitoring surface and subsurface vibrations from test pile-driving prior to beginning construction
- Combined, this information is used during complaint investigations and helps ensure existing groundwater resources are protected



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Test Pile-Driving and Monitoring Program

- Undertaken to obtain surface and subsurface vibration measurements at different distances. Vibration monitoring devices were also installed on water well steel casings
- Results found vibrations from pile-driving are inconsequential for wells, because:
 - Pump-induced well casing vibrations exceeded those associated with pile-driving
 - Vibrations other than from the well's own pump operations were typical for background, day-to-day conditions like nearby traffic
 - The test also confirmed monitoring during construction activity is only required at the ground surface, in conjunction with monitoring well casings at various distances



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Pile-Driving Construction Monitoring Program

- Tracks vibrations during pile-driving at the turbine sites and on steel water well casings that penetrate deep into the ground
 - Equipment captures vibrations that occur, for whatever reason, hundreds of times per second
 - Examples of activities that might influence ground vibrations include nearby road or farm traffic, utility and road work, solar panel systems, and well pump operations
 - More than 1500 continuous hours of vibration monitoring of deep well casings so far
 - More than 2.2 million analyses have evaluated well casing vibrations
 - By far, the most significant well casing vibrations are related to well pumps and traffic
- Piling occurs hundreds of metres away from non-participating properties. It is not plausible that vibrations could cause damage to well infrastructure or disturb sediment within wells



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Complaint Investigations

- Third-party experts are mobilized to investigate any complaints and North Kent Wind shares the results with the well owner, the MOECC, the Municipality, and on the project website, with the well owners' identities redacted
- Analysis involves collecting well-water samples at the residence by a qualified, licensed expert in assessing wells and groundwater, reviewing vibration monitoring data, and comparing water samples from the well to baseline water samples taken prior to construction when available
- Completed investigations concluded that:
 - Groundwater quality and quantity issues reported by property owners are not a result of piling or construction activities
 - Water quality at the wells was relatively consistent to the baseline data collected prior to construction
 - In some cases, water quality or quantity concerns appeared related to well construction, the condition of existing well pumping and treatment equipment, or ongoing maintenance



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Q&A



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Energy for Generations

Contact Us

North Kent Wind 1 LP
c/o Samsung Renewable Energy Inc.
2050 Derry Road West 2nd Floor
Mississauga, ON L5N 0B9

Toll Free Phone: (855) 780-3859

Email: info@northkentwind.com

www.northkentwind.com



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