August 13, 2021

VIA ELECTRONIC MAIL

Jonathan Evans, Presiding Officer
New Hampshire Site Evaluation Committee
21 Fruit Street, Suite 10
Concord, New Hampshire 03301

Re: SUPPLEMENTAL COMMENTS - Docket No. 2021-02
Investigation of Complaints Regarding Antrim Wind Energy Facility

Dear Mr. Evans:

Thank you for the opportunity to provide additional comments regarding the subcommittee's July 15, 2021 *Proposed Recommendation to the Site Evaluation Committee Concerning Charge 1* ("Proposal"). We remain deeply concerned at the subcommittee's fundamental misunderstanding of the ANSI standard and the SEC rules. We again encourage the subcommittee to withdraw its proposal and expand its fact-finding to include the services of an independent, impartial expert for guidance.

The first section of this letter briefly summarizes the comments we filed on July 29, 2021. The second section includes supplemental comments.

I. SUMMARY OF JULY 29, 2021 COMMENTS

1) The subcommittee does not recognize, nor appear to understand the limitations of the Leq metric or the material impact of using long-term Leq particularly when measuring unsteady sound sources.[1] The subcommittee selectively cites from the WHO guidelines but ignores WHO warnings regarding Leq for unsteady noise. As Rand Acoustics' letter states "[l]ong-term Leqs hide dominating noise levels that exceed the NH SEC Rule, disrupt sleep and provoke complaints. Regulatory oversight using long-term Leq would sanction nuisance and sleep disruption from excessive, non-steady, fluctuating, dominant wind turbine noise at night." *See* Rand Letter July 29, 2021 at 3 https://www.nhsec.nh.gov/projects/2021-02/public_comments/2021-02_2021-07-29_rand_complianc_assessment.pdf .

2) The subcommittee disregards the intent and plain language of Site 301.18(e)(6) by claiming "an Leq of 0.125-seconds is not supported by the language of the rules." To make its case, the subcommittee tries to show that a 0.125-second compliance interval is not supported by the ANSI Standard. In doing so, the subcommittee repeatedly demonstrates confusion regarding the ANSI Standard as follows:

    a. The subcommittee erroneously looks to a general standard to define the SEC's regulatory rule (Leq compliance interval) for limiting turbine sound at neighboring properties. ANSI S12.9 Part 3 is a high-level guide for technicians conducting short-term, attended sound measurements.

[1] ANSI S12.9 Part 3 §6.5(b)(1) states that in order for a sound to be "essentially steady, the difference between the maximum sound pressure level and the minimum sound pressure level measured during the 5-min observation period shall be less than or equal to 3 dB." According to ANSI, measurements are to be taken at 0.1 second time-averaged (Leq) or Lfast time- weighted. The Antrim Wind turbines emit **unsteady** sound pressure levels that vary between 4 and 11 decibels using Lfast and 0.1 second Leq. *See* Rand Letter July 29, 2021

Determination of a regulatory Leq noise limit and compliance interval is solely the responsibility of the governing body, in this case the SEC;

b. The subcommittee confuses the 5-minute *measurement period* cited in the standard as the SEC's intended minimum Leq compliance interval for steady sounds. It further asserts, without any justification that for non-steady sounds (i.e. non-accelerated method) the SEC's required compliance interval for Leq is "plainly meant to be longer." In doing so, the subcommittee selected an arbitrary measurement period to serve as the statewide Leq compliance interval for turbine noise without even a technical review to understand the errors and impacts of its recommendation.
c. The subcommittee misunderstands the term "basic measurement period" defined in the standard;
d. The subcommittee confuses the measurement period for removing transient sounds from measurement data with the 0.125-second Leq compliance interval cited in Site 301.18(e)(6). *See* Proposal at paragraph 46. The subcommittee's statements on this issue are meaningless.

3) The subcommittee appears to be confused by Antrim Wind's complaint regarding potential conflict in the rules between Site 301.18(e)(6) and Site 301.18(g) with respect to L10 and L90 statistical values. The interval cited in Site 301.18(e)(6) is specific to noise measurements. L10 and L90 are statistical values and not sound measurements. We are not aware of any time when experts for Antrim Wind claimed Leq 0.125-second was inconsistent with the SEC rules or the ANSI standard.

4) The subcommittee's attempt at giving priority to the ANSI standard over the plain language of the SEC rules creates other conflicts where none should exist (ex: wind speed at the microphone).

5) Finally, the subcommittee disregards clear evidence in the SEC's regulatory history that shows a repeated intent by the SEC to avoid the impact of long-term Leq on neighboring properties. Instead, the subcommittee attempts to construct the false impression that the Rulemaking Subcommittee held a "constant desire" for compliance with the ANSI standards. *See* Proposal at paragraph 63. The rulemaking record does not support this impression. In fact, the subcommittee could find just two instances where the professional standards for noise were referenced in the rulemaking docket: first as it pertained to replacing the term 'ambient' with 'background,' and second in deciding the location of a noise microphone relative to reflective surfaces. *See Id.* at paragraph 64. In each case the subcommittee ignores the context of these examples. Specifically, the Rulemaking Subcommittee was seeking consistency in the language between Site 301.14(f)(2)(a) and Site 301.18 as drafted by the SB99 Stakeholder group.[2] Site 301.14(f)(2)(a) and Site 301.18 are intrinsically connected so consistency in the language was essential.

II. SUPPLEMENTAL COMMENTS

1) Sound Standards in Other Jurisdictions

While the subcommittee claims it did not vet data provided by Antrim Wind regarding the effect of certain noise standards in other jurisdictions, the Proposal suggests that some weight is given to Antrim Wind's claim that a short Leq compliance interval, or not-to-exceed noise standard precludes wind energy development. *See* Proposal at paragraph 63. For this reason, we are compelled to respond.

Looking just to New Hampshire, there are currently two operating wind turbine facilities in the state that *were certificated and conditioned* on a not-to-exceed sound standard.

[2] The SB99 Stakeholder group used the term "background" in Site 301.18 whereas the Rulemaking Subcommittee used the phrase "ambient". The SB99 Stakeholder group required the location of a monitor to be 7.5 meters from a reflective surface. The Rulemaking Subcommittee positioned the microphone at the "exterior wall of an occupied building."

In the examples Antrim Wind provides, we found several errors and/or misleading claims regarding the status of turbine facilities built under not-to-exceed sound standards. For example, Antrim Wind implies that no wind projects have been approved or constructed in Albany County, WY since the noise rule was adopted but misrepresents the date of the noise ordinance. The wind turbine noise standard has been in effect since at least October 1, 2015. Since that time the county approved several wind projects including Boswell Springs and the Rail Tie facility. Antrim Wind also ignores wind development in Wisconsin where a not-to-exceed standard is in effect statewide. Since the standard was adopted, Quilt Block Wind, Uplands Wind, Highland Wind and other projects have been approved.

In any event, the noise standards Antrim cites, while all "not-to-exceed," vary materially from the SEC standard in terms of the limit on decibels and the location where measurements are to be taken. Further, Antrim Wind ignores other factors beyond a noise standard that play a significant role in whether projects are proposed, including the lack of available transmission capacity, setback distances, landowner disinterest, and availability of acceptable property tax programs. To conclude from Antrim Wind's list that the noise standard is the primary in limiting development is grossly simplistic and misleading.

2) Acentech Winter 2020 Report and Tocci Peer Review Report

The subcommittee claims it reviewed Mr. Tocci's peer review report and "believes the opinion of Mr. Tocci supports its interpretation of the Noise Limit." *See* Proposal at paragraph 75, 76.

In our cursory review of Mr. Tocci's report, we found several errors that are concerning and appear to have been missed by the subcommittee.

Before we comment on the report, we remind the subcommittee that Mr. Tocci's scope of work was limited to whether Acentech conducted its sound study in accordance with the SEC rules. The issue of whether his review would resolve Leq compliance interval dispute of one-eight second or one-hour was left an open question to be determined at a later time. *See* Transcript of July 29, 20201, Docket No. 2015-02, at 68 (stating "Will it tell us whether the rule that talks about measuring in one-eighths of a minute or a second and the averaging over an hour, will it sort that out?") The SEC accepted (i.e. received) the Tocci report at its November 23, 2020 meeting but did not rule on the Leq compliance interval. *See* SEC Draft Minutes March 25, 2021 at 8 (stating "Commissioner Bailey noted that the Committee has not made a determination as to the standard or rule…") https://www.nhsec.nh.gov/sites/g/files/ehbemt531/files/inline-documents/sonh/draft_minutes_3-25-21_public_mtg.pdf

Mr. Tocci's report mainly evaluated whether Acentech followed the requirements under Site 301.18(e)-(h) involving the mechanical process of microphone placement, on/off testing, and contents of the final report. Most of these rules are straightforward, and where applicable, are consistent with the ANSI standard. However, there are notable areas in the protocol that Acentech followed that are not compliant with the SEC rules nor the ANSI standard. These are serious discrepancies that Mr. Tocci failed to notice and that warrant a more detailed analysis.

a) ANSI S12.9 Part 3

Site 301.18(e)(1) requires adherence to the ANSI S12.9 Part 3 standard for attended measurements. Long-term, unattended monitoring is also required per Site 301.18(e)(2), however, unattended monitoring requires high-quality audio recordings that serve as a human proxy for the purposes of acoustical analysis and removal of transient sounds. ANSI S12.9 Part 3 is the only relevant standard in the rules and there is no provision within the rules that supports compliance with Part 2. The purpose of ANSI S12.9 Part 2 is inconsistent with turbine sound monitoring required by the SEC.

Despite this, Acentech states in its report, and Mr. Tocci appears to endorse that ANSI S12.9 Part 2 is the governing standard for conducting unattended post-construction sound monitoring. *See* section 5.3 page 16 of the Acentech report. Also *See* Tocci report at 2. Neither Acentech nor Mr. Tocci provides information in their respective reports describing how Part 2 was applied.

b) Application of ANSI S12.9 Part 3 §6.5(b)(1)(first bullet)

As cited in footnote 1 above, in order for a sound to be "essentially steady" under ANSI S12.9 Part 3, "the difference between the maximum sound pressure level and the minimum sound pressure level measured during the 5-min observation period shall be less than or equal to 3 dB." According to the standard, measurements are to be taken at 0.1 second time-averaged (Leq) or Lfast time- weighted. Noise measurements taken by Rand clearly show the Antrim turbines are producing sound levels that are not steady but vary widely between 4 and 11 decibels when measured according to the standard (Leq 0.1 second). *See* Rand Letter July 29, 2021

However, in its report, Acentech predetermines, without proof or justification, that turbine-only sound is steady. Mr. Tocci concurs without any objection. *See* Acentech report at 19. *Also See* Tocci report at 4 (stating "wind turbine sound is characteristically steady"). Based on this assertion, Acentech proceeds to ***exclude*** all sound data measured at Antrim where the "LA10 and LA90 sound levels differed by more than 3 dBA." Acentech does not specify the time period over which the L10 and L90 values were determined, but it appears from the report that Acentech looked at 1-hour values.

To be clear, ANSI S12.9 Part 3 §6.5(b)(1)(first bullet) provides guidance for determining *whether* a sound is steady. There is nothing in the ANSI standard that promotes the blanket exclusion of sound data based on a delta between L10 and L90. For that matter, §6.5(b)(1)(first bullet) does not even mention L10 or L90, but looks at the minimum and maximum sound pressure levels over a 5-minute period when measured using Leq 0.1 second or Lfast.[3]

There is no reading of the SEC rules or ANSI S12.9 Part 3 § 6.5(b)(1) that supports the exclusion of data by Acentech as was done.

The obvious effect of this gross misapplication of the ANSI standard is to exclude valid turbine noise, and likely suppress periods of noise exceedances. Consider that Rand recorded swings in Leq 0.1-sec measurements between 4dB and 11dB. Under Acentech's contrived rule, all of the Rand data would be excluded by Acentech. In fact, Acentech admits in its report that most of data discarded from its 331 hours of monitoring in winter 2020 was due to this post-processing rule. Acentech has repeated this process of eliminating valid data during each of the seasonal monitoring periods. As such, there is insufficient data in the Acentech report to trust any claim of compliance with the SEC's sound standard.

c) Tocci Peer Review Confirmation

Mr. Tocci, attempts to demonstrate operational compliance by subtracting the shut-down hour (March 8, 2020 at 22:00-23:00) from the hours prior to, and after the shutdown. *See* Tocci at 5. Mr. Tocci appears to ignore the fact that the turbines were shut down for only 30-minutes and not the entire hour which would have an obvious impact on the measured L90. Further, since the Leq 1-hour measurements for the hours before and after the shutdown were generally under 40 dBA for several locations, Mr. Tocci's test does not appear helpful in confirming compliance. Rather, it appears to be little more than an exercise in logarithmic subtraction. To that point, we believe Mr. Tocci is applying subtraction of background sound levels at all

[3] Mr. Tocci suggests mild hesitancy in his report over the use of L10 and L90 and not minimum and maximum sound pressure levels. Rather than raise doubt as would be expected in any peer-review by an expert, he endorses the error.

times. This is not supported by the ANSI standard. (Note: Mr. Tocci accepts in his review that the Leq compliance interval is 1-hour.)

III. CONCLUSION

There are other serious problems with the Acentech winter sound survey that go beyond the SEC rules and the ANSI standard. Unfortunately, we have not been granted a venue to make our concerns known. In keeping with the subcommittee's current Charge 1, we limited our comments to the subcommittee's Proposal.

The biggest issue we see is that the subcommittee's Proposal, if adopted, would change the NH SEC sound standard for wind turbines from a not-to-exceed 45/40 dBA Leq(0.125 s) to a not-to-exceed 45/40 dBA Leq(≥5 minute) and leave the final determination of the compliance interval to the judgement of the individual conducting the sound test. *See* Proposal at paragraph 77. Instead of protecting public health and safety, this would have the immediate effect of gutting the NH SEC sound precedent and standard for turbine noise and hand compliance authority to self-interested parties with no regulatory authority or obligation to consider the public. The subcommittee has used a faulty reading of the rules and the ANSI standard to arrive at its Proposal with no apparent consideration of the impact. A change of this scale is clearly rulemaking.

In closing we encourage the subcommittee to withdraw the Proposal and invite an impartial expert to provide guidance. We also ask that the subcommittee consider a more open, public process for further fact-finding as the current method of limiting public input appears to be frustrating the sharing of information. If you have any questions regarding this letter, please to not hesitate to contact Lisa Linowes at 603-838-6588 or by email at lisa@linowes.com.

Respectfully,

Larry Goodman	Nancy Watson
Tripp Blair	Fred Ward, PhD
Barbara Berwick	Bruce Berwick
Ric Werme	Lisa Linowes
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