

Good Morning, my name is Monique Thurston, I am a resident of Ferrisburgh. I lived in Western Maine for 33 years prior to moving to Vermont in 2013 . I am a retired radiologist.

I am coming in front of you to help you understand why you must support a reduction of the current nighttime noise levels .

While not perfect reducing those levels to 37dBA from 7pm to 7am would significantly protect Vermont residents from turbine health hazards.

In 2009 I co-founded the Citizens Task Force on Wind Power as an umbrella for the many concerned citizens groups that were forming in every community being considered for wind projects.

In 2010, our organization successfully petitioned the Board of Environmental Protection to undertake rulemaking, resulting in a decrease of the night time noise regulation from 45 to 42 decibels , not to exceed a 10 minutes average, any protected location.

The basis for the request for a noise rule amendment was that noise generated by wind turbines projects is unique and significantly different than any noise generated from common and industrial developments, and that the BEP had no experience with grid scale wind energy project at the time the noise standards were last amended.

At the public hearing members of the BEP, after listening to wind noise turbines victim's testimonies, the petitioners acoustic and medical experts, and then a fierce rebuttal by the wind industry proponents, agreed that changes must be made and amended the noise regulations by creating a separate standard for wind power developments. The new rules were then adopted by the Maine Legislature in February 2012.

Those new rules are however a far cry of what we had requested .

In Vermont , wind projects have been installed and people are suffering from the noise , some had to vacate their homes, some endure the annoyance and debilitation of sleep deprivation and other physical symptoms of Low Frequency Noise (LFN). Understandably, many folks contemplating proposed wind projects in their communities are anxiously anticipating the same fate.

It is apparent that the Public Service Board is issuing permits with scant consideration of the specific particularities of wind turbine noise. They are issuing permits, so called "certificates of public good" without any specific definition of what "public good" means. I would argue that public good includes the health and well being of residents who may be impacted by the operation of wind turbines that are not located a safe distance from their homes.

I cannot in the limited time allotted describe to you the multiple studies done worldwide dealing with the health hazards of wind turbine noise. In the last decade the sophistication of those studies has evolved tremendously and demonstrated the deleterious effects of Low Frequency Noise and Infrasound in an unequivocal way.

So in view of this growing body of evidence, I would rather attract your attention to the peculiar detachment the wind industry, the policymakers and public officials have displayed to the victims of wind turbine noise and the absolute need to establish the new nighttime level of 37dBA as proposed today.

As a retired member of a profession whose evolution has been driven for a century with the purpose to improve the lives of those it serves, I am puzzled by what I see as a new paradigm of "diminished empathy" in public health policy as it relates to individuals exposed to wind turbines noise.

Through the exponential growth of technology the medical profession has reached a level of human life improvement that would have been considered unthinkable just a few decades ago. Doctors combat infections, transplant organs, provide new joints, reduce blood pressure and blood sugar. The list is endless. Once an aspect of human suffering is identified, a search for relief is started and the successes are endless.

Sadly I am coming to the realization that this old concept of empathy has been eliminated in the realm of the deleterious effects of wind turbines on human well-being and this disturbs me profoundly.

The new paradigm encompasses a combination of denial and/or minimization of turbine sufferers' complaints, the imposition of a new concept of "tolerable" or "reasonable" annoyance, as well as the ignorance or dismissal of well established data related to wind turbine noise and sleep disturbance.

In all Vermont projects, the maximum night time noise levels are accepted to be at 45 decibels, averaged over one hour so they can be much higher, with no consideration given to Low Frequency Noise or Infrasound. Simply put, this puts at risks the health and well being of Vermont residents.

I am baffled that a concept of "reasonable annoyance" is accepted as collateral damage for the public good. What is "reasonable" annoyance? What is "unreasonable" annoyance? Who makes that determination? It seems that in Vermont nobody does – agencies appear to just pass the buck.

A 2004 study by Eja Pedersen called " Perception and Annoyance Due to Wind Turbine Noise; a dose-response relationship " shows that noise exposures over 32 dBA start to be highly annoying to some residents, the curve then rises sharply and at exposure levels at or over 40dBA , 25% of the population experience "high annoyance".

A 2007 study by Eja Pedersen published in the British Medical Journal, concluded that "Annoyance was associated with lower sleep and negative emotions... Annoyance is an adverse health effect... The high prevalence of noise annoyance could be due to the intrusive characteristics of the aerodynamics...swishing, whistling, pulsating/throbbing, and resounding". The study clearly distinguished "a specific characteristic to wind turbine noise separate from other industrial noise".

According to Robert Rand , a Maine acoustician who has independently studied turbine noise extensively, "wind turbine sound levels over 35 dBA in quiet rural areas are related to widespread complaints, escalating nuisance, and emergence of sleep disturbance and health effects for vulnerable people such as elderly, children, and people with pre-existing conditions."

"It is inappropriate to permit designs that generate widespread complaints. An appropriate approach to wind turbine noise pollution is to permit facilities that are designed so that they create "no reaction" or at most no more than sporadic complaints , and no adverse effects."

Finally if one recognizes, as did wind industry expert witness Doctor Robert McCunney, while debating doctor Michael Nissenbaum at Rutland Regional Medical Center in May 2010, that wind turbines can cause sleep disturbance because annoyance leads to sleep disturbance, shouldn't the concept of annoyance be entered in the realm of medical symptoms and be left to physicians to assess, quantify and determine rather than policymakers?

Today, because of the proliferation of wind turbines in the world, these simple facts are proven over and over again, and now with more sophisticated tools, including the visualization of altered brain pattern by MRI when a patient has been deprived of sleep as well as a deeper understanding of the effects of Low Frequency Noise and Infrasound.

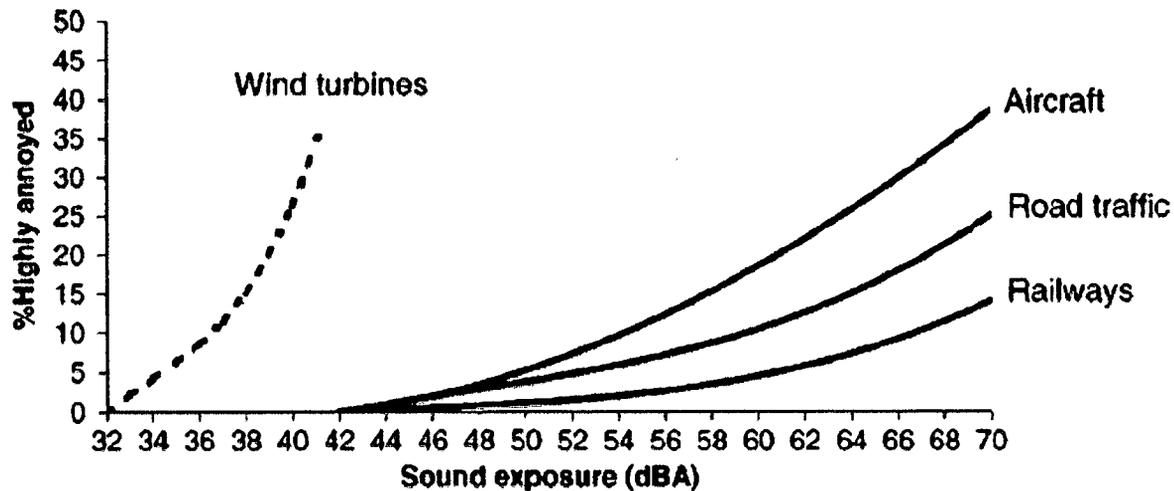
Lack of sleep has many short terms both physical and mental consequences and long term sleep deficit has been associated with increased risk of cancer and decreased immune responses.

So here are my questions:

- Why have the complaints of wind turbines noise sufferers been dismissed by politicians and state health officers, despite the plethora of evidence which supports their complaints. (resignation in Wisconsin of health officer) ?
- Why do politicians accept the precautionary principle that wind turbines will have an effect on global warming, while rejecting the same precautionary principle that would establish regulations to protect the population from adverse health effects as hundreds of studies have now demonstrated worldwide?
- Why are wind turbines noise sufferers not receiving the same attention as any other person complaining about an environmental hazard, but seem rather to be considered as road kills or collateral damage ?
- Where is the empathy and where is the responsibility for the public welfare that public officials have a duty to promote ?

The standard Vermont permit condition for turbine noise 45 decibels averaged over one hour must be changed. As it has been a leader in renewable energy development policy, Vermont should become a leader in the protection of its residents from the harmful effects of wind turbine noise by specifying that predicted night time turbine noise levels for new projects shall not exceed 37 decibels.

There will still be complaints, because rural Vermont can be very quiet in the valleys even when the wind is blowing above the ridges, but you will protect people from the most serious health effects of wind turbine pollution.



Sound exposure is for wind turbines calculated A-weighted  $L_{eq}$  for a hypothetical time period and for transportation DNL.

Source Pedersen, E. and K. Persson Waye. 2004. Perception and annoyance due to wind turbine noise: A dose-response relationship, *Journal of the Acoustical Society of America* 116: 3460-3470.

“The sound level associated with wind turbines at common residential setbacks ... may lead to annoyance and sleep disturbance.” [6] and evidence demonstrates “Annoyance and sleep disruption are common when sound levels are 30 to 45 dBA.” [7]

The American Wind Energy Association and Canadian Wind Energy Association sponsored literature review entitled “Wind Turbine Sound and Health Effects” acknowledges wind turbine noise, including low frequency noise, may cause annoyance, stress and sleep disturbance and as a result people may experience adverse physiological and psychological symptoms.