State of New Hampshire

Site Evaluation Committee

Docket No. 2012-01

Antrim Wind Energy, LLC

Final Memorandum of Lisa Linowes

On behalf of the Industrial Wind Action Group

November 21, 2016

I. INTRODUCTION

Antrim Wind Energy, LLC ("AWE" or "Applicant") has petitioned the New Hampshire Site Evaluation Committee ("Committee") for a Certificate of Site and Facility to construct and operate of a 28.8 megawatt wind energy facility. The proposed wind facility ("Project") consists of nine (9) wind turbines, each with a nameplate capacity of 3.2 megawatts, to be situated along Tuttle Hill and Willard Mountain situated in the Town of Antrim, New Hampshire.

The Industrial Wind Action Group ("Windaction") respectfully proposes that the Committee find and conclude that the petitioner, AWE, has failed to meet the burden of proof with regard to certain criteria identified in RSA 162H :16 and SEC Site rules as discussed in this memo.

II. ANTRIM WIND LLC HAS FAILED TO MEET ITS BURDEN TOPROVE THAT IT IS ELIGIBLE FOR A CERTIFICATE OF SITE AND FACILITY

A. NOISE

The Project, as proposed, will exceed the noise standard under NH Site 301.14(f)(2) and produce an unreasonable adverse effect on public safety.

General

NH Site 301.18(c)(1) requires that expected noise emissions from the project be predicted according to the international standard ISO 9613-2 (ISO). The ISO standard is incorporated by reference in the NH Site 300 rules, Appendix B.

NH Site 301.18(c)(3) requires that modeled predictions be produced at all properties within 2 miles of the project wind turbines "for the wind speed and operating mode that would result in the ***worst case*** wind turbine sound emissions during the hours before 8:00 a.m. and after 8:00 p.m. each day." (Emphasis added)

NH Site 301.14(f)(2) applies a not-to-exceed (Lmax) sound standard during the nighttime hours (between 8pm and 8am) that is the greater of 40 dBA or 5 dBA above background levels, measured at the L-90 sound level, "on property that is used in whole or in part for permanent or temporary residential purposes, at a location between the nearest building on the property used for such purposes and the closest wind turbine."

Mr. O'Neal modeled project sound emissions using the Cadna/A commercial software product as developed and marketed by DataKustik. (APP 33 Attachment 9, at 7-2) Cadna/A incorporates the ISO exactly without altering its limitations, presumptions and known tolerances. *(Transcript 9/22/16, Day 4 morning, at 55, ln 4-12)*

The ISO standard produces equivalent sound levels (Leq) and assumes favorable conditions for sound propagation, corresponding to a moderate, well-developed ground-based temperature inversion, as might occur on a calm, clear night. (APP 33 Attachment 9, at 7-4) NH Site 301.18(c)(4) requires the predictive modeling report disclose and account for possible accuracy and limitations in the modeling method.

Mr. O'Neal agrees the purpose of conducting a predictive sound model is to determine the noise levels likely to be emitted from the operating project. He also agrees the modeled results are intended to ensure a project will operate in compliance with the established New Hampshire's rules for noise. *(Transcript 9/22/16, Day 4 morning, at 68, ln 11-19)*

Mr. O'Neal asserts that the "Antrim Wind Energy Project will easily meet the standard set forth by the New Hampshire SEC under NH Site 301.14(f)(2)a. (APP 33 Attachment 9, at 8-1). According to Mr. O'Neal, the maximum modeled project average noise level that will be experienced at any property is 38.1 dBA. *(Transcript 9/22/16, Day 4 morning, at 67, ln 8-14)*

Dataset Altered

Mr. O'Neal admits he removed 5 properties from his predictive model results when he filed his updated sound report in February, 2016. *(Transcript 9/22/16, Day 4 morning, at 129)* Mr. O'Neal

admits these 5 properties were included in his prior noise report (App 33 Appendix 13a). The updated sound report (App 33 Attachment 9) makes no mention of the removed properties. These 5 properties, if reinstated in Mr. O'Neal's dataset, show that the highest predictive average sound level for the project is 39.8 dBA. (App33 Appendix 13a at 7-7)

Mr. O'Neal asserts he removed one of the five properties from his data set because it was a "dilapidated hunting camp" that, in his opinion, was disqualified from the protections granted under the SEC rules. He admits that other structures including hunting camps, circular huts, trailers, garages, barns and sheds were retained in his report. *(Transcript 9/22/16, Day 4 morning at 129-130)* There is no evidence in the record that Mr. O'Neal inspected or sought independent expert opinion about each of the other retained structures to determine if they qualified or were equally unworthy under the rules.

Mr. O'Neal testified that the other 4 properties removed from his dataset were owned by individuals with agreements with AWE. Mr. O'Neal agrees that the SEC rules make no distinction between participating and non-participating landowners but removed the properties from his dataset nonetheless. *(Transcript 9/22/16, Day 4 at 129-130).*

G-Factor

Mr. O'Neal's model applies a ground attenuation (G-factor) of 0.5 representing "mixed ground" consisting of hard and porous ground cover. (APP 33 Attachment 9, at 7-3) Mr. O'Neal downplays the contribution of the G-factor in his model but admits a G-factor of 0.0 (hard ground) will add 3 dBA to his modeled results. *(Transcript 9/20/16, Day 3 afternoon at 116-117)* Doing so will show at least ten Antrim structures will experience average noise levels that exceed the Committee's standard. *(Transcript 9/22/16, Day 4 morning, at 71-72, ln 9)*

Mr. O'Neal testified that "sound levels for these types of sources [turbines] are driven largely by the direct path of propagation -- in other words, sounds coming from the wind turbine directly to a home, for example. That's the shortest line, the straightest line, and that's what's used in the

calculations to calculate the sound levels from the source to the receptor." *(Transcript 9/20/16, Day 3 afternoon, at 127, ln 1-8)*

Mr. Richard James agrees and further testifies "[a]s long as the hub and the blades are in line-of-sight, the primary noise that's going to be measured at the receiving location is going to be the direct sound, not the reflected sounds." *(Transcript 10/19/16, Day 10 afternoon, at 31, ln 16)* Under these conditions, "[i]t is likely significant sound energy will pass through the atmosphere and directly reach a home before it reflects off of the ground." No ground absorption will occur for the strongest elements of the sound wave that propagates to those properties. (Abutter 20-James May 23, 2016 at 17) Actual turbine sound emissions will be greater than those predicted by Mr. O'Neal's model which assumed turbine sound emissions are reflected off of absorptive ground.

ISO 9613-2 Tolerance (+/- 3dB)

Mr. James asserts that the ISO 9613-2 model for predicting sound propagation is a simple model that "only addresses sound propagation under limited noise source and receiver arrangements, calm wind and weather conditions, on flat ground for noise sources no more than 1km from the receiving location." Under those limited parameters, the ISO model requires a +/- 3dB be added to the results. (ISO Standard Section 9, Accuracy and Limitations Table 5). When one or more of the model assumptions are not met, these tolerances will be higher. (Abutter 20-James May 23, 2016 at 10)

Mr. O'Neal steadfastly refused to accept that the +/- 3dB applies when running the model under conditions outside the defined ISO parameters *(Transcript 9/22/16, Day 4 morning at 77-78)* While he admits the model is not perfect, he insists field evidence repeatedly shows good predictive results when just applying a G-factor of 0.5 and the K-factor (Siemens K-factor is 1.5 dBA). *(Transcript 9/22/16, Day 4 morning at 79-80)*

Mr. O'Neal touts several documents as validation of his modeling assumptions and accuracy. *(Transcript 9/22/16, Day 4 morning at 127, ln 7-14)*

Wallace et. al.

One of the reports Mr. O'Neal cites is Wallace et al (Exhibit WA-06). Wallace, however, does not support Mr. O'Neal's assertion that no tolerances are needed. To the contrary, it states that both the ISO +3 dB tolerance and the IEC K-factor tolerances are necessary.

According to Wallace:

> Informed by experiences from over 2,000 hours of meter position measurements recorded at 7 to 9 positions at Mars Hill, RSE's [Wallace] already conservative modeling approach became even more conservative. On all subsequent projects RSE's models included reported uncertainties in the apparent sound power[1] levels (+2 dBA) and in **ISO published limitations inherent Standard 9613-2 (+/- 3 dBA)**. (Exhibit WA-06 at 2)

Wallace also states:

> Stetson Mountain I acoustic model was virtually identical to the Mars Hill Model with +2 dBA added to account for uncertainty in the GE specification of the apparent sound power level and another **+3 dBA** to reflect mathematical limitations inherent in ISO 9613-2. (Exhibit WA-06 at 8)

[1] The apparent sound power level referenced here equates to the K-factor for the GE Turbine modeled by Wallace.

For both Mars Hill and Stetson, Wallace recommended use of G-Factor, the K-factor (2.0 dBA) for the GE turbines *and* also added the +3 dB to account for uncertainties in the ISO model. Figures 8, 9, 10, 11, 12 and 13 included in Wallace bear this out.[2]

Figure 11 is included below for ease of reference.

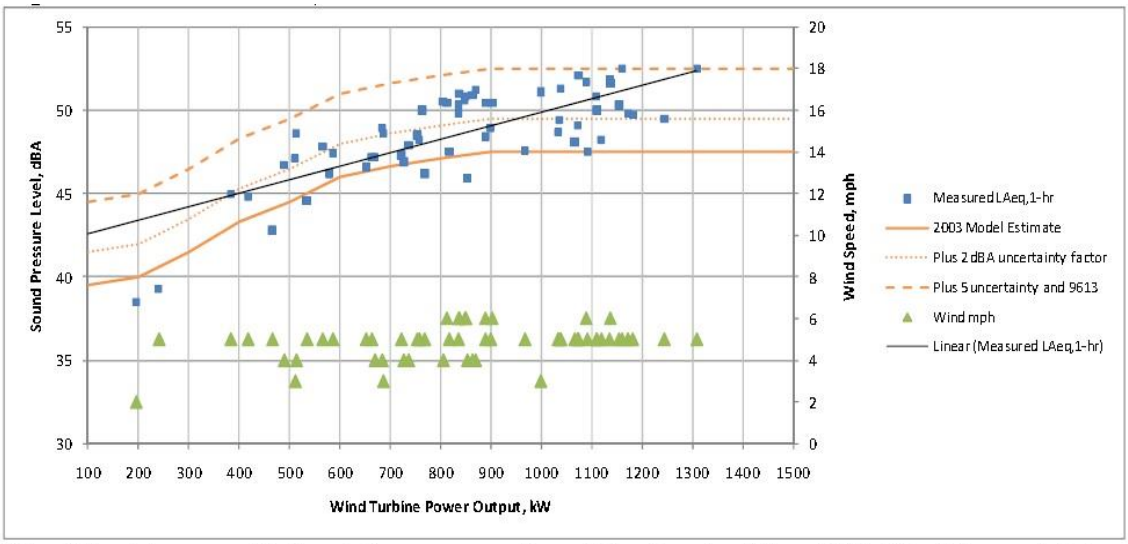


Fig. 11 – Measured LAeq,1-hr. vs. sound model estimate, Mars Hill Wind Farm, Maine

Mr. O'Neal agrees that in all cases, Wallace's data show that measured noise levels (blue squares) exceeded modeled sound level results when the + 3dB was NOT applied. Mr. O'Neal agrees that the blue squares plotted between the small and large dashed curves in the figure indicate where the model under-predicted actual measured sound levels. *(Transcript 9/22/16, Day 4 morning at 117-119)* They also varied widely in sound level from one measurement to another, contrary to Mr. O'Neal's repeated claims that modeled average sound levels will never be exceeded under any circumstances.

When the + 3dB is applied, Wallace's model works better. However, it is necessary to highlight that Wallace's model produced average noise predictions as he is also addressing Maine's Leq-based

[2] We note that at no time do the graphs in Figures 8-13 of Wallace show turbine noise measurements when the turbines are operating at full-power output (1500kW).

standard which requires averaging the measured noise levels over time. In figure 11 above, the measured noise is averaged over 1-hour (Leq 1-hr). Such averaging removes or flattens actual fluctuating turbine sounds like the blades passing by the tower. Under New Hampshire's "not-to-exceed" standard, all post-construction noise studies are to be taken using no averaging. Instead it requires meters to be set to measure 0.125-second (L_{fast}) intervals and Leq metrics. (NH Site 301.18(e)) As previously stated, the ISO 9613-2 standard produces equivalent or *averaged* noise predictions (Leq) over a period of time.

Mr. O'Neal's assertion that Wallace achieved better modeling results without the + 3dB (App 21 O'Neal August 18, 2016 at 5) is not relevant to this proceeding since his claim centers on a very narrow technical demonstration briefly discussed in Wallace involving a single control point (CP-4). *(Transcript 9/22/16, Day 4 morning at 128, ln 22)* Mr. O'Neal agrees that acousticians typically do not rely on single control points when assessing outcomes. *(Transcript 9/22/16, Day 4 morning at 126, ln 19)*

NH Groton Sound Reports

Mr. O'Neal also points to the Groton Wind (NH) pre and post-construction sound reports that he prepared for the Committee (Docket 2010-01) as further validation of his model's accuracy.

A review of the Groton Wind post-construction sound report ("Groton") reveals Mr. O'Neal's profound failure to adhere to professional protocols and standards such as ANSI S12.9 Parts 3 and 2. Given the description of his methodology (Groton, June 24, 2014 at 6-18), the measurement locations near snow-covered roads, trees and vegetation and a review of the L_{90} data in Tables 7-11 through to 7-25, it appears that Mr. O'Neal selected measurement locations designed to produce elevated sound levels due to sources *other than the wind turbines*. Mr. O'Neal even admits in Groton that his ambient noise measurements included periods of high ambient noise (vehicles, birds, insects, etc.) and wind induced noise. *ib* Such noise contamination in the data should have invalidated the results. Instead, Mr. O'Neal touts his work.

The methodology followed in Groton Wind is grossly contrary to the appropriate practices as defined under the standards now mandated in NH Site 301.18 and would be prohibited[3] under the NH Site 301.18(e). The Groton Wind post-construction assessment, as conducted, does ***not*** establish proof that Mr. O'Neal's predictive model is accurate to the degree that he asserts in this docket.

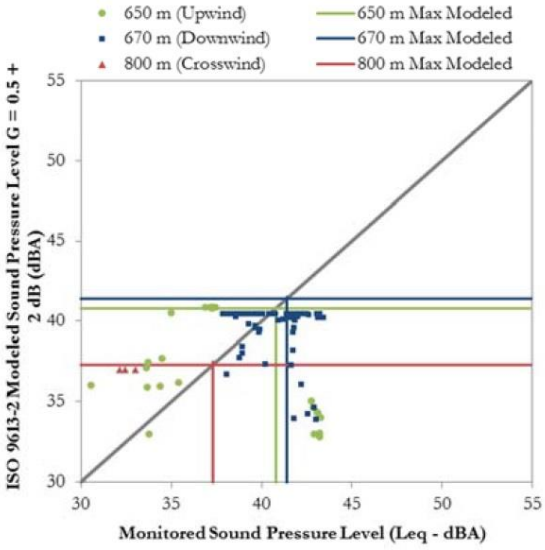
Massachusetts CEC Report

Mr. O'Neal also cites the Massachusetts Study on Wind Turbine Acoustics (Exhibit WA-12). According to Mr. O'Neal, the Mass. CEC study "has shown again and again that a G factor of .5, which represents a mix of porous and hard ground, plus the 2 decibel conservatism for the uncertainty from the turbines, is very accurate in calculating the results." *(Transcript 9/20/16, Day 3 afternoon at 116, ln 8-16)*

However, the report's results are not as definitive as Mr. O'Neal states.

Mr. O'Neal agrees that the chart shown below and taken from the Mass CEC report (Exhibit WA-12 at 65) denotes conditions that are representative of the model he ran for Antrim, i.e. mountainous terrain with a G-factor of 0.5 and added K-factor while making no other adjustments. *(Transcript 9/22/16, Day 4 morning at 107, ln 9-21)*

[3] Mr. O'Neal applied similar incorrect methods in Antrim (Docket 2012-01) and achieved similar inflated noise levels on his background noise survey. Committee rules, at the time, did not address method. It was Mr. O'Neal's methods, in part, that informed the legislature of the need for professional standards which were ultimately included in SB 281.



ISO 9613-2 G = 0.5 + 2 dB

Rather than supporting Mr. O'Neal's claim, the figure reveals many cases where the model under-predicted actual turbine noise measurements. The blue and green dots in the lower right quadrant of the graph and right of the vertical lines represent repeated under-predictions by the model. *(Transcript 9/22/16, Day 4 morning at 108-109)*

Mr. O'Neal insists the noise exceedances in the graph were an artifact of the turbine on/turbine off measurements. *(Transcript 9/22/16, Day 4 morning at 110-111)* But Mr. James disagrees. Data contamination to that degree would throw the results of the entire study into doubt. *(Transcript 10/19/16, Day 10 afternoon at 61, ln 19-24)* He further asserts that researchers would have taken care to remove transitional turbine sounds and not allow it to affect the data. *(Transcript 10/19/16, Day 10 afternoon at 61-63)* In any event, Mr. O'Neal agrees that turbine on/off events are not unusual and will occur in the field under normal operating conditions including when the winds drop below turbine cut-in speed or exceed turbine cut-out speed. *(Transcript 9/22/16, Day 4 morning at 114)* If such sound spikes occur at an operating Antrim project, there will be properties in Antrim that will experience noise levels that exceed the permitted not-to-exceed limits allowed under the SEC noise standard.

We note that Mr. O'Neal could not explain why the Mass CEC report (on which he collaborated) found no such transition exceedances when the G-factor for the model was set to 0 (hard ground). *(Transcript 9/22/16, Day 4 morning at 113, ln 5-21)*

IEC 61400-11 Test and Meteorology

Mr. O'Neal testified that the IEC 61400-11 standard test is conducted on flat ground. *(Transcript 9/22/16, Day 4 morning, at 53, ln 6-16)* Mr. James concurs and further states that the land where the IEC test is conducted is essentially barren (little to no vegetation or surface shrubbery) to limit ground turbulence that might alter the test results. *(Transcript 10/19/16, Day 10 afternoon, at 36, ln 12-24)*

Mr. O'Neal asserts that Siemens guarantees the apparent sound power level for the turbines as calculated under the IEC standardized test. Mr. O'Neal admits that he has not seen the Siemens guarantee. *(Transcript 9/22/16, Day 4 morning, at 100, ln 1-9)* A manufacturer's guarantee might be higher than the IEC 61400-11 test results if the guarantee accounts for meteorological conditions that occur outside the IEC test conditions, however, Mr. O'Neal admits he has never seen a K-factor higher than 2 dBA. *(Transcript 9/22/16, Day 4 morning, at 101, ln 15)*

Mr. O'Neal asserts that the highest sound level of 107.5 (including the K-factor) for the Siemens turbine will be reached at the Antrim project site when wind speeds at hub height are approximately 9.9 m/s as calculated using the IEC 61400-11 logarithmic profile[4]. (App 33 Appendix 13s at 6-2).

Mr. O'Neal admits that specific meteorological parameters, like stability, turbulence, are not specific inputs to the ISO 9613-2 modeling standard. He also admits that turbulence is not accounted for in the model and would have to depend on the conditions under which the IEC 61400-11 testing was done. In this way, turbulence would be incorporated into the turbine sound power level. *(Transcript 9/22/16, Day 4 morning, at 94, ln 6-19)* Nonetheless, Mr. O'Neal insists there are no atmospheric

[4] This 9.9 m/s hub height wind speed corresponds to a 7 m/s wind speed at a 10-meter reference height as reported out of the IEC 61400-11 test. (App 33 Attachment 9 at 7-1)

conditions, temperature gradients or wind shear gradients that might occur at the project site that will cause turbine sound levels at any given location to be higher than what his model predicted. (Exhibit WA-08 at 11)

This statement is contradicted by two separate sources in the docket.

First, Mr. James makes clear that the IEC 61400-11 test is run when winds are producing a steady in-flow air with little or no intrinsic turbulence and a wind shear coefficient of less than 0.2 so that the angle of the blade is always optimum for power extraction. He further states (emphasis added):

> Power extraction is maximized and noise is minimized by assuring that during the tests the wind speed over the area that the blades travel has little variation from the bottom to the top of the rotation pate and there is little turbulence in the wind. **These conditions do not represent what happens when the wind turbines are put in operation for ridge mounted projects as proposed by Antrim Wind LLC. Under these real-world conditions wind turbines produce considerably more noise** and the relatively steady noise observed on the test stand on flat ground with optimum winds can become a whooshing and thumping noise that is even more disturbing. (Abutter 20-James May 23, 2016 at 12-13)

Second, the NARUC report filed with the Minnesota Public Utilities Commission and authored by David Hessler makes this statement about the model:

> Wind turbine sound levels naturally vary above and below their mean or average value due to wind and atmospheric conditions and can significantly exceed the mean value at times. Extensive field experience measuring operational projects indicates that sound levels commonly fluctuate by roughly +/- 5 dBA about the mean trend line and that short-lived (10 to 20 minute) spikes on the order of 15 to 20 dBA above the mean are occasionally observed when atmospheric conditions strongly favor the generation and propagation of noise. (Exhibit WA-28x at 12)

With regard to modeled noise predictions, the NARUC report states:

> The model results using this standard [ISO 9613-2] need to be interpreted as the expected sound level under "average" conditions, meaning that the actual sound level will be close to the prediction much of the time but higher and lower levels will occur with about equal regularity due to fluctuating atmospheric conditions, which affect both the generation and propagation of wind turbine noise. (Exhibit WA-28x at 14)

In fact, AWE has stated that while the annual *average* shear exponent at the project site was a low 0.13 (in 2010) the wind shear exponent was found to be greater than the IEC limit of 0.2, at hub-height when wind speeds were above 3 m/s, approximately 19% of the time. According to AWE, these periods occurred more frequently at night (8:00 PM and 8:00 AM) with a maximum shear exponent was 1.19. (Exhibit WA-08 at 13)

This tells us that the turbines will frequently be operating under atmospheric conditions that are more turbulent than those assumed during the IEC 61400-11 test. As the turbine blades pass through different wind speeds during a rotation there will be a loss of efficiency which will result in more noise. (Abutter 20-James May 23, 2016 at 16)

Discussion

Mr. O'Neal's predictive model does not address the maximum noise levels that will be produced by wind turbines when operating at the Antrim site under worst case conditions. Mr. O'Neal ignores the fact that the manufacturer's sound power level test (IEC) does not reflect operation in turbulent, high-wind shear conditions. Instead, he denies there will be any atmospheric conditions that might cause actual emissions to be greater than what he predicts. Mr. O'Neal also does not account for the fact that the ISO standard predicts equivalent sound levels (Leq) which, by his own definition, will flatten any turbine noise fluctuations. Under New Hampshire's not-to-exceed standard, these fluctuations will, in part, determine whether a project is operating in compliance with the standard.

Mr. O'Neal complained that applying the ISO 9613-2 tolerance of +3 dB would needlessly inflate his predicted values, however, the real-world report (Wallace) he touted to justify his claim made clear the tolerance was necessary. In fact, Wallace showed that without the tolerance the models under-predicted actual turbine sound levels. Similar under-predictions were found in the Mass CEC report. The SEC requirement to follow the ISO 9613-2 standard carries with it a requirement to properly apply confidence levels associated with the standard's algorithms. The fact that the +3dB is not articulated explicitly in the SEC rules does not mean a modeler is at liberty to choose which tolerances to include

and which to ignore. Had Mr. O'Neal submitted reports that supported his position, we might give his claim more credence, but no such reports were provided in the record.

Mr. O'Neal's predicted sound levels are already at the 40 dBA limit (39.8 dBA) without the + 3dB applied. As modeled, the Antrim noise emissions will be unreasonably adverse. Had Mr. O'Neal applied the appropriate tolerances, adjusted the model output to account for the Committee's not-to-exceed standard, and further accounted for periods of high turbulence and other atmospheric conditions that are outside the IEC test parameters, Mr. O'Neal's model would predict noise levels that are well above the Committee's standard and outside the limits of what can reasonably be achieved using noise reduction operation (NRO).

B. SETBACKS

The Project, as proposed, will produce an unreasonable adverse effect on public safety due to ice throw and other catastrophic risks and the close proximity to private property.

This memo reaffirms Windaction's testimony regarding the risks of ice throw and catastrophic turbine failure. This memo focuses on several issues that we believe require additional clarification.

Ice Throw and Safety Zones

AWE asserts, based on empirical data, that DNV GL has observed ice throw up to 250 meters (820 feet) at an operational wind project. (App 24 Kenworthy at 27) AWE asserts that the distance between any turbine and the nearest residence or other occupied structure is greater than ½ a mile and beyond the maximum distance ice fragments could travel. (App 24 Kenworthy at 27) AWE provides no information as to the maximum distance ice can throw. AWE only provides a single distance (250 meters) that was observed but with no context. AWE admits it did not conduct a site specific analysis of the project location regarding ice throw. *(Transcript 9/29/16, Day 7 morning, at 98, ln 12).* Several abutters have testified that they are unwilling to permit AWE's turbines to throw ice or other debris onto their properties. (Clark Craig Abutter)

If the ice-throw zone is permitted to extend onto abutting properties, the Committee will, in essence award AWE an uncompensated safety easement across private property even though that neighboring parcel was not leased to the project. Doing so could potentially strip future development rights of those properties from Antrim citizens and deliver those rights to AWE.

The SB99 stakeholder group that prepared draft rules for the Committee on public health and safety deliberated on this issue of safety setbacks. While we could not reach agreement on what that distance should be, there were a number of points that we did reach consensus on. The table below lists our points of agreement including #7 which states "in no case shall safety zones encompass portions of non-participating properties, public roads or public gathering areas." (Exhibit WA-01, May 23, 2016 at 14)

The official record containing the below table is cited in Exhibit WA-01 footnote 6 and can be found on the SEC website under the rulemaking docket (2014-04: Letter from NH Office of Energy and Planning, August 12, 2014).

SAFETY ZONES - Ice/Blade Throw, Other Catastrophic Failure	
1.	Turbines shall be curtailed during periods of ice accretion.
2.	Turbine technology shall be implemented which will prevent ice accretion or operation during periods of ice accretion.
3.	The use of warning signs is required to alert anyone in the area of risk.
4.	Operational staff should be aware of the conditions likely to lead to ice accretion on the turbine and conduct visual inspections to ensure the turbines are not operating with ice on the rotor unit.
5.	A safety zone or setback distance shall be defined for each turbine.
6.	The SEC may reconsideration the size of the safety zone if the applicant submits a risk assessment that includes project-specific information and mitigations that will adequately protect the public.
7.	In no case shall safety zones encompass portions of non-participating properties, public roads or public gathering areas.

Ice Throw Risk

Windaction's prefiled testimony includes a chart depicting the degree of allowable risk associated with ice throw that a party may be willing to assume as it relates to ice throw. (Exhibit WA-01, May 23, 2016 at 11) The figures along the x-axis represent the risk (1 in a million for example). This risk is not intended to depict the likelihood (or rarity) of an ice event harming a person or property as some have

suggested in during the hearings. Rather, this figure is akin to a public health risk as is codified in NH RSA 485-C:6 Ambient Groundwater Quality Standards. In statute, the State has established that groundwater quality standards be developed that "shall be equivalent to that exposure which causes a lifetime exposure risk of one cancer in 1,000,000 exposed population."

It is Windaction's view that the risk should be as close to zero as possible so that the project does not increase risk to the public significantly compared to daily risk in society. In this case, the public would include abutting property owners whose properties are close to the turbines or hikers, snowmobilers and others who might be in the area. A zero or near-zero risk according to the chart for areas with heavy icing would establish a 400-meter safety zone around the turbines. Higher risk may be accepted for employees at the facility assuming they are provided with sufficient information and routines to avoid harm.

C. TECHNICAL, MANAGERIAL, FINANCIAL

AWE has failed to demonstrate it has adequate financial, technical, and managerial capability to assure construction and operation of the facility in continuing compliance with the terms and conditions of the certificate.

Technical, Managerial

Mr. Weitzner admits that, as a sole proprietor operating as Walden Renewables, he has developed just eight solar projects representing a total of 10 megawatts including a small solar thermal system. The total cost for the eight projects was about $28 million. *(Transcript 9/15/16, Day 2 morning, at 112-113)* At least one of the projects, Whitcomb Solar, was approved by the Vermont Public Service Board after a 1-day hearing. The project received a guaranteed feed-in tariff price of $270 per megawatt hour (27 cents per kWh). *(Transcript 9/15/16, Day 2 morning, at 114-115)* The complexity of siting Mr. Weitzner's solar projects and the level of public involvement is clearly less onerous than what we are

seeing in this docket. Mr. Weitzner admits to a difference in scale between the smaller solar facilities and the Antrim Wind project. *Ib*

Mr. Weitzner admits that he and his partners, Ms. Valdovinos and Mr. Manahilov, have never been involved in the construction or operation of an industrial-scale wind energy facility. Mr. Weitzner also admits that RWE has never constructed a wind energy facility in the United States. *(Transcript 9/15/16, Day 2 morning, at 116 and 121)*

In contrast, the Deloitte report from the prior Antrim docket 2012-02 recognized that the principals of then Westerly Wind came to the project with significant wind development experience in the United States. *ib*

Mr. Weitzner touts the relationships with Reed and Reed and Siemens and insists the project will be a team effort comprised of experienced parties but he also admits he is responsible for managing the project and that the Committee will ultimately decide according to his ability to run the project. *ib*

Financial

The docket record is essentially devoid of any financial information on which the Committee can assess the financial viability of Antrim Wind LLC or Walden Green Energy LLC. AWE has supplied two statements of assets and liabilities. The first, dated June 30, 2015 is an unaudited statement of assets ($73,598.98) and liabilities ($10,976.96) showing working capital of just $62,622. (App 33 Appendix 1) The second statement, dated March 31, 2016 and supplied to the parties in response to a data request by Counsel for the Public, showed assets of $1,417,475.89 and liabilities of $119,961.43 with working capital of $1.3 million. (Exhibit WA-01 Attachment) To our knowledge, this document has not been updated in the record.

AWE supplied a public pro forma for the project which was little more than a rough summary of project revenues and costs aggregated into two buckets – the first 10 years and the later 15 years. The detail in the public pro forma was not adequate to assess the project's assumptions or to test its financial viability.

AWE also provided Windaction with a confidential pro forma under a protective order issued by the Committee. The confidential pro forma included several material omissions and errors including:

a. No information was included on debt and debt service reserve fund;
b. The investment tax credit (ITC) was incorrectly applied to all depreciated assets;
c. The pro forma failed to break-out 5-year (MACRS) assets from 15-year assets for depreciation purposes and application of the ITC;
d. No working capital was accounted for in the pro forma;
e. The model assumed 100% NEPOOL capacity payments despite the risk to intermittent resources like wind of receiving no capacity payments or being subject to performance penalties under the ISO-NE pay-for-performance rules;
f. The dollar amounts identified for operations and maintenance costs (O&M) included the cost of a maintenance contract with Siemens or other third party and also employment costs but there was no way to assess whether there was adequate budgeting to account for catastrophic failures. Mr. Weitzner stated that insurance would cover loss of revenue during down periods as well as turbine failure not covered under the Siemens warranty but could not provide any detail on what limits were on the coverage and the cost of that coverage.

In short, the superficial pro formas that were provided appeared to be overstate revenues, understate costs, overstate the depreciation benefit, and overstate the investment tax credit. If any of these gross line items are not realized the project would be in jeopardy. Mr. Weitzner dismisses these concerns claiming "we've shown these numbers to professionals that make their living lending money to wind farms. They have looked at these numbers, and they have confirmed and validated our assumptions about how much equity we will need to put in, how much debt and how much tax equity the project can support."

That may be true. The problem is that there is no evidence in the record to substantiate Mr. Weitzner's claim.

*** NOTE ***

The above discussion cites from non-confidential portions of the non-public transcript. Windaction corresponded with AWE regarding the portions that are cited herein. The email that follows between Windaction and AWE attorneys confirms our correspondence about this matter.

From: Walkley, Rebecca [mailto:Rebecca.Walkley@mclane.com]
Sent: Thursday, November 17, 2016 12:02 PM
To: Lisa Linowes <llinowes@windaction.org>; Needleman, Barry <BARRY.NEEDLEMAN@mclane.com>
Subject: RE: Docket 2015-02: References to confidential cross [MCLANE--.FID1379296]

Lisa,

All of the statements you highlighted in the attached document, excluding the numbers as discussed in the prior email, are considered non-confidential.

Rebecca

D. OTHER – Proposed Conditions For Future Structures

In response to the Committee's request, AWE prepared proposed draft conditions to address noise and shadow flicker at future structures that might be impacted by the operating wind project. Windaction appreciates the opportunity to comment on the proposal.

Condition 1: No issue

Condition 2: The second bullet needs to amend "residential use" in order to incorporate the words "property that is used in whole or in part for permanent or temporary residential purposes" to be consistent with Site 301.14 (f)(2). For shadow flicker, the wording should incorporate "any residence, learning space, workplace, health care setting, outdoor or indoor public gathering area, or other occupied building."

Condition 3: No issue

Condition 4: Any notification to the property owner must inform the owner that the maximum sound power level (Lmax) at the property will not exceed the Committee's standard in Site 301.14 (f)(2). For shadow flicker, the notification can inform the property owner of the maximum number of hours of flicker per year but at no time will that number exceed 8 hours per year.

Condition 5: We see no reason for this condition. The rules, as written, impose an obligation on the Committee to protect health and safety. This condition suggests that a private "negotiation" between a property owner and AWE that happens outside the purview of the Committee is enough to waive the rules. If AWE is seeking this outcome, it would set a precedence that is contrary to the plain wording of the rules. If others disagree, Windaction respectfully encourages the full Committee to open a docket on this issue and other rule-related questions raised in 2015-02 (ex: definition of infrastructure Site 301.08 a) and encourage stakeholder input.