

March 3, 2015

BY ELECTRONIC MAIL (David.Wiesner@puc.nh.gov)

New Hampshire Site Evaluation Committee
c/o David K. Wiesner, Staff Attorney
N.H. Public Utilities Commission
21 South Fruit Street, Suite 10
Concord, NH 03301

Re: New Hampshire Site Evaluation Committee Rulemaking, Docket No. 2014-04

Dear Mr. Wiesner:

My name is Russell Blair and I am retired engineer and serial entrepreneur. I participated in 5 of the 6 meetings of the NH OEP SB 99 pre-rulemaking Health and Safety work group last spring and summer.

The SB 99 Health and Safety work group had over 19 interested parties attend some or all of the meetings. The group comprised of interested citizens, wind energy representatives, law firms and a meteorologist. Often we were assisted by guest attendees depending on the subject matter that was to be discussed. We were assisted by 4 accredited acousticians; Stephen Ambrose, Edward Duncan, Richard James and Ken Kaliski. There was general consensus from all participants on the methodology for conducting a preconstruction, sound modeling and post construction sound background studies. These methodologies, all listed in the final report, were not incorporated in the draft document and should be. (301.03 (i) 6). In past SEC deliberations, the discussion regarding conducting preconstruction, sound modeling and post construction sound background methodology took a substantial amount of SEC testimony time and since all of the interested parties have agreed upon a common methodology, there is little reason not to include it, except if you want to have a protracted SEC process. I have attached the proposed changes to this document for your consideration.

Additionally I want to comment on the proposed *301.08 (f) (2) Criteria Relative to Findings of Unreasonable Adverse Effects. – Public Health and Safety for wind energy.* The proposed draft language is:

- a. *Sound Standards: A-weighted equivalent sound levels produced by the applicant's energy facility during operations shall not exceed the greater of 45 dBA or 5 dBA above ambient levels between the hours of 8:00 a.m. and 8:00 p.m. each day, and the greater of 40 dBA or 5 dBA above ambient levels at all other times during each day, as measured at the exterior wall of any existing permanently occupied building on a non-participating landowner's property, or at the non-participating landowner's property line if it is less*

than 300 feet from an existing occupied building, and these sound levels shall not be exceeded for more than 3 minutes within any 60 minute period;

I have no objections on the overall sound pressure levels proposed however the language “*as measured at the exterior wall of any existing permanently occupied building on a non-participating landowner’s property, or at the non-participating landowner’s property line if it is less than 300 feet from an existing occupied building*” is objectionable. By only measuring sound levels at an existing occupied building and not at the property line of the non-participating landowner, the wind energy facility potentially is using the space above the landowner’s property to mitigate the sound pressure and limiting the landowner’s rightful use to their land. If the Facility desires to use the landowners space to mitigate sound pressure they can easily reach agreement with the landowner for such purposes. The landowner then becomes a participating landowner and this rule doesn’t apply.

In addition, the exception that the sound levels are permitted to exceed the 40 and 45 dB(A) for 3 minutes each hour is unreasonable (“*and these sound levels shall not be exceeded for more than 3 minutes within any 60 minute period*”) In the Antrim decision, there is not such exception:

1. In the daytime, sound levels generated by the Facility at the outside façades of residences shall not exceed 45 dBA or 5 dBA above ambient, whichever is greater. For the purposes of these conditions, daytime is considered to begin each morning at 8 AM and conclude at 8 PM. All other time shall be considered to be the nighttime.

2. At nighttime, sound levels generated by the Facility shall not exceed 40 dBA or 5 dBA above ambient, whichever is greater.¹

This exception would allow extremely high sound pressure levels of one minute durations three times an hour. If the sound level was high enough, this could cause sleep disruption, nausea, and other public health issues and the Facility would still be in compliance! For this reason, I request striking the sound level exceptions.

It is important to have fair, consistent, an appropriate noise standards that protects the public’s rights to fair use of their property and still provide a standard that an Applicant can properly evaluate and decide if a particular location is appropriate for a wind energy facility. With the increasing requirements to have a greater percentage of renewable energy in New England’s energy mix, more and more wind energy facilities will be

¹ STATE OF NEW HAMPSHIRE SITE EVALUATION COMMITTEE Docket No. 2012-01
Re: Application of Antrim Wind Energy, LLC for a Certificate of Site and Facility for a Renewable Energy Facility Proposed to be Located in Antrim, Hillsborough County, New Hampshire
DECISION AND ORDER DENYING APPLICATION FOR CERTIFICATE OF SITE AND FACILITY
April 25, 2013, page 68

proposed and these wind energy facilities must be appropriately sited and must respect the rights of abutters as well as the local community at large.

Thank you.

Russell Blair
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Proposed Language for (301.03 (i) 6):

(6) Public health and safety. Such information shall:

a. For proposed wind energy systems:

1. Include a sound impact assessment prepared in accordance with professional standards by an expert in the field, which assessment shall include the reports of a preconstruction sound background study and a sound modeling study, as follows:

(i) The methodology for conducting a preconstruction sound background study shall include:

i. Adherence to the ANSI/ASA S12.9-2013 Part 3 standard, a standard that requires short-term attended measurements.

ii. Long-term unattended monitoring may be conducted in accordance with ANSI S12.9-1992/Part 2, provided audio recordings are taken in order to clearly identify and remove transient noises from the data. Frequencies above 1250 Hz 1/3 octave band are to be filtered out of the data.

iii. Measurement locations should be conducted at the nearest properties from proposed wind turbines representative of all non-participating residential properties within 2.0 miles.

iv. Sound measurements shall be omitted when the wind velocity is greater than 4 m/s (~9 mph) at the microphone position, when there is rain, and/or with temperatures below instrumentation minima. Following ANSI 12.9 Part 3 protocol, microphones shall be placed 1 to 2 meters above the ground, and at least 15 feet from any reflective surface. A windscreen of the type recommended by the monitoring instrument's manufacturer must be used for all data collection. Microphones should be field calibrated before and after measurements. An anemometer shall be located within close proximity to each microphone.

(ii) Pre-construction sound reports shall include a map and/or diagram clearly showing the following:

- a. layout of project area, including topography, project boundary lines, property lines;
- b. locations of the Measurement Points (MPs);
- c. distance between any MP and the nearest wind turbine(s);
- d. location of significant local non-turbine sound and vibration sources;
- e. distance between all MPs and significant local sound sources;
- f. The location of all sensitive receptors including, but not limited to: schools, day-care centers, health care facilities, residences, residential neighborhoods, places of worship, and elderly care facilities.

g. Indicate temperature, weather conditions, sources of ambient sound, and prevailing wind direction and speed for the monitoring period; and

h. Final report will provide A weighted and C weighted sound levels for L10, Leq and L90.

(iii) The predictive sound modeling study shall:

a. Be conducted in accordance with ISO 9613-2.

b. An adjustment to the Leq produced by the model shall be applied in order to adjust for turbine manufacturer uncertainty. This adjustment shall be determined in accordance with the most recent release of the IEC 61400 Part 11 standard (Edition 3.0 2012-11). This standard anticipates that the analysis of wind turbine acoustical emissions will also consider sound power level and tonality for a batch of wind turbines as opposed to just one machine (IEC 61400 Part 14).

c. Predictions shall be made at all properties within two (2) miles from the project turbines for the wind speed and operating mode that would result in the worst case wind turbine sound emissions at night.

d. Other corrections for model's algorithm error shall be disclosed and accounted for in the model(s).

(iv) The predictive sound modeling study report shall:

i. Include the results of the modeling described in (iii) above as well as a map with sound contour lines showing dBA sound emitted from the proposed wind energy system at 5 dBA intervals;

ii. Include locations out to 2 miles from any wind turbine included in the proposed facility; and

iii. Show proposed wind turbine locations and the location of all sensitive receptors including, but not limited to: schools, day-care centers, health care facilities, residences, residential neighborhoods, places of worship, and elderly care facilities;

(v) Post-Construction Noise Compliance Monitoring shall include:

a. Adherence to the ANSI/ASA S12.9-2013 Part 3. This standard requires short-term attended measurements to ensure transient noises are removed from the data. Measurements will include at least one nighttime hour where turbines are operating at full sound power with winds less than 3 m/s (~6 mph) at the microphone.

b. Unattended long-term monitoring can also be conducted.

c. Sound measurements shall be omitted when there is rain, and/or with temperatures below instrumentation minima. Microphones shall be placed 1 to 2 meters above the ground and at least 15 feet from any reflective surface following ANSI 12.9 Part 3 protocol.

Proper microphone screens are required. Microphones should be field calibrated before and after measurements. An anemometer shall be located within close proximity to each microphone.

- d. Monitoring will involve measurements being made with the turbines in both operating and non-operating modes. SCADA data will be used to record hub height wind speed and turbine power output.
- e. Locations to be pre-selected where noise measurements will be taken. Measurements will be performed at night with winds above 4.5 m/s (~10 mph) at hub height and less than 3 m/s (~6 mph) on the ground.
- f. All sound measurements during post-construction monitoring will be taken at 0.125-second intervals measuring both “fast” response and Leq metrics.
- g. Post-construction monitoring surveys will be conducted once within three months of commissioning, and once each season thereafter for the first year. Additional surveys may be conducted at the request of the SEC. Reasonable adjustments to this schedule will be permitted subject to SEC review.

(vi) Post-construction sound reports shall include a map and/or diagram clearly showing the following:

- a. layout of project area, including topography, project boundary lines, property lines;
- b. locations of the Measurement Points (MPs);

- c. distance between any MP and the nearest wind turbine(s);
- d. For each measurement period during the post-construction monitoring, reports will include each of the following measurements:
 - 1. LAeq, LA10, and LA90;
 - 2. LCeq, LC10, and LC90
- e. Noise emissions shall be free of audible tones. If the presence of a pure tone frequency is detected, a 5 dB penalty shall be added to the measured dBA sound level;
- f. The SEC shall adopt a complaint resolution program. Validation of noise complaints shall require field sound surveys conducted under the same meteorological conditions as occurred at the time of the complaint.

Proposed 301.08 (f) (2) Criteria Relative to Findings of Unreasonable Adverse Effects. – Public Health and Safety for wind energy.

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