

THE STATE OF NEW HAMPSHIRE
SITE EVALUATION COMMITTEE

Docket No. 2015-02

APPLICATION OF ANTRIM WIND ENERGY, LLC
FOR A CERTIFICATE OF SITE AND FACILITY

LISA LINOWES, JANICE LONGGOOD, AND BARBARA BERWICK'S MOTION FOR
REHEARING JANUARY 5, 2021 ORDER

NOW COMES Dr. Fred Ward, in support of the Objecting Parties, and states as follows:

I. SOUND SCIENCE

The sound of the turbines in Ms. Linowes motion of 4 February 2021, shows there is an obvious harmonic due to the blade rotation, presumably as each blade passes across the supporting post. It appears that the period of this cyclical sound peak is about one spike per second, which comports with my visual observations of the turbines.

Every first-year student who plans to analyze a time-series of data, learns one fundamental truism, and carries it all his professional life. This truism was named after Harry Nyquist, and is known as the Nyquist theorem, or Nyquist frequency. Nyquist states that the sampling interval for any time series, such as that discussed by Ms. Linowes, MUST be sampled at least twice (and preferably more) during the shortest harmonic period in the time series, in this case ONE SECOND. This REQUIRES both Accenture and Tocci to restrict all of their discussions, and conclusions, ONLY to measurements taken AT LEAST twice per second. Their averaging of the AWE sound data are not just beside the point, and not just IRRELEVANT, they are deliberately MISLEADING!!

Averaging sound data over long periods belongs in “the dustbin of history”. Averaging it deliberately masks the obvious one-second harmonic, which is THE BASIC DATA. Tocci's refusal to acknowledge Nyquist shows that he lacks the fundamental knowledge to interpret a time-series of data. He should retract his conclusions, and allow a professional to conduct a proper analysis .

In Tocci's 24 August 2020 report, he selected the early evening of 26 July 2020 from 6 PM to 10:40 PM. Sunset that evening was about quarter past 8 PM, meaning that one-half of his data were taken in the daytime, and the other half were in twilight, prior to the radiative cooling which typically forms the “nighttime temperature inversion”. He also made no attempt to compare the winds during that period against the winds at the times of the complaints, despite being “retained by the NHSEC to measure sound during conditions similar to those” at the time of the complaints

Tocci's selection of dates/times, and his unprofessional analyses were insults; to this Committee, to the harassed neighbors, to all professional sound engineers, and to the general public, which your Committee has been charged to represent!

Tocci's broad “ignorance” of the basics of sound generation and broadcast, and of its fundamental dependence on the wind, disqualifies him from commenting on the Accenture report, or running any tests of complaints from neighbors. There is no information of value in his reports, and they suggest possibly much worse motives. He must not be involved in any Spring 2021 test.

In the AWE objection of 11 February 2021, Mr. Needleman (#10) misstates Ms. Linowes argument in his choice of the phrase “a momentary spike”. Fortunately, his selection of words precisely illuminated the issue. Averaging data with REGULAR and RECURRENT spikes, as in the AWE sound data, is NOT just ignoring “A MOMENTARY SPIKE”. It ignores multiple PERIODIC spikes, more accurately called “HARMONIC WAVES”. That's the Nyquist difference. Since Tocci seems not to have heard of Nyquist, he obviously cannot understand this difference.

Time is short. This Committee must decide on Accenture's and Tocci's replacement in time to have a Spring 2021 test conducted by unbiased professionals!

II. CONCLUSIONS

In the face of Tocci selecting an early evening to “compare” the turbine sounds against those at the times of the neighbor complaints, and agreeing to using (Accenture) average data to hide the extreme values, this Committee has no choice but to ignore his “conclusions”, cancel his mission, and hire a competent analyst, to both compare the results of neighbor's complaints, and comment on the Accenture collection and analysis of the 1/8th second turbine sound levels.

During the hearings AWE said this facility would cost sixty-five million dollars. \$65 million is a lot of money to risk. As insurance against this risk, wouldn't you expect that they ran a careful and professional analysis of their own sound data to ensure that their \$65 million was NOT at risk. THEY MUST KNOW THE REAL ANSWER. If their careful analysis showed they did NOT violate the SEC rules, mightn't they be happy to let us run a similar analysis, and verify theirs? But what if their careful analysis showed they were in violation of the sound limits?

What did their careful (secret?) analysis show?

Don't their repeated attempts to muddy the analysis of the sound data suggest an answer?

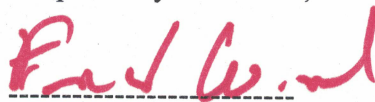
If there is an alternate reason that the SEC continues to employ, and rely on, the opinion of, a demonstrably incompetent “expert”, the neighbors need to hear it, and the SEC needs to state it prior to using him to comment on another “false” test in Spring 2021.

Does the SEC want to be on the side of defending Tocci's incompetence? Does the SEC lack the basic technical knowledge of sound generation and broadcast? If so???

Neither the human brain nor the human ear averages sound!!

Dated this 17th day of February 2021.

Respectfully submitted,



Dr. Fred Ward