

May 11, 2016

New Hampshire Site Evaluation Committee
NH Dept. of Environmental Services
29 Hazen Drive
Concord, NH

Re: Docket No. 2015-02
Antrim Wind Energy, LLC

What is your name and occupation?

My name is Barbara Berwick and I am a Registered Nurse. I retired in June 2014 in order to provide care for my mother who had Alzheimer's. She passed away at our home on Nov 21, 2015 at the age of 95.

Where do you live?

I live at 72 Reed Carr Rd, Antrim, NH and have lived here for the past 23 years. Our property abuts the windmill project, We will be about ½ mile from a proposed turbine.

Were you involved in the previous SEC hearings?

No, I was not, I did not want the windmill in our backyard mostly due to the visual impact. I really wasn't aware of the noise and flicker issues, or of the birds/bats killed by windmills. I'm afraid my view was that I couldn't really make any difference, that whatever would be, would be, and no one would really care how it affected us, only how it affected them. It was obvious that the Antrim Wind was prepared to spend big money and usually big money wins. I was working full time, taking care of my mom part time and like so many of my neighbors who don't want the windmills coming in, I felt too busy and powerless to do anything. I am so grateful to those who did fight for us last time. They showed that "little people" can make a big difference. Now I'd like to see if I can make a difference.

How will this project affect you?

This project will impact my family's lives personally in many ways. We have a direct view of Tuttle Mountain at all times from almost every cleared area of our property. It's the first thing I see when I wake up in the morning. Right now, it's beautiful to watch the clouds come over the mountain, listen to the peepers in the pond, see the beautiful foliage in the fall, the tall pines sticking out above the other trees, wake up to the sounds of the birds, even to sit on the deck at night and watch the stars. If the windmills come in we will have our quiet country way of life changed forever, with constant noise, loss of our beautiful views and flickering of light. We won't even be able to sit outside and look at the stars without the lights from the top of the towers interfering. I'm truly afraid that we will not be able to continue to live in our home as I am very sensitive to light changes and the flicker that will be caused by these windmills will definitely affect me. We had a ceiling fan in our house that had 3 lights below the fan. I could not stay in the room if the fan and lights were on. It bothered me so much, it actually made me physically sick. It didn't bother the others in our home, but was intolerable to me. How will we be able to continue to live in our beloved home with flicker? Then the noise that will be created will be the equivalent noise of 9 chainsaws going day and night. During motorcycle week we hear clearly

the motorcycles going by on Rt 9, which is farther away than these turbines will be. There noise is extremely unpleasant, but it's just for a week or so. We also can hear the whistle that Monadnock Paper Mill blows every day and Monadnock Paper Mill is 14 miles away. To say that 9 chainsaws running right in our back yard will only create the equivalent of a refrigerator running is obviously ridiculous! Some sounds are peaceful, such as the sound of the peepers that I hear even now, but these turbines will not be peaceful. We chose to live in a very rural area deliberately, not a business district. It was important to us, and that will be taken away from us. With my mom, I would go out and sit at the table on our porch for all meals and sit in the rocking chairs out there with her for hours on end (she couldn't be left alone at all). If you've ever been around a person with Alzheimer's you realize that they will ask the same questions and make the same statements at least 400 times a day (no exaggeration). One of the statements my mom would continually make is how much she liked it here, how peaceful it was. How much my dad would have liked it here. Then she would talk about the clouds coming over the mountain, which direction they were going. My mom is gone, but if this project goes in, no one will ever comment about how peaceful and beautiful it is at our home ever again. I should also add that despite Antrim Wind's assurance that house price don't drop due to being close to windmills, I am positive that the value of our property will be greatly reduced and I ask that if you do allow this project to go through you make some arrangements for Antrim Wind to buy all the properties from those affected by this project who wish to sell. With that said, I don't want to move. There is no place else I want to live, we have spent so much of our time and energy fixing this place to be our home, so please do not allow this project to go through.

You were asked to allow Eolian to perform their sound and wind studies in their yard, were there any issues of concern?

Yes, During the first study we had hired a person to build a deck for us. The equipment was set up very close to where the work was being done. I asked one of the Eolian people about this as the workers were doing a LOT of sawing, hammering, etc. The answer I received at the time was that this type of noise would be filtered out. I believed them. For the second study, it was done this past January, right after we returned home from our daughter's home in WA. There was a thick layer of ice on everything and during a bit of a warm up I felt I had to do what I could to remove the ice, this involved making a lot of noise. I mentioned this to one of the people who came out and the answer I received was not that "it would be filtered out" but rather that it was okay because there were still quiet times and the machine measured them all. It would seem that the sawing and hammering WERE included in the first report. More troubling was during the hearings on April 25th and 26th when I saw for the first time the sound and wind report I was shocked to read that " Overall, ground level winds were light (below 2 m/s) at Locations L1 through L4" this is from section 6.2 (we were L4) . I was shocked. It had been VERY windy. I had written things down on my calendar during the time the monitors were up. Here are my entries as I wrote them.

Jan 7- Afternoon Rob O'Neill -Epsilon Associates (this meant they were coming to setup)

Jan 10- rain all day, spent most of day shoveling ice off deck

Jan 11- **very,very windy**

Jan 12- midday sound guy- "they had to come check equipment because of the wind"

Jan 13 snowed yesterday, snowblower and **extremely windy**

Jan 15 late morning- afternoon sound guy (checking equipment)

Jan 16 snow

Jan 18 snow , **major wind all noc (night)**

Jan 19 **major wind all day**

Jan 20 wind guy midday
Jan 22 wind guy removing equipment

Before the hearing I had gone online to see if any site could give me the actual weather conditions on those windy days, as I realized my simple notes don't mean much. When I put in our zip code it gave the conditions for Jaffrey during those days. I printed them out and had them with me for the hearing. I will gladly submit them for you to review, but right now let me just give you a sample,

Jan 19th

midnight wind gusting to **18.4** MPH

0100 variable at 6.9 MPH

0200 gusting to **20.7** MPH

0300 gusting to **29.9** MPH

0400 gusting to **17.3** mph

0500 southwest at 8.1 mph

0600 gusting to **18.4** mph

0700 gusting to **21.9** mph

0800 gusting to **20.7** mph

0900 southwest at 8.1 mph

1000 gusting to **33.4** mph

1100 gusting to **29.9** mph

1200 gusting to **34.5** mph

1300 gusting to **34** mph

1400 gusting to **19.6** mph

1500 gusting to **33.4** mph

1600 gusting to **23.0** mph

1700 gusting to **23** mph

1800 gusting to **21.0** mph

1900 west at **11.5** mph

2000 gusting to **17.3** mph

2100 gusting to **19.6** mph

2200 gusting to **24.2** mph

2300 west at 8.1mph

All the results confirmed what I had written on my calendar and yet, "Overall, ground winds were light"????????????? When I questioned this, the Epsilon representative first stated that our yard would not be the same as Jaffrey so we can't really compare, then later stated that gusts were excluded. How accurate can the report be for a day such as I just listed if continual gusts up to 34 mph are not included? Certainly, noise from that wind was the reason I knew it was windy all night and all day. I was inside my house. Additionally, when asked to give the data of their actual measurements, for the day I have quoted above, their results were VERY different. In fact, let me put them side by side. I will just write the gusts...

Midnight	Jaffrey 18.4,,	Epsilon- 4.53
0100	6.9	4.53
0200	20.7	5.29
0300	29.9	4.53
0400	17.3	6.04
0500	8.1	5.29
0600	18.4	6.3

0700	21.9	6.3
0800	20.7	6.04
0900	8.1	6.55
1000	33.4	7.05
1100	29.9	7.3
1200	34.5	6.8
1300	34	5.79
1400	19.6	7.3
1500	33.4	10.32
1600	23	8.31
1700	23	4.53
1800	21	9.32
1900	11.5	6.04

I could continue, but I think you can see this is a major difference. I KNOW that wind gust of 5 mph would not make wake me up- keep me up, and make me feel that it was “majorly windy” outside!

I have to question the validity of all of Epsilon reports.

Are there any discrepancies or concerns in the flicker study reports?

Yes, First, I'd like to note that from what I have read the definition of flicker is very limited. The sun has to be at such an angle to block at least 20% of the blade . It really doesn't take a scientist to realize that flicker will happen will ANY degree of blockage of the blade. At first it may be almost imperceptible, only causing your eye muscles to constantly make adjustments, but even this will result in visual deficits and headaches. ‘In addition, shadow flicker durations were calculated only when the angle of the sun was at least 3° above the horizon.’ This quote is directly from Epsilon. I would imagine that this calculation would work fine on flat land, but considering that the mountain is already elevated above us the point where the flicker will start will be at a much higher point in the sky. **Monthly sunshine probability values** were input for each month from January to December. Epsilon states in 4.1 : The resulting worst-case calculations assume that the sun is always shining during the day and that the wind turbine is always operating.” however, the sunshine data for the worst case scenarios is NOT calculated on the sun always shining. It is based on “the monthly sunshine probability values”. This probability should be used for their 2nd report perhaps, but certainly not for their “worst case scenario” It is an average number using cloud coverage averages as part of its calculation. A simple google search will give the sunrise and sunsets for any day of the year. What I found by simply looking is that Epsilon's numbers do NOT correlate to the number of hours between sunrise and sunset. Per Sunrisesunset.org, “In Concord, NH, the first day of May is 14 hours, 11 minutes long. The last day of the month is 15 hours, 10 minutes, so the length of the days gets 59 minutes longer in May 2016.” Simple math calculates that out to be 59% possible sunshine on the first day of May, to 63% on the last day of May. Yet for May their report for the whole month list the possible sunshine at 55%, which is less than the actual possible sunshine on the very first day of May!

Epsilon then uses figures given to them by AntrimWind related to the “probability of the turbines running and are able to reduce their numbers again by 6% I am not sure if perhaps that is 6% per turbine or 6% for all turbines combined . This wind data was extrapolated from one wind tower set up near tower 1. If the only way to determine the actual wind data was to put up that turbine then how is it possible to know what the wind conditions will actually be at all the

turbines? It doesn't take many percentage changes to totally change the data and to get the results you want. Also please note that even by their figures (which doesn't use the actual maximum number hours of sunshine) our astronomical maximum **number of hours of flicker is 27 hours and 30 minutes**. That is WAY over the 8 hours maximum, the SEC allows and undoubtable will be more toward the norm.

It is also extremely "interesting" that in the flicker report of 2014 our home receives almost 0 hours of flicker, yet the report of 2015 shows that we are receiving 8 hr and 35 mins/year. Our house hasn't moved, nor have the locations of the turbines near us. The turbines near us are actually now 3.2 ft lower and yet, per Epsilon's own reports, the amount of hours that we will receive flicker has increased. How is this possible, other than trying to make the data fit the parameters they have created?

There also is an assumption that flicker does not happen unless it is a totally cloudless day. I cannot understand how if the sun is producing light (and it isn't dark outside) that there won't be variations in the light produced by the blades blocking the sun. Clouds come between the sunshine and the blades, but not between the blades and the ground. If light is passing through the blades and the blades are cutting off the light, there HAS to be variations in the light reaching the ground

Do you feel that the people of Antrim want this windmill project?

At one time I did, and it was one reason that we didn't get further involved in protesting this project. However, there have been 3 votes done in which the voters have shown that they either do not want the windmills, or do not want their town officials controlled by AntrimWind. In fact, Christopher Condon, Chairman of the Antrim Town Planning Board submitted testimony that, "**Industrial Wind Ordinance have been rejected by the citizens of Antrim three times.**" as one of the reasons for the SEC to assert jurisdiction over this review. To me, this says our citizens will not allow this, so we need the SEC to overrule our citizens. Right now I see this as an issue dividing our town. I realize that to at least some of our selectmen the amount of money this project will bring in has them very much for the project. However, it is a shame that they don't really care about their own citizens who get hurt along the way. Unfortunately money truly does talk! I truly doubt that any of our selectmen would want to live ½ mile from a turbine and listen to the noise, endure the flicker and see those huge windmills every day. I would ask that each them take a moment to look at a youtube video of exactly what flicker is, the name sounds innocuous but the reality is quite different. In fact, here is a link https://www.youtube.com/watch?v=XCA0_W9Qxs . They could also watch videos about windmill noise. There are many videos that have been made by people living near windmills. People who were promised that the effects would be negligible to them, but have found out that the truth is very different.

In addition, what will happen to the town of Antrim once the windmills are decommissioned and that source of income is gone. It will be extremely hard, if not impossible, for the town to take such a significant cut in income, the only solution will be to increase taxes to meet the new budget requirements. The long term result will be that we will be leaving our children with MUCH higher taxes.

How do you feel the windmill will affect wildlife and Tuttle Mountain?

It is a known fact that they will kill birds and bats and of course the noise and motion will scare away many other animals. The huge construction equipment necessary to build this project, the

land clearing both to place the turbines and to make a road that can transport these huge pieces of equipment will certainly displace all the animals that are there. Animals like bear, deer, moose, etc will not stay near these turbines with the noise and flicker. We see how moving shadows created by our headlights confuse animals at night and cause them to run in front of cars, the moving shadows alone will cause most of the animals to move away. So there is not much "conservation" about the project.

The mountain will be blasted and forever altered, all for the sake of less than 40 years of windmill use. Antrim Wind Energy, LLC stated at the information meetings that at the end of their 50 year lease all of the windmill project will have to be decommissioned and that it could be even less time, as the turbines have somewhere around a 25 year life span.

Does this conclude your pre-filed testimony?

Yes.