

## FINDINGS AND RATIONALE THE MONTVILLE WIND TURBINE GENERATOR ORDINANCE

Guiding principle: “A subset of society should not be forced to bear the cost of a benefit for the larger society”. Via Kamperman and James, from George S. Hawkins, Esq., “One Page Takings Summary: U.S. Constitution and Local Land Use”, Stony Brook-Millstone Watershed Association; “...nor shall private property be taken for public use, without just compensation.” Fifth Amendment, US Constitution. As part of its mandate to develop a WTG ordinance, the Montville Wind Turbine Sub-Committee reviewed upwards of 100 documents. These documents included professional papers, white papers, including peer reviewed scientific and medical studies of the effects of WTGs on nearby populations. The available evidence is abundant and credible. A partial listing of these reference materials can be found in Part III – Bibliography of this Appendix.

There is a perceived lack of concern at the state level for the well-being of residents in rural communities. The following is from Kamperman and James:

When Wisconsin’s Town of Union wind turbine committee made an open records request to find out the scientific basis for the sound levels and setbacks in the state’s draft model ordinance, it found that no scientific or medical data was used at all. Review of the meeting minutes provided under the request showed that the limits had been set by Task Force members representing the wind industry. This may explain why state level committees or task forces have drafted ordinances with upper limits of 50 dBA or higher instead of the much lower limits applied to similar projects in other countries. There is, in fact, no independent scientific or medical support for claims that locating 400 foot tall wind turbines as close as 1000 feet (or less) to non-participating properties will not create noise disturbances or other risks. But, there is considerable independent research supporting that this will result in public health risks and other negative impacts on people and property.

### **Part I – Setbacks**

1. Negative health impacts have been observed wherever large turbines have been placed too close to where people live. In numerous instances, these impacts are severe enough that residents have had to move out of their homes some of which they have occupied continuously for more than 30 years. These symptoms have been studied, analyzed, catalogued and documented by professional physicians and scientists, and are not limited to any one region of the world. They are classified under 3 separate clusters of symptoms; Wind Turbine Syndrome, Vibro-Acoustic Disease, and to a lesser extent in humans but widespread among livestock, Electromagnetic Hypersensitivity. The symptoms manifested include: sleeplessness and accompanying exhaustion and irritability, headaches,

tinnitus, ear pressure, dizziness, blurred vision, vertigo, nausea, racing heartbeat, tachycardia, difficulties with concentration and memory.

2. We include, as Exhibit A of this Appendix, a letter by Phil Bloomstein, published in the July 16, 2009 issue of The Republican Journal. Phil Bloomstein a 34 year resident of Freedom, ME, documents how his and his family's life, was affected after the WTG went online late in 2008. His story is typical of families living in quiet rural communities where WTGs have been built too close to homes and without due regard for the quietness of the rural setting.
3. Within the state of Maine, the families living 3500 feet or less of the industrial wind facility in Mars Hill have reported experiencing severe negative health effects, loss of quality of life, and loss of property values. All the families living within that distance, participating in a medical survey have expressed the desire to move away, were they able to salvage the investment they have made in their homes. At the time of this writing, there are no residences in Mars Hill between distances of 3500 feet and 1.25 miles from the industrial wind facility.
4. In Vinalhaven, the industrial wind plant Fox Island Wind, inaugurated on November 17, 2009 – initially welcomed with near unanimous support – began losing that support as families up to 1.5 miles from the project experienced disturbing noise levels and vibrations – all as described in previous studies and literature and in industrial wind plant installations in Mars Hill and Freedom. Prior to construction, residents had been assured that any noise generated would be no louder than a “quiet conversation”. Further, a resident who raises ducks reported they went off their feed when the turbines started operating.
5. The Maine Medical Association on Sept. 12, 2009 and the Maine Osteopathic Association on Sept. 25, 2009 adopted nearly identical resolutions calling for modification of existing industrial wind turbine siting procedures and committed to work with regulatory bodies towards developing up-to-date evidence-based regulations that reflect and incorporate findings of scientific studies on their health effects on nearby populations.
6. For information regarding effects on humans at distances beyond the 3500 foot setback from wind turbines we look to the experience in other locations both at home and abroad, including Europe, whose experience with industrial wind turbines is counted in decades. Researchers at these various locations have made the setback recommendations below. This is by no means a comprehensive listing, but it is representative of the most repeated recommendations. The trend clearly shows a lengthening of the setback distances in order to protect health and well being.

- a. Dr. Robyn Phipps Ph.D., New Zealand – A 2007 survey of 614 respondent households in New Zealand with topography very similar to Maine’s (long, parallel mountain valleys and rocky substrata), found that “wind farm noise has a significant effect on people that may well extend more than 5 kilometers (3.1 mi.) from the site of the turbines”
- b. Marjolaine Villey-Migraine, Ph.D., France – A 2004 paper concludes that no industrial wind turbines must be placed any closer than 5 kilometers (3.1 mi.) from where people live
- c. Scotland requires setbacks of at least 2 kilometers (1.24 miles) from cities, towns and villages
- d. In Feb 2007 United Kingdom’s Dr. Amanda Parry conducted a survey resulting in setback recommendations of no less than 1.5 miles
- e. The Champaign, IL planning commission recommends a minimum 2.5 mile setback from municipal boundaries.
- f. Dr. Nina Pierpoint, MD. Ph.D. recommends minimum setbacks of at least 2 kilometers (1.24 mi..) in flat terrain and 2.2 miles in mountainous terrain.
- g. A nationwide petition in the USA is gathering signatures for minimum setbacks of 2 kilometers (1.24 mi..) with greater distances of 2 - 3 miles for rolling hills and quiet rural areas.
- h. Robert Rand, Full Member INCE, Brunswick, Maine in his April 29 2009 email to the Natural Resources Council of Maine, recommends setbacks of 2 to 3 miles or more.
- i. In the Report of the Governor’s Task Force on Wind Power Development (Maine) dated Feb 14, 2008 recommended “... removing from consideration, 100 percent of the land within two miles of the Appalachian Trail...” even though there are no yearround residents on the trail.
- j. Pharmacist Carmen Krogh of Ontario, Canada cites research calling for setbacks of 1.5 to 3.5 kilometers (.93 to 2.17 mi)
- k. Angus King, former Governor of Maine, and partner of Independence Wind at his March 3, 2009 presentation at the Hutchinson Center, Belfast, ME said setbacks should be “about a mile”.

7. We can also confirm that over time countries have lengthened their setback requirements after documenting the harmful effects of too-short industrial wind turbine and industrial wind turbine plant setbacks.
  - a. United Kingdom: original setbacks in 1991 were based on a multiple of rotor diameter resulting in setbacks of 120 to 170 meters. In 2006, those recommendations changed to no less than one mile.
  - b. Scotland: original setbacks were the same as the 1991 setbacks in the UK. In 2007, the Scottish Planning Policy SPP6 - PAN 45 recommended with the support of the Scottish Ministers a separation distance of 2 kilometers (1.24 mi..) "...between turbines and the edge of cities, towns and villages..."
  - c. France: although at first it placed no limits for setbacks other than sound limitations, in 2006 the Academy of Medicine recommended a setback of 1.5 kilometers(.93 mi) until epidemiological studies could be carried out to determine health effects.
8. It has also been documented that the distance at which human health is negatively impacted by these industrial facilities is influenced by the terrain of the location, whether flat or mountainous, whether loamy or rocky substrata – in the case of Maine, the abundance of ledge which transmits noise and vibration easily and further. The number of turbines also adds to the variables, more turbines means louder noise, traveling further. Higher name plate production turbines result in louder noise.
9. It has also been documented that industrial wind turbine facilities have negative impacts on animals, both domestic livestock and wildlife, including land animals as well as birds, bats, raptors including numerous endangered species.

### **Conclusion:**

The best protection against the negative effects of WTGs on the health, peace of mind, well being and real estate values is proper setbacks. The research literature repeatedly supports longer setbacks as does recorded long-term experience of nearby residents.

### **Part II – Sound Limitations**

1. Improper and inadequate sound measurements have consistently favored the needs of the industry over the needs of the residential, quiet rural communities where they are sited. This has resulted in turbines placed too close to where people live, with real, negative impacts on people, their health, well-being, peace of mind, financial status. In far too many cases,

these adverse effects have been severe, and borne not by the greater community, but by those individual families who, through no fault of their own, find themselves in an unliveable situation caused by improperly sited WTGs. The scientific, medical literature and the news outlets, including the Internet, document these at great length and detail, in print and in video, in the USA and abroad.

2. Unlike other urban or suburban sounds, or loud industrial noise, or traffic noise, those living near these WTGs report being unable to get used to the noise. Rather, reports describe that affected populations become increasingly sensitized to it. Employees in loud factories, or people exposed to traffic noises, or other noises can usually get away from them at home. Because WTGs generated noise occurs at home, 24 hours a day, 7 days a week, individuals cannot escape it. The only cure, is proper sound measurements, resulting in protective setback distances.
3. The noise generated by the WTGs is turbulent broadband noise often described as a jet engine perpetually revving for take-off as the blades move through the air, and a sonically unique and repetitive “wooshing” “thumping”, “clapping”, pulsing noise as the blades pass in front of the turbine mast. This noise is more pronounced at nighttime when the air at ground level is still, but the winds high up at the hub of the turbine are forceful enough to turn the turbine at capacity. Further, the pulsating noise generated by two or more turbines can combine to create louder and more complex noise that carries for longer distances.
4. The most susceptible populations to harmful effects of WTGs noise are young children, individuals with long-term medical conditions, and the elderly.
5. Further, even though many of these WTGs are placed in rural/wilderness areas, such as the Town of Montville, which are very quiet communities, government agencies charged with the protection of the citizenry, consistently espouse noise limitations more appropriate to urban residential or urban mixed areas whose background noise levels are much higher than urban/wilderness areas such as the Town of Montville. The disruption level of these misguided and permissive noise limitations are the cause of much of the sleeplessness and other real health issues suffered by residents near these WTGs.
6. The World Health Organization (WHO) in its reports “Guidelines for Community Noise” and “Report of the Third Meeting on Night Noise Guidelines” recommends that evening and nighttime sound levels should be less than 30 dBA to protect children’s health. Below are some references made in its “Community Noise” (Berglund et al, 2000):

- a. “It should be noted that low frequency noise...can disturb rest and sleep even at low sound levels
  - b. For noise with a large proportion of low frequency sounds a still lower guideline (than 30 dBA) is recommended
  - c. When prominent low-frequency components are present, noise measures based on A-weighting are inappropriate.
  - d. Since A-weighting underestimates the sound pressure level of noise with low frequency components, a better assessment of health effects would be to use C-weighting.
  - e. It should be noted that a large proportion of low frequency components in a noise may increase considerably the adverse effects on health”
  - f. The WHO also states: “The evidence on low frequency noise is sufficiently strong to warrant immediate concern”
  - g. For sounds that contain a strong low frequency component, which are typical of the sound emitted by wind turbines, the WHO says that limits may need to be even lower than 30 dBA to avoid harmful health impacts. The WHO further recommends that the criteria be based on dBC frequency weighing.
7. The low-frequency vibrations, known as dBC, is not usually measured by wind developers, and yet, this is the component that more than the other is the cause of severe health impacts. A reading of the dBC noise level, in addition to the dBA readings, is far more predictive of loudness.
  8. Although the siting of WTGs in the United States consistently favors the needs of the wind developers over the needs for quietude of families living near the WTGs, history shows that they are capable of meeting far stricter sound limitations which have evolved over the 20 plus years of experience in other continents with these industrial facilities. Below is a listing of the sound limitations in place overseas, as compared to those used in the United States:
    - Australia: higher of 35 dBA or L90 + 5 dBA
    - Denmark: 40 dBA
    - France: L90 + 3 dBA (night) and L90 + 5 dBA (day)
    - Germany: 40 dBA
    - Holland: 40 dBA
    - United Kingdom: 40 dBA (day) and 43 dBA or L90+5 dBA (night)

**In the USA:**

- Illinois: Octave frequency band limits of about 50 dBA (day) and about 46 dBA (night)
- Wisconsin: 50 dBA
- Michigan: 55 dBA

9. Further, the International Standards Organization (ISO), an independent organization in ISO 1996-1971 recommends a maximum noise limit of 25 dBA for night time in rural communities. (See table below).

ISO 1996-1971  
Recommendations for Community Noise Limits (dBA)

	Daytime Limit	Evening Limit 7 pm - 11 pm	Night Limit 11 pm - 7 am
Rural	35 dB	30 dB	25 dB
Suburban	40 dB	35 dB	30 dB
Urban residential	45 dB	40 dB	35 dB
Urban mixed	50 dB	45 dB	40 dB

10. From the State of Maine’s Technical Assistance Bulletin #4 – Noise. May 2000:

Prolonged noise exposure is a serious threat to human health; it can result in high stress levels and, at high sound levels, impaired hearing. Common environmental noise sources can cause or contribute to stress-related illnesses such as cardiac and circulatory diseases. Noise can also negatively impact concentration, communication, and sleep creating annoying and sometimes even hazardous conditions. These factors are important in setting noise standards for the community. [.....] It is also important to protect neighborhoods so that residents can communicate and enjoy their property. Residential areas should also be protected from noise so that residents are able to obtain uninterrupted sleep. Interrupted sleep can result in serious health impacts and also affect personal safety at home and at work. Another consideration for municipal officials is property values. Neighborhoods subject to noise disturbance will generally have lower values.

Nighttime noise is more annoying than daytime noise and may cause more noticeable health impacts through the disruption of sleep. — Pages 2 and 3

11. Finally, the same document (Page2) identifies the Sound Pressure Level (dBA) for a “quiet house interior or rural nighttime” as 20 dBA even lower than the ISO’s 25 dBA.

### **Conclusion:**

The Town of Montville is a rural environment, and as such, sound limitations should reflect the quiet nature of its surroundings. Many of its residents have come to Montville from noisier urban environments attracted by its rural character, peaceful, quiet surroundings and community values. Given the abundant documentation readily available from independent professionals and researchers, it is unconscionable that any governing entity, at the local, state or higher level, charged with protecting the health, safety and well being of its citizens, would inflict avoidable hardship on them through either ignorance, carelessness, indolence or undue influences by powerful interested parties with conflicts of interest and their lobbyists.

### **EXHIBIT A – Letter from Phil Bloomstein**

As it appeared on page A9 of the July 16, 2009 issue of the Republican Journal.

#### **Living Next To a Wind Turbine**

We have the distinct “privilege” of living 1,000 feet from tower T3 of the Beaver Ridge Wind Project. Freedom residents on both sides of Beaver Ridge live almost as close but none as close as my family and me. We have tower T3 literally staring us right in the face winter and summer. In the summer the tower and blades almost disappear when you are by the house, but the tower and blades still hang above the house as you walk in our lower gardens. And, you can view the wind turbine from many other spots on our land.

As disturbing as the visual presence of a nearly 400-foot wind turbine is, and its occasional hours of turbine-blade flicker, all that pales in comparison to the noise the turbines often produce. I would dare say we live in one of the noisiest neighborhoods in Waldo County.

Let’s get one thing straight. I’m not claiming my life has been ruined. I’m not looking for sympathy. I’m sure many of you have suffered personal tragedies much worse than having a wind turbine built next to you.

What I am asking for is the truth and some justice.

I want to present you with a credible picture of the turbine’s effects on the quality of our family’s home life. I also want you to understand that the town of Freedom’s planning and permitting of the Beaver Ridge Wind Project was extremely flawed. It was marked by deceptions, poor planning, and small-town politics at its worst. In my opinion, the project has proven that many good folks in the town of Freedom were outwitted by CES



now Beaver Ridge Wind. Many community members were so pro green they were susceptible to the developer's deceptive practices and failed to be responsible to us and our neighbors.

My challenge is to convince you that I am telling the truth. And that others, including my neighbors, the folks in Mars Hill and as far away as the Midwest, are also telling the truth about the disturbing noise created by these machines. Living next to a wind turbine is, to say the least, a very unpleasant experience. Good meaning people write me and say; "We just don't get it". They tell me they have visited the Beaver Ridge turbines several times in different wind conditions, and it just doesn't seem that bad.

I also visited wind turbines. I visited them with the knowledge that one was going to be built very close to my house. I came away thinking living next to one was going to be somewhat annoying but that it probably was going to be OK. I was encouraged by the promises of Beaver Ridge Wind (then called CES). The very same promises that were never kept.

What my neighbors and I have experienced has been much more negative than we had ever imagined.

What is it really like living next to the turbines? There are "good days," but there are way too many bad ones. Although the noise is almost always there, it is not constant in its intensity or type of sound. In minutes it can turn from an almost tolerable drone to a pulsating nightmare so oppressive that any outdoor activity is challenging. The noise also penetrates into the house. On many nights, as soon as you turn off the TV or stereo you immediately hear them. At least four to eight times a month they are very loud. The night noise can be especially disturbing. Some nights there is a loud pulsating noise that lasts right into the morning, on those days we get discouraged. We think that this can't be good for our health and we might as well give up and sell out.

The wind industry, often in concert with well-meaning government officials and environmental activists, uses all its power to diminish complaints and convince the general public that "wind farms" are quiet and that most folks don't mind living next to them.

When CES (now called Beaver Ridge Wind) came to Freedom, they assured us the turbines would be quiet. During the permitting process, they presented a study showing the noise level at our home would hardly ever be above 45 dBa. When all was said and done, the noise levels exceeded the promised levels (often twice as loud). When I asked Beaver Ridge Wind what they were going to do about the noise, they looked me right in the eyes and said they never really exactly promised us that.

The developer's clever promises and use of wind industry propaganda made it easy for the townspeople to support the project even though the setbacks in Freedom were among the weakest in the country. The setbacks were even below manufacturer's suggested distances at property lines. It is my intent to show how the townspeople were

misled. But for now, understand the developers presented a wind study they commissioned saying the sound levels at my house would rarely exceed 45 decibels. The truth is, sound levels are regularly over the promised level, and on many windy nights, can be twice as loud.

Victims of poorly planned wind turbine developments from Mars Hill, Maine to the Midwest are not believed. Fine citizens with the highest of motives dismiss these folks as whiners or less than credible. I have heard people say, you'll get used to it. You don't. There are many contributing factors to this. A few are that the noise changes with wind speed, the types of noise produced, wind direction and atmospheric pressure. The developers should have considered the fact that our home is on a side of a hill downwind from the prevailing wind. Documents can be found and downloaded on the Beaver Ridge Wind web site that explain, "in some hilly terrain where residents are located in sheltered dips or hollows downwind from the turbines, turbine sounds may carry further and be more audible."

Why was this not considered in our case?

There is the classic wind-energy comparison of a turbine's noise level to your refrigerator. First of all, at my house, the turbines are much louder and more annoying than my refrigerator. But let's assume the turbines do sound like my refrigerator. I ask you to imagine your fridge is always running and that also, you have one on your deck, in your garden, by the compost, next to the garage, three or four in your backyard, several well placed down your driveway, one at each door, one next to the grandkids' wing set, and don't forget the ones hanging outside your bedroom window.

Get the idea? I think you might find even your fridge noise a little annoying.

Then there are the possible negative health effects. Remember, the tower is almost 400-feet tall at the tip of the blades and we are 1,060 feet from the middle of the base. So at times, the tips of the blades are about 930 feet away. After a night of pulsating turbine noise that continues right into the morning, (no matter what studies prove) I feel as if this can't be good for my family. I can only imagine what it would be like if one were predisposed to headaches, depression or a sleep disorder.

Perhaps you are thinking, well someone has to suffer for the good of humanity, it might as well be the Bloomsteins. Maybe you are right, but does that give the developers and the wind-energy industry the right to lie about the impact? Beaver Ridge Wind and other projects in Maine are not municipal projects, these wind turbines are for profit. I might be less angry if they had said, OK your life is going to change and not in a good way. There will be a negative impact, you will be sacrificing the quiet rural life you once had for the good of the environment.

But no, they don't do that. They lie and tell your town you'll barely hear them and it will be like being in a quiet room or a library. They could be honest and tell you that it will be noisy at your home. Beaver Ridge Wind could have mentioned the fact that other

people have chosen to sell out rather than live close to a wind turbine. Instead they show videos and PowerPoint slideshows with misleading and deceptive statements.

For us the damage is done. The turbines are up, and most likely, they are not coming down for a long time.

So the question for my family and me is: What do we do? We have lived and worked on our property for the past 34 years. Do we leave the house we built, the gardens we've planted, the place my children and their children love? Or, do we stay and learn to deal with the noise, worry about unknown health hazards, keep windows closed at night in the summer, sleep with earplugs on loud nights — whatever it takes to stay sane?

We know our home will never be the same. If we do leave, what about the value of our house? The industry will tell you house values go up or stay the same, but there are many studies which show quite the opposite.

No matter what we do our family now must fight for our rights. No one comes up to us and offers a solution. Oh, Beaver Ridge Wind might tell you they are working with us and in fact they are: but not until we approached them with our concerns. Beaver Ridge Wind never did a sound study after the turbines went into operation. Their basic approach is to say nothing, do nothing and only respond when the Bloomsteins or other neighbors complain, but not until then.

It has become evident to us that trying to be reasonable, open-minded and pro green has been rewarded by deceptive practices, small-town politics at its worst and a radically negative change to our lifestyle.

We struggle to figure out what to do. We want the truth to be known. We want to be believed. We seek justice in the form of adequate compensation. We also hope in some small way we can prevent others from suffering a similar fate.

Please don't be so zealous in your support of alternative energy that you allow an industry, even a green one, to avoid any reasonable regulations. They need to be held accountable. No company out for profit should be given a free pass.

My family and other families in similar situations should not be forced to seek compensation in the courts or make deals under conditions of confidentiality.

Maine needs to grow up when it comes to wind development. There is no need to repeat the mistakes that were made in Freedom and Mars Hill.

Phil Bloomstein – Freedom, Maine

### **Part III – Bibliography**

This is only a partial listing of the nearly 200 separate documents and references consulted during the Sub-Committee's research. Additional listings are available upon request.

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## Personal Video Testimonies/Documentaries

1. From Mars Hill, ME., residents speak about how the wind turbines have affected their lives.  
Part One: <http://www.youtube.com/watch?v=Lp31TWPC5tc>  
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Part Three: <http://www.youtube.com/watch?v=XBPHKWR-wTM&feature=related>
2. From the Meyesdale, PA windplant, nearby residents speak about their lives. Affected residents live as far as 1 plus miles as the crow flies to the windplant.  
Part One: <http://www.youtube.com/watch?v=SNxvkrgoPLo>  
Part Two: <http://www.youtube.com/watch?v= utFV2ukOtU&feature=related>  
Part Three: <http://www.youtube.com/watch?v=A0d5tSZF3A4&feature=related>
3. Dairy Farmer Scott Smrynka in Lincoln township, Wisconsin tells how the nearby windfarm has affected his milk production and the health of his herds:  
<http://www.youtube.com/watch?v=JP5zT7a8U0Y>
4. In Cohocton, NY, Hal Graham, town Justice, describes how leasing his land to a wind developer has impacted his life:  
[http://www.youtube.com/watch?v=CxSHjAH-9Ys&feature=channel\\_page](http://www.youtube.com/watch?v=CxSHjAH-9Ys&feature=channel_page)
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