June 10, 2021

VIA ELECTRONIC MAIL

Jonathan A. Evans
Presiding Officer
New Hampshire Site Evaluation Subcommittee
21 South Fruit Street, Suite 10
Concord, NH 03301

RE: DOCKET NO. 2021-02 Response to Antrim Wind, LLC Letter of June 8, 2021

Dear Mr. Evans:

We reviewed Robert O'Neal's June 7th letter where he reacts to the Rand Report ("Report") filed with the subcommittee last month.[1] Mr. O'Neal's letter presents numerous misleading and inaccurate assumptions regarding the complaint survey conducted by Rand Acoustics, LLC ("Rand") as well as the relevant NH SEC rules. As the subcommittee investigates the SEC rules on turbine noise, we are compelled to correct the record. Thank you for the opportunity to be heard on this important matter.

Mr. O'Neal broadly complains that Rand did not comply with the NH SEC rules governing post-construction sound monitoring, specifically NH Site 301.18(e), 301.18(f), and 301.18(g). He also claims that Rand's work was "inconsistent with the methodologies previously used and accepted by the SEC for sound level compliance testing on other NH wind energy projects." We address each of these claims below.

a) Complaint 1: Rule NH Site 301.18(e)

Mr. O'Neal objects that Rand did not comply with NH Site 301.18(e) but only comments on provision (e)(4) which states that "[m]onitoring shall involve measurements being made with the turbines in both operating and non-operating modes."

The on/off test is used to determine the contribution of turbine noise to the continuous background sound level. This step is necessary when *the sound under test is **not** **dominant*** as defined under ANSI S12.9-2013/Part 3.[2] Pursuant to ANSI S12.9-2013/Part 3, corrections to the sound measurements to remove continuous (non-transient) background sounds are **not** conducted when the sound under test is dominant.

Rand collected high-quality digital audio recordings (24-bit, 12KHz .wav) of the environmental sound coincident with the sound meter data.[3] The audio recordings clearly confirmed that the Antrim Wind

[1] *Rand Acoustics, LLC: Complaint Response Noise Survey* 3/18-4/9, 2021. https://www.nhsec.nh.gov/projects/2021-02/public_comments/2021-02_2021-05-14_sound_monitoring_report.pdf

[2] ANSI S12.9-2013/Part 3 defines dominant sound as "sound, when heard among other sounds, that is audibly louder than all other sounds combined, and that causes a change of the indicated sound pressure level (measured using approximately a 0.1 s[econd] time average or a fast time weighting) of at least 6 decibels (dB) with the audible fluctuations corresponding to the visible fluctuations of the indicated sound pressure levels."

[3] For the record, Rand's high-quality digital recordings of Project sound are required in order to conduct this acoustical analysis. In contrast, AWE/Acentech relied on low-quality, compressed .mp3 recordings which are insufficient for acoustic analysis.

turbines, *at the time of the complaints,* "dominated the acoustic environment with pronounced low-frequency whooshing-thumping fluctuations."[4] Rand's use of the word "dominant" is consistent with ANSI S12.9-2013/Part 3 thereby abrogating the requirement for an on/off test. Rand also confirmed that "[n]o other significant intrusive noises were heard." Rand applied ANS weighting as permitted under NH Site 301.18(a)(2) to filter out any noises present with frequencies above 1250 hertz 1/3 octave band.

Mr. O'Neal claims that without an on/off test Rand's conclusions are "meaningless." He assumes, without basis, that the sound levels charted in Rand's figures 5, 6, 7, and 8 must "certainly" contain other non-turbine sources. As proof he opines about wind noise (gusts) on the microphone and argues Rand's use of 10-second averaging for collecting local wind speeds is "not accurate and not a proper representation of pairing sound data with wind data."

This is interesting since Mr. O'Neal used *1-minute averaging* when he conducted sound monitoring at Groton Wind. AWE/Acentech also collected local wind speeds using 1-minute averages during their winter 2020 sound monitoring period. Has Mr. O'Neal challenged the validity of the AWE/Acentech winter sound data?

Rand used the same Madgetech Wind101A cup anemometer as AWE/Acentech, but collected wind speed data at 6-times the resolution. Ten-second averaging is entirely appropriate for collecting wind speeds at a monitor location. Used in conjunction with on-site audio recordings, Rand was able to capture turbine sound measurements when the turbines were dominating the area around the Berwick home. Rand followed the SEC rules and correctly applied the ANSI standard. Mr. O'Neal's complaint is without merit.

b) Complaint 2: Rule NH Site 301.18(f)

Mr. O'Neal cites NH Site 301.18(f) in his letter but provides no description as to how he believes Rand failed to satisfy the rule. The rule requires certain logistical data to be included in a post-construction sound monitoring report such as turbine layout, monitoring locations, distances between turbines and monitors etc. Post construction monitoring differs from complaint testing. However, to the extent the required data were relevant to Rand's complaint test, Rand fully complied with NH Site 301.18(f)

c) Complaint 3: Rule NH Site 301.18(g)

Mr. O'Neal then complains that Rand did not report certain statistical data (LA-10, LA-90, LC-10, LC-90) pursuant to NH Site 301.18(g). Here, Mr. O'Neal again confuses the requirements for conducting post-construction sound monitoring with complaint validation.

Rand collected sound meter data, audio recordings, and ground wind speeds in real-time when the Berwicks complained of excess turbine noise. At the point of the complaint, Rand had the data needed to determine compliance. Any added statistical information (i.e. LA/LC-10 and LA/LC-90) was not necessary as focus was on whether the turbine sound measurements exceeded the Committee's nighttime standard of 40 dBA Leq 1/8th second, *which they did*.

Turbine noise levels at the Berwick home reached up to 45 to 53 dBA which were 5 to 13 dB louder than the Committee's nighttime standard. This should not be a surprise to Mr. O'Neal as Rand's findings are entirely consistent with the December 22, 2016 memo co-authored by Epsilon Associates (O'Neal's firm)

---

[4] Rand Acoustics, LLC: Complaint Response Noise Survey 3/18-4/9, 2021 at 8 and 9.

which states that measurements based on an Lmax metric will range from "about 6 dB to 11 dB greater than the Leq" using a 1-hour compliance interval.[5] Mr. O'Neal is exaggerating the purpose of these statistical data especially given that compliance is based on Leq. This complaint is also without merit.

d) Complaint 4: Inconsistent with prior SEC methods

Mr. O'Neal makes a general statement in his letter that Rand's complaint survey was "inconsistent with the methodologies previously used and accepted by the SEC for sound level compliance testing on other NH wind energy projects." We could find nothing in Mr. O'Neal's letter where he attempts to explain this statement.

In fact, it is Mr. O'Neal's firm, Epsilon Associates, LLC, who, at the Groton Wind facility, disregarded the Committee's Lmax noise standard imposed on the facility (Docket 2010-01)[6] and unilaterally replaced it with a different standard based on 10-minute averaging (i.e. Leq 10-minute).[7] This action by Mr. O'Neal's firm is a serious breach of a certificate condition that we believe deserves further investigation.

e) Complaint 5: SEC 1/8th second compliance interval

Finally, we get to the heart of Mr. O'Neal's objection, namely the SEC's use of a compliance interval based on 1/8th second. We respectfully offer the following brief summary of facts already in the record:

1) The SEC rule explicitly assigns a value to the Leq compliance interval of 1/8th second. This compliance interval is functionally identical to the Committee's prior standard of Lmax and *independent of the ANSI standards*.[8] Numerous jurisdictions in the United States have adopted the Lmax standard for measuring turbine noise. Mr. O'Neal is aware that his arguments against the short compliance interval were the subject of a federal court challenge where the court ruled against Mr. O'Neal's position and found the Lmax metric was reasonable as a turbine sound standard.[9]

2) The Committee has deliberated extensively over the question of long-term noise averaging and rejected it in favor of the more protective Lmax.[10] The SEC's former Lmax standard and its current not-to-exceed standard based on 1/8th second are functionally identical.

---

[5] See Appendix A. https://www.nhsec.nh.gov/projects/2015-02/post-certificate-filings/2015-02_2021-03-24_linowes_comment_technical_memoranda.pdf

[6] NH Site Evaluation Committee, *Order and Certificate of Site and Facility With Conditions*. May 6, 2011 at 5 https://www.nhsec.nh.gov/projects/2010-01/documents/110506order.pdf

[7] Epsilon Associates, Inc. *Groton Wind Farm Sound Level Assessment Report*. June 24, 2014. https://www.nhsec.nh.gov/projects/2010-01/documents/140723sound_report.pdf

[8] Mr. O'Neal's reference to a "basic measurement period" under ANSI S12.9-2013/Part 3 is irrelevant to the SEC's Leq 1/8th second compliance interval.

[9] See Appendix b (Tuscola Wind III, 2017 U.S. Dist. LEXIS 182278). https://www.nhsec.nh.gov/projects/2015-02/post-certificate-filings/2015-02_2021-03-24_linowes_comment_technical_memoranda.pdf

[10] Linowes, L. Letter to the Committee April 2, 2021. https://www.nhsec.nh.gov/projects/2021-02/public_comments/2021-02_2021-04-02_linowes_comment_convene_subcommittee.pdf

To conclude, Mr. O'Neal admitted in his 2016 sworn testimony, without qualification, that the maximum turbine noise level at any neighboring property to the Antrim wind turbines would be 38 decibels. He also admitted that he understood the SEC's nighttime turbine noise standard was a 40 decibel, not-to-exceed figure.[11] With the project now operational and noise complaints filed with the SEC, there is an effort underway by AWE to rewrite the NH SEC Rule of 1/8th second intervals with 1-hour intervals. This effort is clearly driving all the novel arguments now coming from Epsilon.

We respectfully ask the SEC to enforce the turbine sound standard as written in its rules in order to protect the public from excessive noise levels now occurring at neighboring properties to the Antrim turbines. The Committee should uphold its own precedence that was established in prior wind dockets and rulemaking and support the protective standard New Hampshire residents were promised and expect.

Respectfully,

/s/ Dr. Fred Ward

/s/ Lori Lerner

/s/ Larry Goodman

/s/ Richard Block

/s/ Ivan Quinchia

/s/ Carole Binder

/s/ William Everett

/s/ Nancy Watson

/s/ Lisa Linowes

/s/ Joe Wilkas

/s/ Tripp Blair

cc: Service List, Docket 2021-02
Executive Councilor Joseph Kenney
Representative Michael Vose
Senator Jeb Bradley
Senator Bob Giuda
Senator Ruth Ward

[11] Docket 2015-02 Transcript Morning of September 22, 2016 at 67-68. https://www.nhsec.nh.gov/projects/2015-02/transcripts/2015-02_2016-09-22_transcript_adj_hearing_day4_morning.pdf