

# **The State of New Hampshire Site Evaluation Committee**

## **In regard to Antrim Wind Energy Docket 2015-02**

### **Post Hearing Brief of Stephen Berwick, abutter**

The Applicant should be denied permission to construct a wind turbine on land zoned by Antrim citizen vote to be Rural Conservation Land. Please consider the following:

#### **Landowner's Rights**

If the SEC rules in favor of AWE you will effectively be taking away the rights of property owners to use their land for whatever purposes they wish in the future. These turbines will be in place for 25 years. During those years it is not only conceivable, but probable that some property would be subdivided, either to give to children, or for other purposes. Yet, most of the current abutter's lands is located in areas that can not meet the SEC rules for health and safety.

The land that abutter's and others own will no longer be able to be used by the landowners. This issue could and should have been prevented by insisting that all health and safety standards are met at abutting property lines. My parents own 38 acres; my maternal grandfather owned 40 acres. He gave a portion of land to one of his sons, my uncle, to use as a house lot. Before him, my great -grandfather gave a portion of his land for his daughter to use as a house lot. On my father's side, my grandfather was given land by his father to build his home. This is a natural course of action in many families. If you allow these windturbines to create noise and flicker levels above the levels created for HEALTH and SAFETY then you will be taken away this right from not only the abutters, but all landowners within the affected area. You would be taking away my rights, my brother's and my sister's as well as other's like us. You would be taking away my parent's rights as well as those of others in the same position.

The SEC rules apply wherever there is a temporary or permanent residence. My parents, at a significant cost, both financially and physically, have constructed a camp out at the back of our property. My mom has camped out there and they have invited friends and family to enjoy the camp any time they want to have a peaceful night or few weeks in the woods. Obviously, they have done this to bring front and center the health issues that Antrim Wind will create on our land. The camp is finished, it is built, and it is well outside of the sound limits that the SEC has made. My advice, going forward, after denying AWE their application, is to insist that all IWT's meet the sound and flicker obligations at the property lines of abutter's properties.

#### **Ice Throw**

I am sorry that I was not able to be there at the hearings. Obviously, this shows a bias towards the industry vs. the common man. We have work obligations that prevent us

from being able to participate fully in these hearings. I digress. Ice throw is a complicated factor, at present; Antrim Wind has NO safety measures to protect people near the turbines. It is quite easy to determine the potential ice throw at maximum speed on flat land with no wind assistance. This calculation comes out to put ice throw on private land. Obviously, adding meteorological conditions and ice shapes can increase this number even with wind resistance. A factor I have noted in the industrial wind turbine world is the idea that if one IWT has been constructed in such and such a manner, then, every IWT's should be able to follow that "standard". The companies site each other as "proof", while never mentioning all the disasters! Of course, the first IWT's were constructed with almost no standards; so following suit leads to disaster. Each state seems to look to surrounding states for wisdom, or to the IWT companies themselves. Studies done by IWT companies or by those advocating IWT's are biased and should not be allowed. These same companies have "studies" that prove land values don't decrease. Perhaps they don't decrease if left on the market for a very long time, but certainly the pool of interested buyers does decrease, and in turn that does decrease property values.

My brother, sister and I played in the woods, we hiked, followed streams, looked for bear scraping on trees, built secret forts, picked blueberries, created bike obstacle courses and had adventures. There will be children walking up to the turbines; there will be hunters, and hikers. An area around the turbine needs to be secured by fencing, and that area needs to be at a minimum 1.5 hub height plus rotor diameter, plus a factor added for the elevation.

### **Environmental Impact**

Every aspect of wind turbines are "more than meets the eye". Beginning with the mining of the rare earth elements that are needed in large amounts for the power generating components in each nacelle. The processes used create significant pollution and radioactive waste. Large amount of non rare earth elements are also used- also mined, mostly in open pit mining. The pollution created in the mining process alone is overwhelming. Then there is the construction, mostly done overseas. These turbines are not small; there are a lot of materials used. Transporting these massive structures from overseas, the amount of cement used, the amount of construction work. The life span is about 20-25 years. The huge amount of money to construct them versus the output and life span are not saving our environment, but destroying it. As an unsteady producer of electricity they require traditional power sources for backup. Almost all wind turbine projects have projected capacity factors that are greatly elevated. They are wasting taxpayer's money, money that could be used for true long-term solutions. The wind industry has been receiving huge subsidies for over 20 years and still without subsidies cannot begin to be financially sustainable.

### **Flicker and Sensors**

Quality control for all new products involves testing to uncover defects. AWE is planning to use an untested product to control shadow flicker. As an engineer I know how important testing is. Siemens answered the SEC committee that its flicker control product is being created just for this project. No other company would state that their product would work because there are other companies out there making the same thing. Siemens has never created this product. They have not tested it; it's not even

clear if it actually has been created yet. Why would a company create a product that it specifically just for this project until it is sure it will be financially compensated? Testing a product like this takes a lot of time to prove out and ensure all the bugs have been worked out and what environmental factors might cause the sensors to be ineffective or fail.

According to the data request, which was requested in September but not received until after the final day of hearings. These sensors will not have any cleaning schedule, "The system continuously self-monitors for data validity and sensor health. If the sensors are obstructed (dirt, ice, bird nests, etc.) the system will alarm. This alarm will then trigger inspection and maintenance." How will this system recognize that it is covered with a light coating of dust, or a thicker coating of dust? Obviously, if this sensor is not kept completely clean it will not be able to measure the intensity of the light accurately and will not provide accurate data. What this answer shows to me is that the object is to have an "appearance" of compliance. How much "dirt" does it take for this alarm to trigger inspection? If it takes a bird's nest before it triggers than it didn't trigger when there was just a few bits of straw. How much ice and snow will it take to trigger an alarm and how can the sensors possibly be kept clean of snow and ice in our climate?

Calibrating is done to measure the allowable tolerance range, check the stability of past calibrations and adjust the accuracy drift. To suggest that the sensor equipment used outside will only be calibrated every three years is very disconcerting. *"REQUEST: How often will the sensors be calibrated? Response: The sensors will be calibrated the earlier of every three years or in accordance with the sensor manufacturer's recommendations."* Three years is a significant portion of time for a product pertaining to the health of the public to be exposed to the elements and so critical in the compliance of controlling shadow flicker. Again, the appearance of compliance! Also based on AWE response it sounds like no company has even been selected for these sensors.

### Sound Study

I found that the conversation during Day 4, morning session line 116 sums up nicely the fact that even with a **K factor of 2**, a **G factor of 0.5 AND an ISO uncertainty factor of 3 decibels** there will be events that create noise levels above that predicted. This shows the importance of, at the very minimum, including the ISO uncertainty factor which has not been done in the AWE study. Below is the conversation from that day.

*Day 4 morning page 116 line*

**Q.** *Okay. Mr. O'Neal, in your attachment, this will be App. 33, Attachment 9, and I don't think there's a need to go to that. But, on Page 7-4, you make a statement that "two ridgeline wind farms in Maine, Mars Hill and Stetson Mountain I, were found to be below modeled predictions even under worst case operating conditions." Do you remember writing that?*

**A.** *Yes.*

**Q.** *And then you also pointed to this Wallace paper that I'm talking about. Correct?*

**A.** *Correct. MS. LINOWES: Sorry, Mr. Chairman. BY MS. LINOWES:*

**Q.** *Okay. Now, if you can go to Page 2 of that report. It doesn't actually have page numbers. So, it's the physical page 2. In the last paragraph, it states "Informed by experiences from over 2,000 hours of meter position measurements recorded at 7 to 9 positions at Mars Hill, RSE's already conservative modeling approach became even*

more conservative. On all subsequent projects, RSE's models included reported uncertainties in the apparent sound power levels (**plus 2**). That would be the **K factor**, correct?

A. Correct.

Q. "And published **limitations inherent in ISO Standard 9613 of 3 decibels**." Do you see that?

A. Yes.

Q. Okay. In other words, they added 2 decibels for the K factor, which you add in, you add the 1.5 for the Siemens, and they also added in the 3 for the ISO Standard, correct?

A. Correct.

Q. Okay. Now, I want to draw your attention to Figures 9, 10, and 11 in that report. These are after all of the text. They would be on Page, pdf Page -- I don't know what the -- pdf Page 16. Now, all of these are basically the same. So, we'll focus on the one, the Leq one, which would be the third one, the one on the bottom of the page, if we can, Figure 11. Okay. Now, do you recognize this chart?

A. Yes. I'm there.

Q. Okay. And you've seen this before?

A. Yes.

Q. Okay. And that solid orange line that you see there, those are the modeled results from that, before any adjustments were made. Do you see that?

A. Yes.

Q. And, then, the small dash line is the adding in of the turbine uncertainty, which is the plus 2 in this case, your 1.5, correct?

A. Yes.

Q. And, then, also the dark -- **the large dash line would be adding in the 3 for the ISO**, plus or minus 3 decibel correction. Do you see that?

A. I do see it, yes.

Q. **Which you say doesn't have to be done, correct?**

A. Correct.

Q. Okay. Now, in their measurements, those blue dots now are actual measurements of turbine noise coming from the project, okay? Now, what I want to concentrate on are the blue dots that appear above the small dash line, the small dash, which is would be comparable to what you are stating should be done. I should say for the record, this was using a ground -- **G factor of 0.5 as well**. Now, **do you see how many actual numbers, actual recorded noise levels exceeded the plus 2?** Do you see that?

A. I do see some, yes.

Q. Okay. So, they had a very different experience. This is a document that you pointed to as showing that the projects are -- that the model is very -- works very well. And what is this actually showing here at Mars Hill?

A. I was actually commenting on the Stetson, the Stetson results, a little bit further back.

Q. I understand. I appreciate that. But I'm asking you about this portion of it.

A. This portion? This shows some of them above that, yes. Yes.

Q. So, there were under predictions with the model, even when they added -- when they just added in the turbine uncertainty, correct?

A. Correct.

Q. Okay. And, now, I'd like to call your attention to WA-27-x, if I may. This is a letter that I handed out earlier today. This letter is written from the State of Maine Department of Environmental Protection, to First Wind, which is the company that had owned the Mars Hill Project. And I wanted to go to the second page there, about the fifth line down. And it begins towards the end of the line. It says "The Department recognizes that Mr. Brown", **Mr. Brown was the consultant working with the State of Maine on acoustics**

***issues, "found the data at monitoring location MP-8 to be up to 2 decibels over the allowed limit of 5 decibels." DR. WARD: Fifty. BY MS. LINOWES: Q. -- "50 decibels for approximately 15 percent of the time." So, in fact, the actual operating project was found to be even higher output noise level than what the model did, even with the plus 2 and the plus 3?"***

As seen by the conservation above, **Not** including the ISO factor of uncertainty, and having a G value of 0.5 the worst case scenario was not modeled. It is almost certainly creating a situation in which noise levels will exceed the predicted values.

This project should be rejected; the SEC should not allow construction when there is every reason to believe that both flicker and noise levels will be exceeded. It should not take away private property landowner's rights and should not allow ice to be thrown ever on a non-participators land.

Sincerely,  
Stephen Berwick