

NIAGARA REGION WIND FARM PROJECT



Community Liaison Committee Meeting 4 |
February 7, 2017

AGENDA

- **Introductions & Meeting Structure Outline**
- **Review of Minutes – CLC Meeting #3**
- **Project Update**
- **Topics of Community Interest**
- **Moving Forward**

REVIEW OF MINUTES

CLC MEETING #3

PROJECT UPDATE

- Status - Operational
- Meet the Operations Team
- Guest experts

Project Status - Operational

- NRW achieved its Commercial Operation Date (COD) on November 2, 2016
- Intro of Operations team:
 - Jason Weir, Site Manager
 - Michael Gaudet, Wind Site Technician
 - Stephanie Bujold, Environmental Manager
- Current activities on site – Jason

Contacting NRW

To contact the Niagara Region Wind Farm:

- *Phone:* 1-844-363-6491
- *Email:* info@nrwf.ca
- *Website:* www.nrwf.ca



Guest Presenters

- Natural Resource Solutions Inc. (NRSI)
 - *Charlotte Teat, Terrestrial and Wetland Biologist*
- Aercoustics
 - *Payam Ashtiani,
Principal Aercoustics, Acoustical Engineer*

NRSI

- Natural Resource Solutions Inc. (NRSI) is an environmental consulting firm consisting of biologists specializing in aquatic, terrestrial, and wetland biology.
- NRSI has extensive environmental monitoring experience on wind power projects in all stages of development.



NRSI

- **NRSI will be completing the following post-construction surveys:**
 - Avian and bat mortality monitoring,
 - Significant woodland and wetland hydrological monitoring,
 - Amphibian woodland and wetland breeding habitat surveys,
 - Migratory landbird stopover and staging area surveys, and
 - Raptor wintering area surveys, including short-eared owl surveys.

NRSI

- **Bird and bat mortality monitoring**

- Monitoring is conducted in accordance with requirements of the REA and MNRF Guidelines
- Mortality monitoring began January 5th, 2017 at 2 turbines (T01 and T58)
 - These turbines will be monitored weekly from December 1st to March 31st
- A subset of 23 turbines will be selected for twice-weekly monitoring, from mid-April through October 31st and once per week from November 1st through November 30th
- All turbines will be searched once per month from May 1st through October 31st

NRSI

- Correction factors are applied in order to calculate overall estimated mortality rates across the project
- An annual report will be prepared
- 3 years of monitoring is required
- Supplementary monitoring will be conducted at 10 of the subset of 23 turbines
 - Search radius of 85m from the turbine base, instead of the typical 50m radius
 - Twice-weekly monitoring from mid-April through October 31st
 - An annual report will be prepared

NRSI

- **Post-construction behavior monitoring**

- Pre-construction surveys completed by Stantec
- Based on significance, post-construction surveys are required to assess any potential changes in habitat use
 - Amphibian woodland and wetland breeding habitat surveys (1 year)
 - Migratory landbird stopover and staging area surveys (3 years)
 - Raptor wintering area surveys, including short-eared owl surveys (3 years)

- **Significant woodland and wetland hydrological monitoring (1 year)**

- Inspections of culverts within 30m of access roads
- Ensure hydrological flows are maintained

NRSI

- Q&A

NIAGARA REGION WIND FARM

Who are Aercoustics?

- Experts in wind turbine acoustic measurement and monitoring
- Completed acoustic assessment and sound modelling for over 1 GW of wind energy. Logged more than 100,000 hours of post construction noise measurements from wind turbine facilities
- Accredited to measure wind turbine noise emissions as per CAN/CSA Standard C61400-11:07 standard
- Noise monitoring performed on behalf of Industry, Regulators and Residents
- Unbiased data and information

Acoustic Audit – Agenda

- REA Requirements
- Acoustic Audit Immission
 - Transformer Acoustic Audit
 - Receptor Acoustic Audit
- Acoustic Audit Emission
 - Turbine Acoustic Testing (IEC 61400-11:07)

REA Requirements

- Wind Turbine – Receptor Audit
 - Acoustic audit at five (5) receptor locations
 - Two separate audit periods (one spring, one fall)
- Wind Turbine – Noise Emission
 - One test on each turbine type
 - 3.0 MW – 104.8 dBA
 - 2.9 MW – 102.9 dBA
- Transformer Substation
 - Acoustic Audit of two (2) Transformers Sound Emissions
 - Nearby Receptor measurements

Transformer Acoustic Audit

- Noise emission
 - Testing in accordance with the IEEE Standard C57.12.90 and NPC-233
 - Transformer sound power levels reported and compared to maximum sound power levels specified in Schedule B of REA
 - Tonal audibility of transformer assessed
- Nearby Receptor measurements
 - Near field and receptor based measurements, compliance assessed at the receptor with regards to sound pressure level and tonal audibility

Receptor Acoustic Audit

- Five (5) locations to be monitored as required by the REA
- Receptor locations chosen based on worst case impact and prevailing downwind conditions
- Measurement procedure and analysis based on MOECC guideline - Compliance Protocol for Wind Turbine Noise
- Measurement during night-time (10pm to 5am)
- Data set
 - 120 one-minute intervals for Turbine ON. Between 4-7m/s (10m height). Each bin (+/- 0.5m/s)
 - 60 one-minute intervals for Background. Between 4-7m/s
- Placement of monitoring equipment (5 stations) for ~4 weeks



Noise Emission Audit (IEC 61400-11)

- Two (2) turbines to be tested as required by the REA
- One (1) test per each turbine type:
 - 3.0 MW – 104.8 dBA – T03
 - 2.9 MW – 102.9 dBA – T46
- Acoustic emission measurements performed in accordance with the CAN/CSA-C61400-11:07 National Standard.
- Equivalent to IEC 61400-11 Edition 2.1



Schedule

- COD: November 2nd, 2016
- Wind Turbine – Receptor Audit
 - Audit 1 – 12 months from COD – November 2, 2017
 - Planned start Spring 2017
 - Audit 2 – 18 months from COD – May 2, 2018
 - Planned start Fall 2017
- Wind Turbine – Emission Audit
 - 12 months from COD – November 2, 2017
 - Start Spring 2017
- Transformer Audit
 - 12 months from COD – November 2, 2017
 - Start Spring 2017

Thank You

Comments or questions?

Payam Ashtiani
PayamA@Aercoustics.com – 416-249-3361

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Topics of Community Interest

- Questions & Concerns – Who to contact
- Project Ownership & Community Investment
- Technical Turbine Questions
- Health-related Questions
- Water Wells
- Transmission Line
- Guiderrail Installation
- Tree Replacement Plans



Contacting NRW with Questions & Concerns

Your Questions and Concerns are welcomed

- Complaints are logged and tracked
 - NRW must report all environmental complaints to the MOECC
- Complainants will receive an acknowledgement within 48 hours

To contact the Niagara Region Wind Farm:

- *Phone:* 1-844-363-6491
- *Email:* info@nrwf.ca
- *Website:* www.nrwf.ca



Project Ownership & Community Investment

- NRW is owned & operated by Boralex Inc.
 - As of January 18, Boralex Inc. completed the purchase of shares previously owned by ENERCON Canada.
Six Nations of the Grand River Development Corporation is also a project owner but is not involved in operating the Wind Farm
- Community Investment
 - NRW will spend in excess of \$80 million during the lifetime of the project on such items as taxes, local contractors, land lease agreements, etc.
 - Community Fund Agreements exist with West Lincoln, Wainfleet, and Haldimand County and are payable annually on April 30
 - Long-term jobs are created through direct employment with the Operations team including maintenance, monitoring and other support roles and indirect employment opportunities including jobs created at three tower and component manufacturing facilities

Technical Turbine Questions

- The 230MW capacity of the Niagara Region Wind Farm is comprised of seventy seven (77) ENERCON E-101 turbines.
- The nominal power rating of this turbine model is 3MW. 66 turbines operate at 3MW and 11 are de-rated to 2.9MW (T18, 33, 34, 45, 46, 47, 53, 55, 60, 74)
- These turbines generate electricity at wind speeds of 2 metres per second or greater (up to 28-34m/s)
- Turbines are lit according to Transport Canada requirements. Not all turbines require lighting depending on their location/proximity to other turbines.

Health-related Questions



- Health-related information about Wind Farms
 - Health Canada website www.hc-sc.gc.ca
 - CanWEA Website <http://canwea.ca/wind-facts/your-health/>
- Ontario's Chief Medical Officer of Health, CMOH Report, May 2010:
 - "the scientific evidence available to date does not demonstrate a direct causal link between wind turbine noise and adverse health effects. The sound level from wind turbines at common residential setbacks is not sufficient to cause hearing impairment or other direct health effects, although some people may find it annoying".

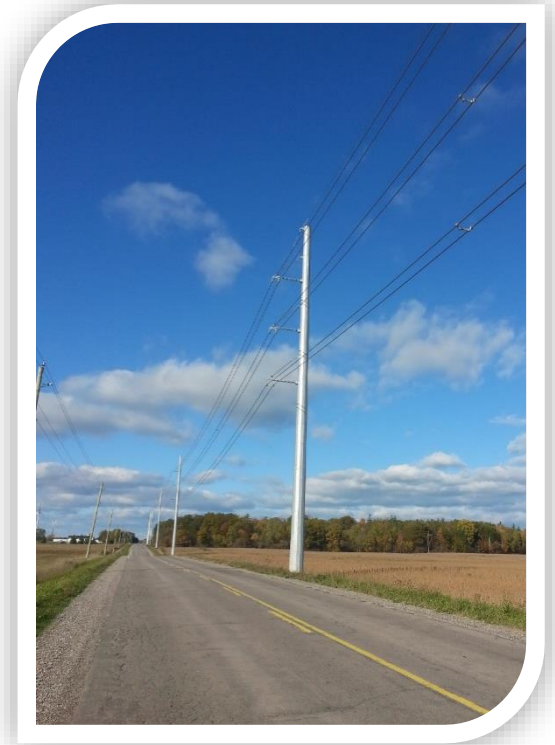


Water wells

- As per the project's REA approval, both pre- & post-construction groundwater monitoring must be done and annual reports submitted to the MOECC District Manager
 - Home owners in prescribed zones were approached by mail and door-to-door in 2015 and pre-construction samples taken and analyzed from those who elected to participate
 - Post-construction sampling has been completed proximal to the T-line (and report submitted to and approved by NEC)
 - Post-construction sampling will commence in 2017 for homes proximal to turbines.
 - Final samples will be taken in 2018 and reports submitted to MOECC
- Any specific concerns or issues with water wells should be raised directly with NRW – please use email and phone contact information provided

Transmission Line

- Pole placement is closer to travelled road surface on some roads than others – a multitude of factors determined the location of poles including:
 - Sight lines & Clear zones
 - Setbacks from private land
 - Drainage
 - Other infrastructure (hydro, telecommunications, pipelines)
- Section of underground T-line on Regional Road 45 is the result of the need to avoid interference with other infrastructure in the right-of-way



Transmission Line (continued)

- Several comments about whining or pinging noises from the transmission line were received prior to this meeting
- Any noise-related concerns about the Transmission line should be reported directly to NRWF – please use email and phone contact information provided



Guiderail Installation

- Guiderail installation is a safety measure to protect motorists which is required by applicable guidelines and enforced by the Road Authority
- The guiderail installed by the project was designed, reviewed and stamped by a licensed Engineer in the province of Ontario
- Upper Canada Consultants (UCC) designed all installations and has reviewed and signed-off on the safety and completeness of the guiderail installed



Tree Replacement Plans

- Tree replacement commitments to each municipality and region are set out in individual Road Usage Agreements (RUAs)
- Implementation plans are being discussed with municipalities and once finalized, NRW will share details via the project's website www.nrwf.ca



DISCUSSION & QUESTIONS

Moving forward



- **Meeting minutes will be available online in ‘Community Liaison Committee Documents’**
<http://www.nrwf.ca/project/>
- **Next CLC meeting timeframe**
 - Boralex will continue to offer CLC meetings twice yearly for as long as there is interest

Thank you!

Your attendance and participation is valuable and appreciated.

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APPENDIX

- Ad ran in
 - Niagara This Week (2x)
 - Grimsby Lincoln
 - Pt Colborne Leader
 - Dunnville Sachem
 - NewsNow (1x)

COMMUNITY LIAISON COMMITTEE MEETING 4

NIAGARA REGION WIND FARM



Tuesday February 7th, 2017 | 6pm

Wellandport Community Centre
5042 Canborough Road
Wellandport, ON L0R 2J0

The purpose of the CLC is to facilitate two-way communication between NRW and CLC members with respect to issues relating to the construction, installation, use, operation, maintenance and retirement of the facility. All CLC meetings are open to the general public for observation.

Questions can be submitted in advance up until January 31st to Karla Kolli, CLC Chair and Facilitator at kkolli@dillon.ca or **416-229-4647 ext. 2354**.

For more information about the project please visit the website at:
www.nrwf.ca

77 TURBINES

230 MW

80 M DOLLARS INVESTED

APPENDIX

- RE WATER WELLS – underground T line testing:
- Conclusions of the report are: 1) no decline or fluctuation in water level attributable to underground transmission line construction activities, 2) post-construction water quality were generally consistent with pre-construction quality with fluctuations of chemical parameters expected to be naturally occurring and not related to the construction of the underground transmission line, 3) no complaints received providing further evidence that construction activities have had no detrimental impact on the function of private wells located within 120 m of the underground transmission line.

CLC #3 Action Items

- Debenture
implication

- Letters from Upper Canada Consultants (UCC) confirming guiderails conform to design and standards in each municipality
- Site visit re: guiderails took place as requested
- Tree Replacement plans TBA
- Stump grinding completed
- 11 residents elected to participate in groundwater monitoring (of 420 landowners contacted)
- Maximum depth of turbine foundation piles is 47m, average depth is 33m (measured from bottom of foundation)
- Road surface quality on Highway 20 confirmed acceptable
- Legal implications of debentures ____?
- CLC meeting notification process improved per requests with direct contact to those who requested it and additional advertising