

The State of New Hampshire Site Evaluation Committee

In regard to Antrim Wind Energy Docket 2015-02

Post Hearing Brief of Barbara Berwick, abutter

The applicant should be denied permission to construct an industrial wind turbine on land zoned rural conservation by the citizens of Antrim. Please consider the following:

Shadow flicker SEC 301.14f(2) b

1. Antrim Wind Energy has shown by their own calculations that they CANNOT meet the shadow flicker requirements of SEC rule 301.14 f (2) b. *“With respect to shadow flicker, the shadow flicker created by the applicant’s energy facility during operations shall not occur more than 8 hours per year at or within any residence, learning space, workplace, health care setting, outdoor or indoor public gathering area, or other occupied building.”* Currently by AWE’s calculations there will be 24 locations with over 8 hours of expected shadow flicker, ranging from 8hr 02min to 13hrs 48 min.
2. Shadow flicker in the 2015 report used a run time of 94% when determining potential flicker. While the predicted run time of the turbines may be 94%, there is no way that each location can be assured that, at those times when shadow flicker will appear, the turbines will not be running 100% of the time. The 2011 report did use 100% run time in determining flicker. By making this change AWE has automatically reduced the flicker time. Details matter, if 100% was correct in 2011 why is 94% correct now?
3. The shadow flicker model presented by AWE does not measure the amount of flicker as defined by SEC rules. Per Site 102.48 *“Shadow flicker” means the alternating changes in light intensity that can occur when the rotating blades of a wind turbine are back-lit by the sun and cast moving shadows on **the ground or on structures**.* Notice the word “ground” and “on structures”. AWE’s models shadow flicker using WindPro 3.0.639 and it measures flicker “inside a structure”, specifically, the amount of shadow flicker that will come in windows. On page 4-1 of Attachment 6, 3rd paragraph from the end starting midway in that paragraph, it reads *“ Each modeling point was assumed to have a window facing all directions (**“greenhouse” mode**) which yields conservative results. In addition to modeling discrete receptors, shadow flicker was calculated at grid points in the area surrounding the modeled wind turbines.”* While Mr. O’Neal does not give much of a description of exactly what greenhouse mode means, the 2011 report does. On page 5 of attachment 13A-B under 4.1 shadow-flicker methodology, *“ it was conservatively assumed that every receptor had windows (one meter by one meter) one meter above ground in all directions. WindPro refers to this as the “green house” mode.* Please note, this does not consider the roof to be a window,

and does not even consider the 1 meter from the ground up to be part of their calculations, nor the height above 2 meters to be part of the area.

4. In addition, **each “structure” is considered 1 meter by 1 meter per Windpro**. Our house is not 1 meter by 1 meter and while it may, or may not be true that a single meter of our house will receive the amount of shadow flicker predicted by this model, by not adding the total amount of our house and at least a good portion of the yard that we use this results in a greatly reduced amount of “anticipated” flicker that we will in reality experience. Attachment 6, appendix B page 8 and 9 show the expected flicker shadow for our house, while page 10 and 11 show the shadow flicker for our barn which is at the bottom of our hill approximately 80 ft. from our house and certainly in what anyone would consider to be our “yard.” You will note that shadow flicker starts at different times for our house than at our barn. You can see differences of up to 7 minutes. The amount of shadow flicker is only calculated for each “structure” not for our entire “yard” and so gives an entirely inaccurate number of what we will actually experience. Even if the flicker study considered just the size of our house, the resulting report would be higher numbers as our house is 72 ft. long, not 1 meter. For us the shadow flicker will be happening Jan through March, and the end of Sept through mid Dec, with 13 days off during each section. So basically September through March! Most days it will last over 20 minutes, not 79 seconds as Mr. Richardson implies!
5. In order to compensate for their inability to meet SEC 301.14f (2) b’s requirements, AWE has proposed using an **untested**, uncreated at this time, system that will “control” shadow flicker. (Day 2 afternoon, page 52) It would be without precedent to use an untested system, without the consent of those affected, in an area related to public health. All products related to health are subject to a significant screening process that is **not controlled** by the manufacturer of the product. All new products of any manufacturer are tested. To properly test this type of system would require at least 4 seasons of testing on a model version. Obviously, that has not been done! Saying that other manufacturers have created these, therefore Siemens will be able to without testing is ridiculous. Does Microsoft share with Apple? Both are making similar products.
6. This is a quote from AWE regarding how often the sensors that sense the sky luminance are cleaned, *“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.”* The answer is there is **NO CLEANING SCHEDULE**. It may take a bird’s nest before the alarm “trigger”. We have not been provided with any details for how much dirt it takes to trigger an alarm. Even a slight coating of dust will cause a misreading of sky luminance. We were not provided this information until after the hearings were over, even though the data request was made in September. Bird’s nests do not just appear; they are built bit by bit. The very fact that they say bird’s nest speaks to the significant amount of obstruction before these are checked and cleaned. What about snow? We get a lot of snow, snow all day, snow all night, snow even when there is sunshine! How often are they

- cleaned during snow? We know there is no one there after 5pm, or weekends and yet it certainly will snow, and flicker does happen in the early morning before the workers get there, and after they leave at 5! How can the sensor monitor correctly when covered with snow and no workers there to clean it off. Can they possibly pay a worker to stay there constantly and clean off the snow every minute, off every turbine, since every turbine has a sensor? I have not heard any plans of hiring 9 people for on site cleaning. Even if they did, it wouldn't be correct for the time it was covered in snow between cleanings, and the time they are cleaning it and obstructing input. This is important, and there is no way that these sensors can possibly be clean at all hours during winter, no way that light dust will trigger the need to be cleaned. Therefore their calculations CANNOT be correct! They cannot meet the SEC rules regarding shadow flicker, if they cannot correctly monitor sunshine. Furthermore, for them to introduce any new evidence now of how this equipment will work when we have no way to question them is unjust.
7. AWE has not demonstrated how any individual would document shadow flicker at their residence in a way that would be accepted for registering a complaint. Therefore, they are asking for the SEC to "trust" them, in a matter related to public health with no real means of monitoring and indeed to make themselves self-monitoring. Don't worry- we'll remove the bird's nests! Oh and we'll calibrate the equipment every **THREE** years.
 8. It appears that Siemens has not even selected a sensor manufacturer yet based on the answer quoted in the data request of how often these sensors will be calibrated. Their answer is "*The sensors will be calibrated the earlier of every three years or in accordance with the sensor manufacturer's recommendations*". If they already had a manufacturer they could easily have cited their recommendations! Obviously, this flicker control program will NOT be created until Siemens has a guarantee of payment from AWE. This program is being created specifically for AWE. **never created- never tested!**
 9. SEC rule 301.14f(2) b is clear in its requirements and AWE is **unable** to meet the requirements; there should be no leeway allowed before construction, when there are significant potential health effects post-construction. The time to assure public safety is before construction and the only way to do that is to not allow any residences to have predicted hours over 8 hours. Please remember that is **not** the astronomically possible number, which are 3 times higher!
 10. AWE's response to data request states in a footnote, "*It is important to note that photosensitive epilepsy is not triggered by flicker at frequencies less than 2.5 Hz and the maximum frequency of potential flicker from a SWT-3.2-113 turbine is 0.825 Hz.*" they use as sources for this information reports from 2006, 2008 and 2010. However, according to the Epilepsy Foundation, "*The frequency or speed of flashing light that is most likely to cause seizures varies from person to person.*" I can speak personally, from my experience working as a nurse in brain injury rehab, that this is absolutely true. I cannot imagine one of my seizure prone patients being exposed to shadow flicker and NOT having a seizure. Certainly, it took much less to trigger seizures in my patients. The epilepsy foundation also states, "*Many individuals who are disturbed by light exposure do not develop seizures at all, but have other symptoms such as headache, nausea,*

dizziness and more. They do not have epilepsy.” Doesn’t that sound like the symptoms of “wind turbine syndrome! I’d also note that the only other work sited in that data request is a report from 1978. AWE made it a point to paint Mr. Ward’s meteorology books as outdated. Well, work from 1978 is 38 years old, which is the information they are using for their shadow flicker control.

11. In addition, in regard to both shadow flicker and noise, by only using residences and not property lines, there is a total disregard to the value of our property. By allowing shadow flicker and noise levels much higher on OUR property located closer to the turbines the SEC would be taking our property without compensation. AWE’s submitted plan for “mitigation” for any new structures to be built on ground with higher than allowed flicker and noise does not state that they will adjust the shadow and flicker to meet the law at these structures. Instead it says “mitigation”. This absolutely is wrong and is admitting that there is personal private property that will be affected very adversely to shadow flicker and noise. Who would now want to build in areas like that. They are taking the rights to use that land away from the landowners. Per SEC Health and Safety rules, just to enjoy hiking on our property will now mean that we will have to endure noise levels above those allowed. How can it be said that for your health the noise standards cannot be above this level, and yet we are allowing almost all of your land to be above those levels.
12. Please consider this relevant discussion from 8/27/2015 transcript from SEC Rulemaking, page 111: *And, again, we’re looking at property that’s owned by a non-participating landowner. So, if you signed a waiver, you’re not considered for this purpose. And “property that is used in the whole, or in part, for permanent or temporary residential purposes”. And that language I came up with, it intended to both make it clear that we’re not just, you know seasonal housing is included, which was a concern of a number of commenters, and also to capture the concept that “**wherever people are trying to sleep**, we’re going to measure the sound”. So that’s “permanent or temporary residential purposes.” It could over an inn or perhaps a campground even. “*
13. We should have the right to use our property in any way that is permitted by zoning regulations, which would include allowing our children to use sections of our property to build if they so desired. **We have constructed a building slightly over 50 ft. from the back border of our property**, the GPS coordinates are 43 degrees 4’8.89N, 72 degrees 0’15.48W. The camp is **for the purposes of sleeping, temporarily residing**. I contacted both the building inspector and fire chief before starting construction, explaining the planned use to be sure we followed any building codes necessary. We have invited our neighbors and friends who hunt to feel free to use this as a **temporary residence**. I, myself, have already camped out in this building. We have asked Antrim Wind to make adjustments necessary to prevent excessive noise and flicker at this location. Please remember this is a HEALTH issue. They have not responded at all! Are you, the SEC, going to enforce the rules and make AWE comply with the noise and flicker standards at our cabin? This structure has been completed! It’s not a future thought. It exists! Obviously, the issue here is that if you make them comply, they will not be able to operate, as there is no way for them to meet the

noise standard at **that location (i.e. OUR LAND)**. Either you are protecting our rights as property owners or you are giving our land rights away without compensation. If this building is not enough, then let us know what we need to build. Yes, we will build whatever we need to build to qualify, whatever the financial costs to us. Something we should not have to do, but since the law does not protect us we are forced to do this. I will definitely go live out there for a few years if that is what it takes. We have lived before without running water, or electricity, I have no problem doing it again. My neighbors, the Morrison's fellow abutters, have stated that they will be willing build at the back of their property and they have plenty of road frontage. In fact, they already were seriously considering doing just that, making a home for their daughter's family. Other abutters have said the same. So the question is will the committee force AWE to meet the safety standards, or will you give away our property?

14. To my knowledge any time a person's property is taken by any government agency, the property owners are always financially compensated. We do not want financial compensation; we want our property. What is being proposed is taken our land without any compensation. Since when is that allowed!

Noise

1. By AWE's own calculations, many residences will have increases in noise levels of 256 times what they have now. Please note that each 3 decibels increase is doubling the amount of noise present, so 3 dbs. is doubling, 6 dbs. is quadrupling, 9 dbs. is octupling, etc.
2. Instead of hearing the frogs at night, and birds in the morning, we will hear the sounds of wind turbines- not a steady noise, but an ever-changing modulation of noise.
3. Amplitude modulation does not seem to have been considered when formulating rules, but as the very hard of hearing, Lempster selectmen, described, a low drumbeat even if below allowed decibel ratings will seriously affect all nearby residents, including all residents by Gregg Lake, Meadow Marsh, and all people enjoying Willard Pond.
4. Lempster has been continually held us a proof that noise is not an issue. Yet, the Lempster selectmen was totally unaware of "good neighbor" agreements, or of close friends who have needed to replace all their windows and insulate their walls. No mention was made of all the properties near the wind turbine listed for sale in Lempster. I noted the signs myself; it seemed to be almost every property along the road near the turbines. The SEC received a public comment from Justin Lindholm on 10/3/2016. He provided a map and pictures of all the for sale signs with gps coordinates for each sign.
5. Mr. O'Neal's report did not include any decibels for margin of uncertainty, nor did it include a "G" rating of 0. SEC rule 301.18(c)(4) "Incorporate other corrections for model algorithm error to be disclosed and accounted for in the model." Instead Mr. O'Neal claims that this is not "required", while at the same time admitting that there are limitations in the ISO model. He then uses reports which demonstrated clearly that there were sound levels over the predicted levels at other industrial wind projects, (see WA 25X), although he was trying to show

the opposite. Speaking as a person who will be the recipient of those extra decibels, this is unacceptable. Please see the report by S.E. Ambrose & Associates 15 Great Falls Road, Windham, ME 04062 Acoustics, Environmental Sound & Industrial Noise Control in Russell Blair's public comment on 10/3/16, which shows many industrial wind turbine projects that have greatly exceeded their model predictions of noise level.

6. Looking at the previous sound level measurements predicted in Mr. O'Neal's 2011 report versus the predicted values in this present report - although our houses have not moved and although turbine 10 was located at the farthest distance away from many houses, the predicted 2016 sound levels have greatly decreased. In 2011, the decibel goal was 45 decibels/nighttime, 50 decibels/daytime. Lo, and behold, all residences were below 45 dbs. Now, the SEC has ruled the decibel level at night must be below 40 decibels and without moving our houses, and with a change of only 1.4 decibel created per turbine, all residences are below 40 decibels! However, adding either the "G" factor of 0, or adding in a 3 decibel margin of uncertainty will put most residences over 40 decibels.
7. Please note WA 13, page 33, *"Predictions made using the ISO 9613-2, the worldwide standard for noise propagation calculations, characterize sound levels under average or normal conditions. There will be times when atmospheric conditions, temperature gradients and wind shear gradients cause sound levels at any given location to vary above and below the nominal prediction value largely because wind turbine sound originates at a high elevation above the ground making it more susceptible to atmospheric influences."* ..This means that somewhat higher sound levels from the Project may well occur from time to time." Again if you look at WA 14, page 12, *"The predicted noise levels do not exceed 45 decibels", which was the limit on this particular project, "at any of the receptors surrounding the project area, and therefore no adverse impact related to noise is expected during normal operation of the wind farm." Due to the variability in human perception of noise and the potential occurrence of higher noise levels [due to] some meteorological conditions, certain noise complaint mitigation measures may be required."*
8. SEC Rule 301.18(i) states, *"Validation of noise complaints submitted to the committee shall require field sound surveys, except as determined by the administrator to be unwarranted, which field studies shall be conducted under the same meteorological conditions as occurred at the time of the alleged exceedance that is the subject of the complaint."* Without having constant sound monitoring, done by an independent company, this would seem to be a physical impossibility. How can the same meteorological conditions be replicated, and how can I as a citizen know that AWE is running the same turbines at the same speed during testing, especially if THEY are in CONTROL of the testing. This system is highly weighted toward AWE and not toward the individual homeowner, who can expect AWE to try to discredit any complaints. (Similar to cigarette companies of the past who had **many, many** studies done by professionals showing that cigarette smoking did not cause any health problems). This is truly creating a David vs. Goliath situation, but in this case you are taking away David's 5 stones!
9. Mr. O'Neal demonstrated in his sound study that he did not follow SEC rules.

- a. He did not place the anemometer in close proximity at our location (L4) and did not accurately describe where the equipment was placed in his report 301.18(4)d. *“An anemometer shall be located within close proximity to each microphone.”* The anemometer was placed at least 70-80 ft. away and at an elevation approximately 12 ft. higher than the sound measuring equipment.
- b. He failed to report on the solid ice conditions coating the ground for close to a week during testing. 301.18 (4)a. *“Microphones shall be placed 1 to 2 meters above ground level, and at least 7.5 meters from any **reflective** surface.”*
- c. He failed to remove sound created by excessive wind gusts (see pre-filed testimony, addendum to pre-filed testimony and exhibit of wind gusts at Jaffrey airport 301.18(4) *“ Sound measurements shall be omitted when the wind velocity is greater than 4 meters per second at the microphone position, when there is rain, or with temperatures below instrumentation minima; following the protocol of ANSI S12.9-2013 Part 3, available as noted in Appendix B:”* Just look at the wind gusts recorded by Jaffrey airport. Numbers that correlate with my own personal observations that I wrote on my calendar back in January.
- d. This follows a pattern of disregard for ANSI/ASA S12.9 rules as stated in SEC 301.18(2), *“Long-term unattended monitoring shall be conducted in accordance with the standard of ANSI S12.9-1992 2013 Part 2, available as noted in Appendix B, provided that audio recordings are taken in order to clearly identify and **remove transient noises from the data**, with frequencies above 1250 hertz 1/3 octave band to be filtered out of the data.”* In 2011 Mr. O’Neal did not remove the noise created in the construction of a deck, but simply noted, *“ daytime sound levels were influenced by deck construction at the residence”* Abutter exhibit 5, attachment 13 A-B, page 5-6 . In addition in his current report, Attachment 9 page 5-7, Mr. O’Neal notes under 5.6.5, *“ sound levels at the L5 monitor (near Gregg Lake) were influenced by traffic on Gregg Lake Road, water noise, wind noise and **guns shooting.**”*
- e. 301.18(b) states, *“Pre-construction sound reports shall include a map or diagram clearly showing the following:
(1) Layout of the project area, including topography, project boundary lines, and property lines.”* This was not done, and as a homeowner it has been extremely difficult to find any information that showed property lines, other than the property lines that abut AWE’s project. There is no way with Mr. O’Neal’s report or any reports in the AWE application to determine exactly how our **entire** property is impacted with sound levels or shadow flicker.
- f. 301.18c(3) *“ Include predictions to be made at all properties within **2 miles** from 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". This was not done, the model does NOT go out to all residences within **2 miles**, nor does it include **worst-case conditions!**

Visual

1. I don't think anyone could state it better than was stated in the 2012 docket, deliberations morning session Day 2 2-6-13 *"The idea of mitigation implies that one can take something of lesser value, swap it for something of higher value, it certainly wouldn't work the other way around. So, when we talk about the Willard Pond area, you have to ask yourself "what else is out there that we could possibly swap for to give a higher value?"* In a word, nothing! The previous docket did not feel that removing or lowering turbines would be an option. So many years of work, by so many people has made the Willard Pond Sanctuary what it is. People come from all over the country to go to Willard Pond -- do they really need to come from NY, NJ, CT, MA, etc. to find a little pond in a secluded area that surrounds you with nature? Evidently, yes, because they are coming. Willard has something they cannot find anywhere else. PLEASE don't destroy it.
2. Gregg Lake, Meadow Marsh, White Birch Point, Willard Pond- I don't believe there is one citizen in all of Antrim who does not enjoy Gregg Lake in the summer. It is OUR beach, it is OUR spot to take families, to BBQ, to swim, even to learn to ride bikes. Meadow Marsh is where families hike, bird watch, look for moose, and fish from the bridge. Willard Pond is our very special quiet spot with crystal clear water, wonderful loons, special peace and nature. These places are not Mt. Monadnock, the White Mountains, or the Grand Canyon but these places are extremely important to every citizen in Antrim. How disgusting to hear the town of Antrim's own lawyer putting down Gregg Lake and Meadow Marsh. He seems to feel that Hampton Beach is more important. May I say, that Hampton Beach could easily have an industrial wind turbine, there is a lot of development and noise there! Shame on him and Shame on the selectmen for going against the will of the people of Antrim who spoke clearly in the 2014 ballot election. Shame on him for the accusations he made against Charlie Levesque, a former planning board member and current state house of representative elect. This is how the lawyer for the town of Antrim treats Antrim's own people?
3. What can mitigate for the destruction this will cause to Greg Lake, Meadow Marsh, and White Birch Point? The summer residents of Greg Lake and White Birch Point are livid that they were not notified, and hence unable to participate in these proceedings. The idea of an acceptable mitigation being a "sign," is a slap in the face to the residents of White Birch Point. Again, the little people are being stepped on! They didn't even get the right to participate in these proceedings! A sign posted in town hall means absolutely nothing to most people in Antrim. We go to town hall to pay our taxes and vote, period.
4. Last month, many people posted pictures of the beautiful foliage. I have seen many pictures - NONE of them include wind turbines, even from people who live in areas where turbines are present. All of them attempt to show the beautiful

foliage in a beautiful natural environment. It's what tourists come to NH to see. Yes, we may have some groups of people who come to see the turbines- people involved in other court cases, rather like touring the waste water treatment centers! Tourists, however, come back, year after year and go to their favorite places. They come to see nature, not industrialization!

5. Both Ms. Vissering and Ms. Connelly found unreasonable visual impact on their assessments. Their assessment were not biased, but done totally without bias. Both made their conclusion at the end of their study, not pre-study. Mr. Raphael stated during the technical hearings that he would not have taken the case if he thought he could not find in favor of AWE. Obviously, by being hired by AWE, he understood what was wanted and expected.
6. Kellie Connelly stated, when asked, that if she had more time and more money she would have definitely ballooned the area. It was requested of AWE to balloon the area for the site visit. They refused. In all this time, years, they have never ballooned the area, never shown the people of Antrim exactly where and how high these turbines will be. The reason is obvious!
7. Worst-case scenarios will indeed be the almost everyday scenarios during warm weather months for people at Gregg Lake, Meadow Marsh, Willard Pond and even from our neighboring towns, Stoddard, Hillsboro and Deering. Please note that both the Deering selectmen and Stoddard selectmen have expressed that they are against this project. Mr. Raphael did not in any way depict worst-case scenarios; perhaps because he is colorblind he does not see the major difference we all see. Most people who are colorblind cannot tell the difference between the red and green of stop lights but depend on where the light is. Mr. Raphael stated himself that he couldn't distinguish between pink and brown. I am extremely sensitive to people with any type of disabilities, however, some disabilities limit the types of things you can do. My friends, Jan and Jay, are blind and cannot drive a car (not yet anyway). It is quite possible that Mr. Raphael is not aware of how much his disability affects his assessments as you cannot be aware of what other people are seeing, only what you see yourself. All you need to do is look at the difference in those pictures between his photo simulations and Ms. Connelly's simulations and you can see that there is an OBVIOUS difference. Perhaps Mr. Raphael truly can't see it, but to anyone who is not colorblind the difference is dramatic. During the beautiful warm months when most people are outside, the views they will see are those clear blue skies, not the hazy skies depicted by Mr. Raphael. Certainly he did not meet the standards of clear weather conditions set forth in SEC rule 302.05 (8)(a) when it stipulates, "*under clear weather condition at a time of day that provides optimal clarity and contrast.*"

Safety- Ice

1. AWE has no plans to fence around their wind turbines. They don't even have plans to put warning signs! Our land is 920 ft. from the CENTER of a turbine base. My grandchildren will be able to walk right up to the turbines, as will any hunter, hiker, etc. How far the ice can be thrown has not been demonstrated by AWE other than by anecdotal evidence; no lawsuits for deaths yet! I have no reason to believe that it will not be thrown onto our property. I, as an abutting

- property owner, as well as all my neighbors all around this area should not need to worry about our children hiking in the woods, an activity frequently done, and getting hit by a chunk of ice falling from a turbine, or from anything dropping almost 500 ft. from these turbines. I believe the reason that AWE has not planned to fence is that they realize they would have to fence onto “non-participating” owners property to include a proper safety zone. Vestas stated in their safety manual, “do not stay within a radius of 400m (1300 ft. from the turbine unless it is necessary). While they have changed this rule, (probably due to complaints from other industrial wind companies for hearings such as these), these safety rules were actually for turbines not as high as those currently planned by AWE. I have submitted exhibits, which show that the minimum standard is 1.5-hub height PLUS rotor diameter (WA 19X, Abutter 52). Vermont has fined a wind company for operating during icing conditions TWICE. It is obvious that the rules committee never intended that there would be NO SETBACK. How can we safely allow children to hike in the woods anymore? For the record, children don’t always follow every bit of warning advice we give them! Mr. Richardson uses an exhibit that I introduced to state that the odds of ice throw are only once in 10,000 years. If Mr. Richardson had taken just a few minutes to read the entire exhibit he would understand that this is the risk related to death, or very significant injury from ice throw, specifically being hit with the force of 20 joules, not simply ice throw. There is significant information in that exhibit about true events, include blade throw that would happen at less than 1.5 times hub height, that article also talks about the need to add a height element in ADDITION to 1.5 hub height PLUS rotor when on elevated areas. AWE doesn’t even add the rotor dimension.
2. Fire- a fire in this area would be devastating! The risk is significant. Look what happened in Stoddard this year! These structures, since they are by far the tallest objects (as tall as the “mountains” they are on) will obviously be struck repeatedly by lightning. There have been plenty of fires associated with turbines, and all of them have lightning protections systems. Abutter exhibit 53, page 6, *"The lightning protection of wind turbines must consider the protection from effects of direct and nearby lightning strikes, even though **protection from lightning cannot be fully assured.**"* One very important need for good lightning protection systems is the ability to ground the system is the depth of the soil and its conductivity. Tuttle Mountain is one massive boulder field. Underneath the boulders are more boulders, and ledge. This is not an area conducive to good grounding! I believe a section of the transcript really sums up AWE’s efforts at suppression of all evidence such as evidence of fire, ice, and lightning. Here is a direct quote, *“MS. BERWICK: This is safety of wind turbines in general. MR. NEEDLEMAN: I don't think it's relevant.”* Let me assure the committee, that to we citizens who could be living near these turbines, safety issues ARE relevant! You will note that the committee has received a public comment letter against AWE from Antrim’s fire chief, Marshall Gale, as well as the head of Antrim’s conservation committee, Peter Beblowski.

Mitigation

1. Is this really the way our legal system works? I actually thought the idea of spending a lot of money to compensate for doing damage was called, “greasing the palm”, “pay offs” and was prosecutable, nor rewarded! A tactic of illegal behind the scenes swindlers and crooked politicians! AWE is stating that they are giving money to the Gregg Lake Association (I know of NO ONE in the Gregg Lake area that approves of this project- and many people in the Greg Lake area who are extremely upset about it), money to the Antrim Scholarship program, money (\$100,000) to the NE Forestry Foundation. Maybe I am old fashioned, but to me this is bribe money and rewarding companies that participate in bribes is wrong! How can ordinary citizens have any type of a chance against a company spending \$65 million dollars (much of which is taxpayer’s money)? As an aside, please remember AWE’s writing up a zoning proposal and “pretending” that it was truly a citizen’s proposal. (The proposal that was soundly defeated by the citizens of Antrim in 2014), and the non-public hearings with the selectmen that resulted in the town being sued and found guilty. I can understand AWE acting in this way; I simply can’t understand that these types of practices would be tolerated by the SEC.
2. There are 100 additional acres offered between this docket and last docket. In that additional acreage are agreements that allow for cell towers, driveways, buildings, and actually provide the assistance in getting these things into an area very inhospitable for building and construction. Definitely it is beyond the scope of most private individuals financially to build roadways to the top of that mountain. Thereby AWE is assuring a permanent private drive for Mr. Ott, and assuring permanent fragmentation.
3. Let’s not forget the absolutely splendid mitigation for White Birch point- a sign they don’t want, or a website -they don’t want. Very nice, no one ever reached out to even one citizen of White Birch Point for their input! As Mr. Kenworthy said, they weren’t REQUIRED to! Companies that “do right” don’t need to be required to!
4. With all this offered mitigation there is No willingness to put their money where their mouth is, by offering a property purchase agreement. This despite constant assurances that property values will not decrease. Private property owners will take the financial hit, with no promise of any assistance in selling their property or moving expenses unless the SEC requires it.

301.08(a)3 states, *"description of planned setbacks that include the **distance between each wind turbine and the nearest landowner's building and property line**, and between each wind turbine and the nearest public road and overhead or underground energy infrastructure or energy transmission line within 2 miles of each turbine."* In Day 2 am transcripts, page 77, line 6 Mr. Kenworthy says, this information is available. He states that page 8 of the application C3 (PDF page 20) has this information. I, as a homeowner, cannot tell with **any** accuracy, at all, from that map exactly how far my house or property lines are from any turbines and certainly not from their road construction. I would ask the committee members to look and see if they could possible tell the distance to our and/or any other abutter’s property line or house. They have not provided this information. They have not met the standards of the SEC rules.

25 years! - That's what Mr. Kenworthy predicts is the lifespan of this project per his testimony. Glacial boulders destroyed, 16-17 ft. ledge cuts, riprap stones left all over, granite rubble left all over, making a drive that will end up being used by Mr. Ott for his own personal use, thereby creating permanent fragmentation. This driveway is something that is unlikely he could ever afford to do himself, and certainly he could not do such destruction without input from the town (last I know you can't just blast away 16-17 ft. of ledge without a permit!) Lives destroyed, including some who are, at this moment, fighting life-threatening illnesses -- people who have put their life and soul into their residences, culverts put in that will stay forever and require landowners maintenance, millions of taxpayers dollars spent -- with most profits going overseas, all for 25 years. Yes, there is a potential it could continue until 2059 (42 years maximum) but that's all and per Mr. Kenworthy, not what is anticipated. Other sites can continue as long as profitable. All this destruction for 25 years! PLEASE, PLEASE, PLEASE don't drive us from our homes, don't fragment this part of the Quabbin to Cardigan corridor, don't destroy our enjoyment of Gregg Lake, Meadow Marsh, Willard Pond, don't destroy Tuttle Mountain and don't drive us from our homes!

Lastly, I would like to add the requirements that I feel would be absolutely necessary if this project were approved.

1. Buy out program for all residential homes within 2 miles for full-appraised value without turbines. Plus moving expenses.
2. Provide a way for homeowners affected by noise and shadow flicker to monitor these factors at their homes. We can monitor with video cameras to document flicker and phone apps that show the decibel levels, but will that be allowed? If not, we need a way that we can monitor at the moment, to prove what we are seeing and hearing. This is especially important considering that the maximum noise levels will almost certainly happen at night hours, not during normal working daylight hours.
3. Follow up studies must be done by independent agencies, AWE should pay into an account used by the SEC to fund noise and flicker study follow-up, not be their own police! They must not be informed when studies will be done, as this would allow them to potentially shut down turbines to improve outcomes.
4. Turbine must be fenced and fencing must be sufficient to cover ice throw **and** blade throw. Just this year there have been 3 Siemen's turbines that have lost at least a blade, one lost the whole nacelle! This area is frequently used by hunters, and hikers. To only fence across the entrance road, with no signage; no anything; is not protecting the public!
5. There must be a clause that they will bear all financial costs for firefighting and home replacements cost if their turbines start a forest fire and/or cause fire to residential homes.
6. An independent agency or company must monitor for oil leaks to protect our watershed area.
7. Deconstruction must remove all construction debris, and not leave the area covered in concrete rubble! This is not returning the mountain to a natural state.
8. All owners of property with land that will have more than 40 dbs. at night, or over 45 during the day, and more than 8 hours of flicker should be RICHLY

compensated for the loss of their land. If the land is going to be stolen without even using eminent domain laws, then the landowners need to be compensated for the loss of their land.