

May 30, 2013

Bonnie and Mike Tuson
[REDACTED]

Hello and thank you for your email,

The following is a response to your email dated February 5, 2013. We have copied your questions and have provided a response below each one:

1. I have obtained some expert advice and it is my understanding that CFD is a computer simulation that relies upon whatever data is entered into it and should be followed up by real world testing. Was that completed? It is my understanding that the efficiency of the wind turbines will be severely compromised by positioning them at the diminished distances. Please provide the expected loss of efficiency that will result from the reduced distances that you propose.

RESPONSE:

ENERCON implemented computational fluid dynamics (CFD) models to study the fluid-structure interactions based on the proposed turbine layout. This was completed to determine the impact of turbulence on the integrity of the downwind turbines with spacing at or within the conservative guidelines.

One of the requirements of a REA is for acoustic audits to be completed by an independent engineer after 3 months of operation, and at intervals afterward (i.e., real world testing). The equipment used to conduct the audit will be based on MOE procedures for acoustic audits of wind farms, including minimum requirements for instrumentation and methodology. Typically, a sound level meter with octave band capabilities is used for time periods of no less than 48 hours.

If noise levels are found to be above the maximum threshold of 40.0 dBA at a non-participating receptor, turbine operation will be modified to reduce noise emissions, for example, by reducing rotational speed, or interrupting operation.

NRWC will operate the Project in compliance with all applicable MOE noise criteria.

2. If Enercon's recommendations are merely "guidelines" as you state in your response, then what is the minimum distance that Enercon recommends. It only stands to reason, that they would have a guideline for that as well. I am also curious to know why Enercon would bother to recommend the greater distance in the first place. An answer to that question would be also be appreciated.

RESPONSE:

The guidelines provided by Enercon are merely guidelines for turbine siting, as previously indicated. Many factors are considered when determining the proposed location of individual

and groups of turbines within a landscape. Factors such as minimum setbacks from noise receptors, cumulative noise impacts, protection of significant natural features, availability of participating land owners and manufacturer recommendations are considered. The final turbine layout must comply with all regulatory requirements under O. Reg 359/09 for all turbines, which is the case with the proposed layout for this Project. Enercon has reviewed the turbine layout, including spacing between turbines, and has accepted the proposed layout.

3. Attached are several reports from experts detailing distance between wind turbines. They are from Johns Hopkins University, the U.S. Department of Energy and the National Renewable Energy Laboratory. They are experts in the field yet their recommendations in terms of siting wind turbines include significantly greater distances. As I am sure you can appreciate, unlike Enercon whose interests lie in selling wind turbines and NRWC whose interests lie in selling energy to the Province, these organizations do not have a vested interest. For that reason, I would appreciate Enercon's response with regard to these reports.

RESPONSE: As previously stated, in developing the turbine layout, the general siting of individual or groups of turbines considered the separation distances recommended by the turbine manufacturer (ENERCON). These recommendations were balanced against other regulatory setbacks, such as noise, property line and other environmental setbacks, so that the layout of turbines and other project components comply with all required setbacks and noise requirements.

The separation distances recommended by turbine manufacturers are general guidelines. They are intended to represent conservative spacing for which one can be confident that turbulence created by upwind turbines on downwind turbines will not impose a structural or mechanical integrity issue on the downwind turbines. Since some of the spacing for this project is tighter than the conservative guidelines, ENERCON implemented computational fluid dynamics (CFD) models to study the fluid-structure interactions based on the proposed turbine layout. This was completed to determine the impact of turbulence on the integrity of the downwind turbines with spacing at or within the conservative guidelines.

Based on the results of this study, ENERCON agreed that the turbine spacing is acceptable, whereby the downwind turbines will operate without integrity issues. ENERCON also confirmed that there will be no need for sector wide shutdown of any turbines in the project in order to avoid potential turbulence or integrity issues. The proposed turbine layout is acceptable to ENERCON and complies with all required setbacks.

4. It is also my understanding that the impact of siting at the diminished distance will create a turbulent effect which may cause the rotors of some of the closely sited turbines to rotate at different speeds and will generate a "beating" noise effect.

RESPONSE:

The noise emissions of the wind turbines and transformer substations have been modeled and assessed in the Noise Assessment Report in the Renewable Energy Approval. This report demonstrates that noise emissions at any non-participating receptor do not exceed 40 dBA as

per Ministry of Environment requirements. This Report will be reviewed by the MOE prior to approval of the project.

As stated above, one of the requirements of a REA is for acoustic audits to be completed by an independent engineer after 3 months of operation, and at intervals afterward. The equipment used to conduct the audit will be based on MOE procedures for acoustic audits of wind farms, including minimum requirements for instrumentation and methodology. Typically, a sound level meter with octave band capabilities is used for time periods of no less than 48 hours.

If noise levels are found to be above the maximum threshold of 40.0 dBA at a non-participating receptor, turbine operation will be modified to reduce noise emissions, for example, by reducing rotational speed, or interrupting operation.

Please let us know if you have any further questions.

Sincerely,

Randi Rahamim
Director of Communications