

Comments to Massachusetts  
Department of Environmental Protection  
March 18, 2012

Kenneth L. Kimmell  
Commissioner, Department of Environmental Protection  
One Winter Street Boston, MA 02108

John Auerbach  
Commissioner, Department of Public Health  
One Ashburton Place  
Boston, MA 02108

Dear Commissioners Kimmell and Auerbach:

**OVERVIEW - WIND TURBINES CAUSE ADVERSE HEALTH IMPACTS**

**THE SIMPLE TRUTH**

There is increased political pressure to construct industrial wind turbines in neighborhoods throughout MA.

MA DEP released a document that is far less than honest. The DEP panel review of a small amount of literature that was cherry picked by the biased pro-wind panel of so-called 'independent experts' from the hundreds of documents that were submitted.

This 'review of literature' must not stand. From 'a to z' it is fundamentally wrong. From the first word in the report, 'independent', it is false.

**Furthermore, since MA DEP and MA DPH are charged to protect the citizens of MA from harm, PROVE TO THE CITIZENS OF MA THAT WIND TURBINES DO NO HARM TO PEOPLE. THE DEP PANEL DOCUMENT RELEASED DID NOT PROVE THAT WIND TURBINES CAUSE NO HARM. Why? Because they can't do that. There is no proof.**

**The truth is that wind turbines adversely impact the health of people, and they do so all over the globe. Therefore, the documents that the DEP panel was willing to put their names on should be disregarded and discarded.**

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Since the June, 2, 2010 letter to John Auerbach, Commissioner of MA DPH, MA, citizens have called on DPH and DEP to conduct a truly INDEPENDENT epidemiological study in Falmouth, MA.

It is my understanding that there is a cluster of people, that includes approximately 50 families who live in Falmouth, MA and are experiencing adverse health impacts. There are other towns in MA where people experience the same symptoms as the people living in Falmouth, MA. These people live and work in close proximity to industrial wind turbines. The MA citizens were not experiencing these symptoms prior to the operation of the industrial wind turbines. When these MA citizens leave their homes they do not experience the symptoms. When they return to their homes they once again experience the same symptoms.

Wind Turbine Syndrome symptoms are outlined by Nina Pierpont, MD, PhD. in the attached poster. Some symptoms “are sleep disturbance and deprivation, headache, tinnitus (ringing in ears), ear pressure, dizziness, vertigo (spinning dizziness), nausea, visual blurring, tachycardia (fast heart rate), irritability, problems with concentration and memory, and panic episodes associated with sensations of movement or quivering” inside the body that arise while awake or asleep” See attached poster: **Exhibit A, Wind Turbine Poster**

Massachusetts citizens have urgently appealed to Mass DPH and Mass DEP to ‘go out and do the research’. Find out what is happening and STOP the reason why these people are sick. If there is a health issue in a community in MA, why do we have MA DPH or MA DEP? These agencies were established by the citizens of our Commonwealth, these agencies are funded by the citizens of our Commonwealth to PROTECT the citizens of our Commonwealth.

Both agencies have neglected their duty of care to the citizens of MA to protect our health, safety and well being for almost two years that I know of regarding the universally known FACT that wind turbines cause adverse health impacts to humans.

See attached letter: **Exhibit B**, signed by me and other health care professionals, and community leaders from Cape Cod and the Islands.

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**The panel assembled by DEP / DPH in complete secrecy was not interested in the truth. They were only interested in criticizing evidence which demonstrates that there are adverse health problems caused by wind turbines. They didn't even bother to try to validate their assumptions or questions, but just did the best they could to discredit research from around the world that has consistently identified serious health risks caused by wind turbines.**

**The report is exactly like the decades of reports produced by the tobacco industry as a smoke screen to hide the evidence of the health problems caused by tobacco. The tobacco industry for decades hired its army of 'independent experts', i.e. doctors and scientists.**

The panel was convened by the DEP in response to citizen outrage at siting wind turbines too close to people and the adverse health impacts that have resulted in people living in proximity to the turbines.

A number of the panel members are biased even though DEP claims they are 'independent'. **The panel was selected in secret. The panel met in secret. No records of panel meetings were made public. No members of the public were able to speak to the panel members. The panel members did not meet with any of the citizens in Falmouth and other communities in the state who have suffered health problems since the turbines began operation.** MA citizens continuously and vocally protested to DEP throughout many months regarding the above points.

**Although ample evidence was submitted to MA DEP during the comment period by MA citizens and from people around the globe to conclude that there are adverse health impacts to humans when wind turbines are sited too close to people, the panel put their name to a document that is a complete whitewash.**

Wind Wise ~ Massachusetts (WWMA) continues to advocate for "a rigorous epidemiological study by a truly independent team of experts [as] essential" as per the press release sent out following the release of the MA DEP panel document.

See attached press release: **Exhibit C**

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**IN GENERAL**

I find it completely negligent on the part of DEP/DPH that their biased experts criticized selected studies in such a way that people reading the studies may conclude that something is wrong with the selected studies' methodology and/or conclusions. Clearly the panel should have erred on the side of caution to see if there are any chances that wind turbines can adversely impact people, and if so, then use the **precautionary principle** to protect the health and safety of people, not carefully craft wording to lie by omission, write half truths and out and out misrepresent the truth.

We in Massachusetts are headed down a slippery slope where the politicians and their corporate allies are hell-bent on stripping away the rights of citizens and usurping the protections afforded by state agencies like DEP and DPH. We have seen what has happened in New Zealand when a government imposes its will on its citizenry full well knowing that it is destroying small communities, the environment and the health and safety of its citizens. It is a very sad situation.

In our state we have now seen the extent the Patrick Administration will go to meet its goal of 20 % renewables by 2020. Already DEP has shown that it does not care about the families in Falmouth who are adversely impacted from a health standpoint.

**ONE EXAMPLE**

I do not want to lend any credibility to the document that the MA DEP panel was willing to put their name on, but I would like to draw attention to one study that was pointed to:

**THE NEW ZEALAND STUDY**

People are asleep when they are woken up by wind turbines. It is dark when people are sleeping. The statements about visual impacts of wind turbines and information in this study do not hold up. (Yes, even though most people would just assume differently, the data about visual impacts of wind turbines are that literal. There is some data that suggests -- does not

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prove -- just suggests, that when people see the turbines, that this causes stress.) So the panel did not analyze the NZ study properly. Sleep disturbance was not caused by visual impacts, it was caused by some other factor. It was noise. PLEASE FOLLOW THIS THREAD BELOW ALSO.

Panel review states: "Given the findings in the Swedish and Dutch studies, this means that even if the difference in QOL scores seen are due to wind turbines, it is possible that it is driven by seeing the turbines rather than sound from the turbines. Overall, the level of evidence from this study for a causal association between wind turbines and reported QOL is limited."

The NZ study was conducted following rigorous academic standards and carefully peer-reviewed. This study is statistically valid. The sample size was statistically valid, yes small, but this is indicative of many rural communities where wind turbines are constructed.

There were a number of statements made that were worded so that one might take issue with this study. One was about the match between the control group and the Makara Valley victims. The statement about the educational levels is not valid and statistically all of these variables were carefully studied. From a statistical standpoint these two groups are a match.

This is a valid epidemiological study by a highly regarded interdisciplinary team of New Zealand scientists and a medical doctor, all working in the University system of NZ.

The lead author is an expert in psychoacoustics, which is the scientific study of sound perception. More specifically, it is the branch of science studying the psychological and physiological responses associated with sound.

The journal article was peer-reviewed and this is a highly regarded internationally recognized journal. So if it matters that the data should be presented to show the matched neighborhoods, or how many per household, or the power of the turbines, then the journal would have asked for these details.

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In fact, the type of turbines were described in the caption to figure 2, and thus one would expect that the panel would be able to look up the power output if they were so interested:

*Figure 2: Map showing a part of the Makara Valley and the relative distances between houses and 14 of the 66 turbines. The wind turbines (Siemens SWT-2.3-82 VS) have 68 m high towers and rotor diameters of 82 m (Map generated by Rachel Summers, and displayed with permission).*

**FOLLOW UP INFORMATION PROVIDED TO MA DEP AND PANEL MEMBERS:**

I personally have conducted videotaped interviews with people living in the Makara Valley, NZ. I have provided to the panel members through MA DEP a documentary film I created from these interviews as well as other interviews with victims living too close to wind turbines, industrial refugees (those who have had to flee from their homes because their health is so compromised by living too close to wind turbines) and experts in New Zealand studying these issues. I traveled to these countries, spent my time and resources, edited the footage, and worked with others to post the film online in order to bring back information so that MA could make informed decisions. The citizens of MA are not alone. People on the other side of the globe experience the same symptoms that they do.

I provided a DVD of the film ***Pandora's Pinwheels: The Reality of Living with Wind Turbines*** to MA DEP. I have also provided the online link to MA DEP and the panel members.

You can view the film at the following link:  
[www.preservelenoxmountain.org/pandora](http://www.preservelenoxmountain.org/pandora)

Here you will see the victims of the industrial wind power plant --- the wind turbines in the Makara Valley, NZ describe their symptoms. These are some of the very people who are part of the NZ study. Please pay attention to how they describe sleep deprivation. Pay attention to the nurse, midwife and senior lecturer at a Wellington, NZ University who describes the

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vibrations from the turbines and how she has chronic sleep deprivation. It is the noise, but not audible noise that wakes her up. It is like a sensation, a vibration she can feel. Take her up on her offer. Go and share her bed with her. Others in the Makara Valley have offered for you to go and live in their homes for three months. Live the life they live. The point is their lives have been ruined because there are wind turbines sited too close to people.

These people are very ill. They experience a whole host of symptoms that Nina Pierpont, MD, PhD describes as Wind Turbine Syndrome. The following symptoms have been described to me on videotape by the people in the Makara Valley: "sleep disturbance and deprivation, headache, tinnitus (ringing in ears), ear pressure, dizziness, vertigo (spinning dizziness), nausea, visual blurring, tachycardia (fast heart rate), irritability, problems with concentration and memory, and panic episodes associated with sensations of movement or quivering."

Furthermore, I have visited these people twice. I visited in January of 2011 and also 12 months later in January of 2012. The findings show that no person we interviewed in January of 2011 has gotten better if they continued to live in the Makara Valley. The industrial refugees, those who have abandoned their homes, (they have not been able to sell them) feel better because they no longer live there.

There are people who we interviewed in January of 2011 who were determined to stay. Now these people have either abandoned their homes, have their homes on the market, or leave their homes every weekend to get relief, or go away for weeks at a time to get relief, and have plans to move.

So I do have a big issue with how the NZ study was approached by the document that the panel members were willing to sign their names to. This one example alone should sent shivers up their spine. This peer-reviewed study in a highly reputable scientific journal should cause this panel to pause and question, and err on the side of caution. The NZ study should prompt the panel to call for the Precautionary Principle to be invoked in order to protect the health, safety and well being of the citizens of MA.

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**APPLICATION OF LOGIC**

**NINA PIERPONT, MD, PHD:**

And what of the lies told consistently, attempting to rob *true independent experts* of their credibility and professional integrity. Let's look at just one example from the MA DEP/DPH report. Referring to Wind Turbine Syndrome, A Report on a Natural Experiment (2009) by Nina Pierpont, MD, PhD, the MA DEP/DPH report states unequivocally: "limitations to the design employed make it *impossible* for this work to contribute *any* evidence to the question of whether there is a causal association between wind turbine exposure and health effects" (p24).

Well then! So much for Dr. Pierpont, honors graduate of Yale, MD from Johns Hopkins, PhD in population biology from Princeton. Note a different appraisal from her peer reviewers, Drs. Katz (epidemiology), Lehrer (otolaryngology), Haller (neurology), and Horn (population biology). All four reviews have been reprinted in their entirety in the book. As excerpted below:

"Your high level of scientific integrity is revealed both in your [research] design decisions and in your writing.... You have laid a remarkable, high quality, and honest foundation for others to build upon.... [Y]ou have made a commendable, thorough, careful, honest, and significant contribution to the study of (what we can now call) Wind Turbine Syndrome." —*from the referee report by [Ralph V. Katz, DMD, MPH, PhD](#), Fellow of the American College of Epidemiology, Professor and Chair, Department of Epidemiology & Health Promotion NYU College of Dentistry*

"The careful documentation of serious physical, neurological and emotional problems provoked by living close to wind turbines must be brought to the attention of physicians who, like me, are unaware of them until now." — *from the referee report by [Jerome Haller, MD](#), Professor of Neurology and Pediatrics (retired 2008), Albany Medical College, Albany, New York. Dr. Haller is a member of the American Academy of Pediatrics, the American Academy of Neurology (Child Neurology Section), and the Child Neurology Society.*



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“Dr. Pierpont has gathered a strong series of case studies of deleterious effects on the health and well-being of many people living near large wind turbines. Furthermore, she has reviewed medical studies that support a plausible physiological mechanism directly linking low frequency noise and vibration (like that produced by wind turbines and which may not in itself be reported as irritating) to potentially debilitating effects on the inner ear and other sensory systems associated with balance and sense of position. Thus the effects are likely to have a physiological component, rather than being exclusively psychological....” —*from the referee report by [Henry S. Horn, PhD](#), Professor of Ecology and Evolutionary Biology, and Associate of the [Princeton Environmental Institute](#), Princeton University*

What problems did the MA “expert independent” panel have with her study design? After having cherry-picked which evidence among the thousands of pages of material to ‘review,’ the panel essentially claimed Pierpont cherry-picked her subjects: “The way in which these participants were recruited makes it *impossible to draw any* conclusions about attributing causality to the turbines” (p25).

**If logic follows then, if the DEP panel has an issue with Dr. Pierpont’s book and Wind Turbine Syndrome because they claim that she ‘cherry picked’ the victims, and therefore the panel claims that there is NO Wind Turbine Syndrome, and the concept of Wind Turbine Syndrome should be thrown out, then the panel itself should be throw out because they are a cherry picked group of people who are indeed biased.**

**AGAIN, I CALL UPON MA DPH (as I have since June 2010), the agency that has the mission statement to help the people of MA and to actually take people seriously who are experiencing adverse health impacts in our Commonwealth and ACT. HELP THE PEOPLE IN FALMOUTH WHO ARE EXPERIENCING ADVERSE HEALTH IMPACTS FROM LIVING TOO CLOSE TO WIND TURBINES AS WELL AS THE PEOPLE WHO HAVE SPOKEN OUT IN HINGHAM, HULL, HANCOCK, DENNIS, BOURNE, NEWBURYPORT AND WOODS HOLE. Do the research. There are likely more people who are experiencing adverse health impacts from wind turbines in MA TODAY. It is your responsibility to help MA citizens and protect the health, safety and**

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**well being of the citizens of our Commonwealth. DO YOUR DUTY, NOW!**

**STATED SCOPE OF WORK**

This panel neglected their stated SCOPE OF WORK from MA DEP and did not even make mention of a whole set of data. They were charged to read, study, and report on empirical evidence as well as studies. MA DEP somehow did not even mention that the panel neglected a BIG part of their scope of work. See below:

"In conducting its evaluation the panel will:

Conduct a literature search and suggest studies and reference materials. Evaluate and discuss information from peer reviewed scientific studies, other reports, and popular media on the nature and type of health complaints commonly reported by individuals who reside near existing wind farms.

Indicate the quality of the data and the weight-of-evidence for potential health effects associated with wind turbines.

Clarify best management practices versus precautionary measures.

Conduct at the Panel's discretion fact-finding activities, including field trips to one or more wind turbine locations.

<http://www.mass.gov/dep/energy/wind/scope.htm>

**OTHER IMPACTS THAT WERE NOT EVEN MENTIONED**

**WATER QUALITY:** The panel report is also deficient in that it does not deal with water quality to the detail of answering questions I and others raised. I have evidence of oil leaking from wind turbines that I submitted to them. They didn't address the fact that Cape Cod is a sole source aquifer and the adverse impacts to health if oil, or cleaning chemicals that are used in turbine maintenance leak into our ground water.

**FIRE:** They did not address fire, especially in places like the Outer Cape where during storm conditions it would be impossible to drop chemicals on a turbine, the impacts to the health of communities where there is a fire, let

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alone what the chemicals would do to the water quality, of this sole source aquifer.

COMMUNITY FRACTURE: They did not report on community fracture. One of the most damaging aspects of the placement of wind turbines into communities is the 'community fracturing' which occurs throughout the world. The Community Fracture has a direct impact upon the health of the community and members of the community.

AMENITY: The panel did not report on loss of amenity as a decrease in human health as per the WHO definition of health quality. People who are noise sensitive gravitate to living in these areas. This is a large part of their sense of well being, quality of life and overall health. By making these areas noisy one is stealing the peace and quiet from people living in these rural and semi rural areas, and robbing them of their health and well being. Of course there are a whole host of other adverse health impacts from wind turbines as well.

**LESSONS LEARNED BY DOING THE WORK THAT WE HAVE CALLED  
UPON MA DPH AND MA DEP TO DO -- INTERVIEW THE VICTIMS,  
PEOPLE WHO ARE LIVING TOO CLOSE TO WIND TURBINES WHO  
ARE ADVERSELY IMPACTED FROM A HEALTH STANDPOINT AND  
ARE WILLING TO SPEAK OUT:**

**In light of the politically motivated and biased DEP health study, it think it is important to share some of the highlights from the interviews I have conducted in many countries around the world:**

- The health problems caused by living near wind turbines appear to get worst over time.
- Many of the people interviewed have concluded that the only path available to them to regain their former health status is to abandon their homes.
- People stated that they feel the health impacts they have experienced due to living near turbines is cumulative.

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- There are many many variables and all need to be researched including weather conditions, topography, elevation, time of season.
- Long term exposure to low frequency noise and infrasound, even at lower doses may indeed cause severe adverse health impacts far outstripping any imagination.
- People with well-managed chronic illness may indeed find significant health problems with even short exposure to low frequency noise and infrasound from wind turbines, even experienced by driving through hundreds of wind turbines over several hours.
- There are many people all over the globe who do not even know that they are adversely impacted because they live, work, or go to school too close to wind turbines. They know they are ill but do not know that it is the turbines that are making them ill.

**HUNDREDS IF NOT THOUSANDS OF RECORDS OF EMPIRICAL DATA WAS SUBMITTED TO MA DEP BY THE JULY 2011 DEADLINE; IT WAS IGNORED BY THE PANEL EVEN THOUGH THE SCOPE OF WORK STATED THAT EMPIRICAL DATA SHOULD BE INCLUDED IN A REPORT**

The package of materials that Wind Wise - Massachusetts (WWMA) submitted via mail to [WindTurbineDocket.MassDEP@MassMail.State.MA.US](mailto:WindTurbineDocket.MassDEP@MassMail.State.MA.US) by the July 22, 2011 deadline, and was received by the deadline contained among other items a CD-ROM. This disc contains documented empirical data from **FIVE MA wind turbines**. Additional packages with all of the above information was also mailed directly to both Kenneth Kimmell, Massachusetts Commissioner of the Department of Environmental Protection and to John Auerbach, Commissioner of the Massachusetts Department of Public Health.

In the spirit of keeping the MA legislature informed, additional packages of the information sent to both agencies I mailed as copies to my MA State Representative who is part of Leadership and to my MA State Senator. I

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wanted also to document the information mailed to DEP and DPH by WWMA.

Hundreds if not thousands of records of adverse impact incidents from a health standpoint were submitted to DEP and DPH by WWMA from the lived experiences of those who are unfortunate to be living too close to wind turbines. This empirical data & evidence of harm from wind turbine noise was indeed submitted. Empirical data was submitted by WWMA from MA citizens living too close to FIVE WIND TURBINES IN MA (Falmouth Wind 1, the Notus Turbine, the Woods Hole turbine, Hull, and Newburyport.) Empirical data was submitted by WWMA from US citizens throughout our country. Empirical data was submitted by WWMA from citizens of the world including from Australia, New Zealand, Japan, and many European countries.

I know this is factual. I compiled most of the material on the CD-ROM with the help of people around the state. I produced the CD-ROMs and DVDs and materials contained in the packages. I sent out the materials. This took me countless months of my volunteer time to do so as well as my own personal finances. I am very concerned that my time, money and efforts to submit ample evidence of the truth that wind turbines cause adverse health impacts were ignored and disregarded.

In addition to the materials submitted by WWMA, MA citizens submitted materials to MA DEP as well as people from throughout the United States and from throughout the world.

**POSTING ALL DATA ONLINE**

DEP neglected their duty by not posting a massive amount of data submitted. DEP should be forced to post online ALL submissions submitted.

DEP insisted that they send out emails to obtain permission to post online submissions. DEP received permission to post the letters and information.

Thousands of records of adverse impacts from a health standpoint were submitted to DEP from the lived experiences of those who are unfortunate

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to be living too close to wind turbines, empirical data & evidence of harm from wind turbine noise. Permission was given to MA DEP to post material and it was not posted.

As an example, I refer to my husband's submission. He emailed to DEP a PDF file with his submission that took him countless hours to research, write, proof and compile. He also took his time to give MA DEP permission to post his submission online. When this was posted online, the body of his email was posted stating that the PDF file with the content of his lengthy well researched materials was attached. The MA DEP posting only includes the body of the email stating the PDF file is attached. The PDF file is not accessible. There is only an image of a box that says PDF.

Furthermore, I played a major role to submit over 70 letters from people in MA and around the globe who are adversely impacted by wind turbines by WWMA before the July 22, 2011 deadline. I emailed to MA DEP wind docket several times to find out what the procedure would be to obtain permission by the people who wrote the letters so that these letters would be posted online when I learned that these were the 'new rules' that MA DEP was placing before the citizens of MA and those who submitted materials to MA DEP for the panel members to review. WHAT WAS MY RESPONSE? I RECEIVED NO RESPONSE FROM ANYONE!

I am concerned as a MA citizen at the shoddy work product of MA DEP in posting the comments that MA citizens spent their volunteer time, resources, research and energy to submit. The approach shows little concern for the citizens of MA and little concern for doing the right thing and honoring the hard work of the citizens of MA and the world. It is an outrage that MA DEP has treated people in this manner.

Furthermore, if this is the work product of MA DEP, then it follows that the the MA DEP panel work, in working with the MA DEP staff assigned to this project must be just as shoddy.

I do hereby call upon MA DEP to make this right. Post all submissions and testimony online properly ASAP.

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Reach out to me and let's get this right. Work with me to post all of the letters that WWMA submitted.

In addition, answer each and every submission and do so online as MA DEP does with submissions for other matters.

**POSITIONING OF JUNK SCIENCE DOCUMENT**

As a concerned MA citizen I am calling upon MA DEP to clarify with the media what the document actually said. Did MA DEP deliberately pitch this story so the media wrote that there are no adverse health impacts from wind turbines? If not, then issue a statement that this is NOT what the document even says. To do anything less is down right dishonest to the MA citizens.

**THERE IS SOMETHING ROTTEN IN DENMARK, SWEDEN, GERMANY,  
VERMONT AND MAINE**

Brief comments regarding the document: A Brief Review of Wind Power in Denmark, Germany, Sweden, Vermont, and Maine: Possible Lessons for Massachusetts

During a meeting held at MA DPH on Sept. 9, 2011 at the DPH office in Boston, Alicia McDevitt, Deputy Commissioner DEP told 11 members of WWMA and citizens of MA attending that the health report would NOT be used for policy decisions in MA. She further stated that the MA DEP panel would NOT make any policy recommendations. She stated that this was NOT their role. They were charged by DEP to ONLY report on health related to wind turbines.

Obviously this is not true if one reads the document:  
A Brief Review of Wind Power in Denmark, Germany, Sweden, Vermont, and Maine: Possible Lessons for Massachusetts

As a concerned citizen of MA this document is not appropriate. It must be dismissed. It is biased, untrue, misleading, and down right propaganda.



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**QUESTIONS:**

**INDEPENDENT PANEL:**

Independent panel. What is MA DEP's definition?

MA citizens were assured that panel members would be chosen because they would have no pre-conceived opinion on wind energy or wind turbines. This is clearly not the case.

MA citizens deserve to know the truth about how MA DEP has positioned this word (*independent*) to mean something it does not mean.

PROVE TO ALL CITIZENS MA THAT THE PANEL WAS NOT HAND PICKED TO GO ALONG WITH A POLITICAL AGENDA AND THAT ITS REAL 'CHARGE' WAS NOT TO SEEK THE TRUTH AND PROTECT THE SAFETY, HEALTH AND WELL BEING OF THE CITIZENS OF MA. See **Exhibit D**, (Mills) **Exhibits E, F** - (Manwell)

**WHAT INFORMATION DID THE MA DEP PANEL MEMBERS RECEIVE:**

Did DEP panel members of the so called wind science panel receive the information that WWMA submitted? Members of WWMA were assured by Alicia McDevitt, Deputy Commissioner Department of Environmental Protection that all members of the panel did receive all materials submitted by WWMA.

Or did the other panel members receive the information that WWMA submitted but just choose to ignore the empirical data from MA citizens, USA citizens and citizens of the globe?

**SCOPE OF PANEL:**

During the meeting on 5/3/11

Did panelists not follow the scope of the panel members as published by MA DEP on their website and emailed to WWMA members?

"In conducting its evaluation the panel will:



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Conduct a literature search and suggest studies and reference materials.  
**Evaluate and discuss information from peer reviewed scientific studies, other reports, and popular media on the nature and type of health complaints commonly reported by individuals who reside near existing wind farms.**

**Indicate the quality of the data and the weight-of-evidence for potential health effects associated with wind turbines.**

Clarify best management practices versus precautionary measures.

**Conduct at the Panel's discretion fact-finding activities, including field trips to one or more wind turbine locations."**

<http://www.mass.gov/dep/energy/wind/scope.htm>

The panel was charged to read, study, and report on empirical evidence as well as studies. **This panel neglected their stated SCOPE OF WORK from MA DEP and did not even make mention of a whole set of data.**

Did panelists receive a different mandate than that published by DEP as per above?

MA DEP somehow did not even mention that the panel neglected a BIG part of their scope of work. Empirical data & evidence of harm from wind turbine noise was submitted for the panel and was not even mentioned in the review of biased selected literature that the panel produced. **MA DEP AND MA DPH HAVE NEGLECTED THEIR DUTY OF CARE TO THE CITIZENS OF MA.**

**CONCLUDING COMMENTS, BUT BY NO MEANS A CONCLUSION OF MY WORK TO MAKE THE TRUTH THAT WIND TURBINES CAUSE ADVERSE HEALTH IMPACTS**

It was my great hope that the panel would honestly report to the citizens of MA the truth that people around the globe are experiencing adverse health impacts from wind turbines.

It was my great hope that there would have been at least several panel members who would have the integrity and intellectual honesty to oppose the twisted language, half truths, perception of truth and outright lies that

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these panel members have put their names to, and these panel members would call for an honest report for the citizens of MA and call for MA to take action by sponsoring a rigorous, independent and transparent epidemiological study. Not one member of this panel had what it takes to stand up for protecting the health, safety and well being of the citizens of MA and the globe.

**I find it completely negligent on the part of DEP/DPH that their biased experts criticized selected studies in such a way that people reading the studies may conclude that something is wrong with their methodology and/or conclusions. Clearly the panel should have erred on the side of caution to see if there are any chances that wind turbines can adversely impact people, and if so, then use the precautionary principle to protect the health and safety of people.**

**Since MA DEP and MA DPH are charged to protect the citizens of MA from harm, PROVE TO THE CITIZENS OF MA THAT WIND TURBINES DO NO HARM TO PEOPLE. Anything less should be disregarded and discarded.**

Sincerely,

Lilli-Ann Green  
Wellfleet, MA

Member Windwise ~ Cape Cod

Member Wind Wise ~ MA

cc: Governor Deval Patrick

MA Senators and Representatives

Suzanne Condon, Associate Commissioner Department of Public Health

Alicia McDevitt, Deputy Commissioner DEP

Martha Steele, DPH

Margaret Round, DPH Deputy Director, Toxicology Program

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Carol Rowan West, Director ORS

MA DEP Panel members:

Jeffrey Ellenbogen, MMSc, MD

Sheryl Grace

Wendy J. Heiger-Bernays, PhD

James F. Manwell, PhD

Dora Ann Mills, MD, MPH, FAAP

Kimberly Sullivan, PhD

Marc Weisskopf, Sc.D

# Wind Turbine Syndrome: A Report on a Natural Experiment

Nina Pierpont, MD, PhD

Excerpts from the Executive Summary 12/20/2009

**The core of the book is a scientific report presenting original, primary research on symptomatic people living near large industrial wind turbines (1.5-3 MW) erected since 2004. The findings:**

1. Wind turbines cause Wind Turbine Syndrome. We know this because people have symptoms when they are close to turbines and the symptoms go away when they are away from turbines. The study families themselves figured out that they had to move away from turbines to be rid of their symptoms, and nine out of ten have moved. Some sold and some abandoned their homes....
2. The symptoms are sleep disturbance and deprivation, headache, tinnitus (ringing in ears), ear pressure, dizziness, vertigo (spinning dizziness), nausea, visual blurring, tachycardia (fast heart rate), irritability, problems with concentration and memory, and panic episodes associated with sensations of movement or quivering inside the body that arise while awake or asleep....
3. People with pre-existing migraine disorder, motion sensitivity, or damage to inner ear structures (such as hearing loss from industrial noise exposure) are more susceptible than other people...
4. Symptoms are not statistically associated with pre-existing anxiety or other mental health disorders.
5. The symptom complex resembles syndromes caused by vestibular (inner ear balance organ) dysfunction. The proposed mechanism is disturbance to balance and position sense by noise and/or vibration, especially low frequency components of the noise and vibration.
6. An extensive review of recent medical literature reveals how balance-related neural signals affect a variety of brain areas and functions, including spatial awareness, spatial memory, spatial problem-solving, fear, anxiety, autonomic functions (like nausea and heart rate), and aversive learning. These known neural relationships provide a robust anatomic and physiologic framework for Wind Turbine Syndrome.
7. Medical and technical literature on the resonance of sound or vibration within body cavities (chest, skull, eyes, throat, ears) is reviewed, since study subjects experience these effects.
8. Published studies of documented low frequency noise exposure (both experimental and environmental) are reviewed. These demonstrate effects on people similar or identical to Wind Turbine Syndrome. Indeed, one study from Germany in 1996 may indeed be Wind Turbine Syndrome.
9. Recent mail-in survey studies of people who live near wind turbines in Sweden and the Netherlands... show that people are severely annoyed at noise from wind turbines at much lower A-weighted noise levels than for traffic, train, or aircraft noise.
10. Published literature documenting the effects of environmental noise on cardiovascular health and children's learning are reviewed. For health reasons, the World Health Organization recommends lower thresholds for nighttime noise than are currently observed in most countries —especially when the noise has low-frequency components.
11. Wind Turbine Syndrome gives a name and medical description to a set of symptoms severe enough to drive people from their homes and establishes medical risk factors for such symptoms. This study and other studies reviewed in the report indicate that safe setbacks will be at least 2 km (1.24 miles) and even longer for larger turbines and in more varied topography. Further research is needed to clarify physical causes and physiologic mechanisms, explore other health effects of living near wind turbines, determine how many people are affected, and investigate effects in special populations, including children....

Wednesday, June 2, 2010

John Auerbach, Commissioner  
Department of Public Health  
One Ashburton Place  
Boston, MA 02108

**RE: Call for Immediate Review of Public Health and Safety Standards Near Wind Turbines**

Dear Commissioner Auerbach:

As health professionals and representatives of citizen groups, we submit this urgent request for your immediate action.

It is imperative that, as Commissioner of the Department of Public Health, entrusted with the responsibility to protect the health and safety of the citizens of Massachusetts, and consistent with your power under M.G.L. Chapter 111, Section 6 to define, control, and prevent diseases deemed dangerous to public health, you launch an **immediate and comprehensive study** of the public health and safety impacts to Massachusetts citizens in relation to the siting of wind turbines.

Some of us have been directly involved in the wind siting review process in a number of Massachusetts communities during the past two years. Through this participation we have become acutely aware of the emergence - and growing potential - for serious public health and safety impacts of wind turbines in Massachusetts exacerbated by the "rush to wind" and siting wind turbines less than 1.24 miles (2 km) in flat areas and less than 2 miles in mountainous areas from human habitation.

It is Governor Patrick's goal to site 2,000 megawatts of wind turbines throughout Massachusetts by 2020, a policy that seems to be translating into "*site wind at any price*". In addition, legislation recently enacted, such as the Green Communities Act of 2008, requires the development of wind facilities throughout the state. These aggressive goals and legislative mandates highlight the growing critical need to ensure that the locations and operations of all future wind facilities in our state reflect adequate protective public health and safety oversight.

We implore you to begin this process in those communities where proximity to a wind turbine has already caused health effects in residents. The most recent incident has occurred in the town of Falmouth.

In addition to assessing public health and safety impacts on residential neighborhoods, there is also a need to protect the health and safety of sensitive and less mobile populations – those in nursing homes, hospitals, schools, and prisons.

Wind turbines have already been erected near schools, and more are planned.<sup>1</sup> School sites can involve complex constraints and should take into consideration the example of a turbine blade breaking with parts hurled near an Ohio high school<sup>2</sup> and the collapse of a turbine in a primary school playground in Scotland.<sup>3</sup> In fact, there are numerous documented instances around the world of turbine malfunction that have potential impacts on public safety.<sup>4</sup>

According to a report on the renewable energy potential at state-owned facilities, wind turbines are also planned at three sites controlled by the Massachusetts Department of Corrections.<sup>5</sup> Imprisoned populations may be particularly vulnerable to the health and safety effects of living near wind turbines.

We therefore further implore you to take a public and firm position in support of a rigorous, independent and comprehensive study of the public health and safety effects of proximity to wind turbines.

The compelling motivation for our request to you is based upon the recent events in this state. The completed and operating wind turbines in our state are rapidly becoming “natural experiments” for demonstrating adverse impacts to the health and safety of the citizens of Massachusetts even though a decade of similar impacts by industrial wind turbines when sited too close to human habitation are documented in other states and countries.

Here is what we know:

- The validity of research showing adverse human health impacts when industrial wind turbines are placed in proximity to homes, businesses, schools and institutions is irrefutable. Physicians, public health officials and researchers around the globe are reaching the same conclusions based upon the reality that people living near wind turbines experience the same illnesses.<sup>6</sup>
- Faced with mounting evidence of health and safety concerns near wind turbines, numerous jurisdictions in the U.S. and other countries have initiated their own health impact reviews. As just two examples, the Environment Ministry of Japan has started a four-year study of the possible health hazards of wind turbines.<sup>7</sup> The Maine Medical Association has adopted a resolution to “work with health organizations and regulatory

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<sup>1</sup> P. 12, [http://www.mass.gov/Eoeea/docs/eea/press/publications/022409\\_renew\\_potential\\_study.pdf](http://www.mass.gov/Eoeea/docs/eea/press/publications/022409_renew_potential_study.pdf)

<sup>2</sup> <http://www.morningjournal.com/articles/2009/02/10/news/mj594813.txt>

<sup>3</sup> <http://www.windaction.org/news/24196>

<sup>4</sup> [www.windaction.org](http://www.windaction.org); [www.wind-watch.org](http://www.wind-watch.org)

<sup>5</sup> P. 12, [http://www.mass.gov/Eoeea/docs/eea/press/publications/022409\\_renew\\_potential\\_study.pdf](http://www.mass.gov/Eoeea/docs/eea/press/publications/022409_renew_potential_study.pdf)

<sup>6</sup> [http://www.windturbinehealthhumanrights.com/wtnhhr\\_june2007.pdf](http://www.windturbinehealthhumanrights.com/wtnhhr_june2007.pdf)

<sup>7</sup> <http://www.asahi.com/english/TKY201001180410.html>

agencies to provide scientific information of known medical consequences of wind development in order to help safeguard human health and the environment.”<sup>8</sup>

- Nina Pierpont M.D., Ph.D. recently published a book titled Wind Turbine Syndrome, A Report on a Natural Experiment which describes the common illnesses caused by living or working near wind turbines. According to Dr. Pierpont:

“The symptoms that people report follow a common pattern, or cluster, which I call ‘Wind Turbine Syndrome.’ These are the most prominent: sleep disturbance, headache, ringing or buzzing in the ears (tinnitus), ear pressure, dizziness and vertigo, nausea, visual blurring, racing heartbeat (tachycardia), irritability, problems with concentration and memory, panic episodes associated with sensations of internal pulsation or quivering, which arise while awake or asleep.

“People suffering from these health effects were, in nearly all cases, supportive of these wind energy projects. Let me be clear on this. Moreover, they were assured that as the closest neighbors they would not experience any disturbance or illness. Of the 10 families (38 individuals) included in my “Wind Turbine Syndrome: A Report on a Natural Experiment” ..., 9 families have had to leave their homes, and the tenth has sued and is living in misery. Mind you, this is just the families in my report; I have since learned of numerous people, globally, who suffer from Wind Turbine Syndrome and are being forced to leave their homes. My phone and email in-box are loaded with these complaints.

“...Whether the precise pathophysiological mechanism I lay out is correct or not, there is no serious dispute among medical doctors that these people suffer from bona fide and serious illness-and that its cause is the wind turbines, and that this constellation of illness disappears when these people remove themselves from the vicinity of the turbines. I repeat, there is no serious clinical dispute about this.”

- Christopher Hanning M.D., retired director of the Leicester Sleep Disorders Service, has authored a report titled Wind Turbine Noise, Sleep and Health. He writes “...there is compelling evidence that wind turbine noise can and does disturb sleep and impair the health of those living too close and that current guidance is inadequate protection.”

He adds that “In my expert opinion, from my knowledge of sleep physiology and a review of the available research, I have no doubt that wind turbine noise emissions have been clearly associated with sleep disturbances.”<sup>9</sup>

- In a press conference on May 7, 2010, Michael Nissenbaum M.D. reported to the Vermont legislature on his research into the health effects of living within 3,500 feet of wind turbines. He explained:

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<sup>8</sup> [http://windvigilance.com/noise\\_ahe.aspx#\\_edn12](http://windvigilance.com/noise_ahe.aspx#_edn12)

<sup>9</sup> [http://windvigilance.com/downloads/Wind\\_Turbine\\_Noise\\_Sleep\\_Health.pdf](http://windvigilance.com/downloads/Wind_Turbine_Noise_Sleep_Health.pdf)

“It is a medical fact that sleep disturbance and perceived stress result in ill effects, including and especially cardiovascular disease, but also chronic feelings of depression, anger, helplessness, and, in the aggregate, the banishment of happiness and reduced quality of life.”

“If industrial wind turbines installed in close proximity to human habitation result in sleep disturbance and stress, then it follows as surely as day follows night that wind turbines will, over the long term, result in these serious health effects and reduced quality of life.”

He then presented a summary of his research:

“In my investigation of Mars Hill, Maine, 22 out of about 30 adults (‘exposed’) who live within 3500 feet of a ridgeline arrangement of 28 1.5 MW wind turbines were evaluated to date, and compared with 27 people of otherwise similar age and occupation living about 3 miles away (Not Exposed).

“Here is what was found:

“82% (18/22) of exposed subjects reported new or worsened chronic sleep deprivation, versus 4% (1 person) in the non-exposed group. 41% of exposed people reported new chronic headaches vs 4% in the control group. 59% (13/22) of the exposed reported ‘stress’ versus none in the control group, and 77% (17/22) persistent anger versus none in the people living 3 miles away. More than a third of the study subjects had new or worsened depression, with none in the control group. 95% (21/22) of the exposed subjects perceived reduced quality of life, versus 0% in the control group. Underlining these findings, there were 26 new prescription medications offered to the exposed subjects, of which 15 were accepted, compared to 4 new or increased prescriptions in the control group. The prescriptions ranged from anti-hypertensives and antidepressants to anti migraine medications among the exposed. The new medications for the non exposed group were anti-hypertensives and anti-arthritis.”<sup>10</sup>

- The careful research of Amanda Harry M.D. in England,<sup>11</sup> Bridget Osborne M.D. in Wales,<sup>12</sup> Robert McMurtry M.D. in Canada (a former Assistant Deputy Minister of Health),<sup>13</sup> and Robyn Phipps Ph.D. in New Zealand,<sup>14</sup> have confirmed the substance of these findings.

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<sup>10</sup> <http://www.windaction.org/documents/27196>; <http://windconcernsontario.files.wordpress.com/2009/08/mars-hill-nissenbaum1.pdf>; <http://vodpod.com/watch/2060980-interview-with-dr-michael-a-nissenbaum>

<sup>11</sup> [http://www.wind-watch.org/documents/wp-content/uploads/wtnoise\\_health\\_2007\\_a\\_harry.pdf](http://www.wind-watch.org/documents/wp-content/uploads/wtnoise_health_2007_a_harry.pdf)

<sup>12</sup> <http://www.telegraph.co.uk/education/3326712/Wind-farms-make-people-sick-who-live-up-to-a-mile-away.html>

<sup>13</sup> <http://www.wind-watch.org/ww-noise-health.php>; <http://alleghenytrees.wordpress.com/2010/01/10/dr-robert-mcmurtry-on-the-issue-of-wind-turbines-and-health/>;

<http://online.wsj.com/article/SB10001424052748704240004575085631551312608.html>

<sup>14</sup> <http://www.ohariupreservationsociety.org.nz/hiphps-moturimutestimony.pdf>



- Other researchers have linked proximity to wind turbines with vibro-acoustic disease.<sup>15</sup>
- There is substantial evidence of impacts to human health through videos and other materials available on the internet. Among those, we refer you to the following items:

Life Under a Windplant (Meyersdale PA)

<http://www.youtube.com/watch?v=SNxvkrGoPLo>

[http://www.youtube.com/watch?v=\\_utFV2ukOtU](http://www.youtube.com/watch?v=_utFV2ukOtU)

<http://www.youtube.com/watch?v=AOd5tSZF3A4>

The Voices of Tug Hill (Lowville NY)

<http://www.youtube.com/watch?v=ePZO76z2iBY>

<http://www.youtube.com/watch?v=ugmxuYQvjv4>

<http://www.youtube.com/watch?v=ZgeQjtuwxuE>

Welcome to Mars Hill (Mars Hill ME)

<http://www.youtube.com/watch?v=Lp31TWPC5tc>

<http://www.youtube.com/watch?v=JpFLsNiXE0g>

<http://www.youtube.com/watch?v=JpFLsNiXE0g>

Weekend Voices (Vinalhaven ME)

<http://archives.weru.org/voices/weekend-voices-121909>

How Close is Too Close? (Hull MA)

<http://www.wind-watch.org/video/windwise.mp4>

Our Life With DeKalb Turbines

<http://lifewithdekalbturbines.blogspot.com/>

Claims of wind farm illness: Waubra Disease

<http://www.abc.net.au/news/video/2010/02/19/2825235.htm>

It is imperative that your agency undertake an **immediate and comprehensive** review of all health aspects of wind turbine siting, particularly in those communities where wind projects have resulted in significant numbers of residents becoming ill, including Falmouth. Such affected communities should be the focus of a standard epidemiological study in an attempt to learn from them to help improve wind siting and placement of wind turbines in the future.

**Furthermore, you and your agency have the obligation to immediately help the people who are now suffering due to health impacts from operating wind turbines.**

**The public health and risks posed by industrial wind turbines represent unacceptable threats to the citizens of Massachusetts and require your personal and immediate intervention and action.**

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<sup>15</sup> <http://visitwalesnow.org.uk/VAD%20press%20release.pdf>

Respectfully submitted,

(Signatures on file)

Eric Bibler  
President, Save Our Seashore  
Wellfleet, MA

Sheila Bowen  
President, The Harwich Neighborhood Alliance  
Harwich, MA

Mark J. Cool  
Falmouth Land Owners Against Wind  
Falmouth, MA

Andrew Goldman  
Director, POINT (Protect Our Islands Now for Tomorrow)  
Martha's Vineyard

Lilli-Ann Green  
Chief Executive Officer, Professional Resources Group  
Quality Assessment & Improvement Services for the Healthcare Industry Since 1979

Helen Schwiesow Parker, Ph.D  
Licensed Clinical Psychologist  
Past Clinical Supervisory Faculty, University of Virginia Medical School  
Past Director, Purdue Achievement Center for Children

Preston G. Ribnick, MS  
President, Professional Resources Group  
Quality Assessment & Improvement Services for the Healthcare Industry Since 1979

CC: Paul Reville, Secretary, Executive Office of Education  
Harold W. Clarke, Commissioner, Department of Correction  
Alice A. Tolbert Coombs, M.D., President, Massachusetts Medical Society



**FOR IMMEDIATE RELEASE**

**CONTACTS:**

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**Windwise ~ Massachusetts calls for immediate epidemiological study  
on health effects of wind turbines**

Brimfield, MA -- Windwise ~ Massachusetts calls for an immediate epidemiological study on the effects of living near wind turbines, charging that the DEP and DPH have failed the people of Massachusetts with the inadequate study that they released today.

Last year, as the departments of environmental protection and public health (DEP and DPH) prepared to convene their wind study panel, Windwise ~ Massachusetts submitted hundreds of studies, reports, personal accounts, video clips, and other materials compiled from around the world demonstrating the damaging effects of living near wind turbines. In some cases, those impacts were felt over a distance of up to six miles.

Despite all that evidence, the report released by the state today concludes that the available literature shows there is limited and insufficient epidemiological evidence to determine an association between wind turbines and certain health impacts. For that reason, a rigorous epidemiological study by a truly independent team of experts is essential.

Last year, the Falmouth Board of Health asked the state to take a lead role in conducting an investigation to determine if negative health effects are associated with wind turbines operating in Falmouth. So far, the state has not responded with a commitment to sponsor

such a study. It is doing a noise study of one town-owned turbine in Falmouth, known as Wind I, but not a health study.

“We have a living experiment right here in Falmouth, and I’m part of it,” Mark Cool of Fire Tower Road in Falmouth said. “We’ve been begging DEP and DPH to come down and do an epidemiological study of wind-turbine neighbors, and gotten nowhere. They did not contact us for this report,” he said.

“We knew from the beginning that DEP’s report would be politically motivated with a predetermined outcome,” said Eleanor Tillinghast, a steering committee member of Windwise ~ Massachusetts. “This whitewash is no surprise,” she added.

Virginia Irvine, another member of the Windwise ~ Massachusetts steering committee said, “The governor and his staff have been dedicated to removing all obstacles to the buildout of hundreds of wind turbines across the state, and dismissing the concerns of the many people experiencing the ill effects of wind turbines has been a goal all along.”

“This panel was not independent, its work was not conducted in public or with any ongoing involvement by the public. Everything was done in secret, so who can take this report seriously?” asked Barry C. Cosgrove, also of Windwise~ Massachusetts.

Windwise ~ Massachusetts expects that people from around the state who are now experiencing the effects of wind turbines as neighbors will participate in the upcoming public meetings that DEP and DPH are planning to accompany the release of their report.

Windwise ~ Massachusetts is a statewide alliance of groups and individuals who support the responsible siting of renewable energy projects and are concerned about the negative health, environmental, and economic impacts of poorly sited wind turbines. The alliance members are all volunteers.

For more information, please visit our website, <[www.windwisema.org](http://www.windwisema.org)>.

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Breton, Mary B

FOAA 31

**From:** Littell, David P  
**Sent:** Thursday, February 12, 2009 12:25 PM  
**To:** Brooks, James P; Severance, Ronald W; Fisk, Andrew C; Cassida, James  
**Cc:** Boutilier, Lynn A; Garrett, Deborah N  
**Subject:** FW: Wind Turbine Points  
**Follow Up Flag:** Follow up  
**Flag Status:** Red  
**Attachments:** Wind Turbine Points 02 11 09.doc

Jim and Andy, you can see I sent Andy's comments to CDC this morning but asked for 48 hours to make finer revisions if any. So please look at the document again to see if we would suggest any further revisions – and get anything further (as redlines on top of Andy's redline) to Lynn by end of business tomorrow (friday).

Jim/Ron, if you have better information on the avoided pollutants, we can provide. If not, we should look at the NRCM numbers enough to validate or not given that Dr. Mills specifically asked us if we have better numbers. I know this is not what we regularly do.

Thanks.

---

**From:** Littell, David P  
**Sent:** Thursday, February 12, 2009 8:58 AM  
**To:** Mills, Dora A.; Harvey, Brenda; Green, Geoffrey; Martins, John A; Kerry, John; Farmer, David W; Ende, Patrick  
**Cc:** Fisk, Andrew C; Garrett, Deborah N; Brooks, James P  
**Subject:** RE: Wind Turbine Points

Attached are quick comments and suggestions on the draft document (which is very good for a quick draft). Our Air Bureau can not validate the NRCM numbers on such a short time frame, but Andy Fisk has been able to look at the noise pieces and has provided suggested edits. Given your tight time schedule to get the information back to the reporter we wanted to provide you with these immediate suggestions. We recommend giving us 48 hours to do a fine read of the document if you intend to release the document itself or post in anywhere.

Thank you for pulling this summary together on such a short timeframe.

David Littell

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**From:** Mills, Dora A.  
**Sent:** Wednesday, February 11, 2009 1:57 PM  
**To:** Harvey, Brenda; Green, Geoffrey; Martins, John A; Littell, David P; Kerry, John; Farmer, David W; Ende, Patrick  
**Subject:** Wind Turbine Points  
**Importance:** High

Attached is a rough draft of a Q&A I drafted to answer the questions that the Sun Journal is asking in response to the Rumford Hospital's medical staff letter calling for a moratorium on wind turbines until further research delineates and mitigates health effects. I've pasted the medical staff's letter below this email. I do not find evidence to support their conclusions, and I state that in the last question in the FAQ. There are no firm statements I could find from non-industry sources stating there are no adverse health effects from wind turbines, but that would be true of most

I did not state this in the Q&A, but unless DEP rules have been recently updated and are not online yet, there may be room for improving the noise rules for developments to take in account wind farms. The last time these rules were updated appear to be 1989. Massachusetts has rules that take in account the change over ambient noise levels rather than a level cap. And, there are some proposals from Canada that take into account low frequency noise emissions. However, that said, I am not a noise expert and Maine is fortunate to have statute and rules on noise levels in place, given that many states do not. I will send my findings under separate a cover to Commissioner Littell on this matter.

Please review the enclosed Q&A and provide any feedback. I started working on this very early (2 am) today, and have also been busy doing other things, so I'm sure it needs some refinement. The reporter wanted to talk with me today or tomorrow, so if I can get feedback on this by late today or early tomorrow am, that would be great, and at least I can use this as my speaking points.

Also, I did not spend much time in the Q&A writing about the medical staff's sources of information, but I did check them out, and can tell the reporter, as I did yesterday (I had checked a few out early yesterday morning after reading the email from Dr. Aniel) that they are not from peer-reviewed studies. Most of the information was not from legitimate sources, though some were and had misinterpreted.

Thank you! Dora

## Health hazards Generated by wind turbines

As members of the Rumford Community Hospital medical staff we endorse the concept of alternative energy including but not limited to wind turbines.

As wind turbine generated power has been introduced on an industrial level around the country as well as in the world, there is literature emerging worldwide expressing a multitude of side effects affecting those who live, work, attend school in the vicinity of wind farms.

These health hazards include problems arising not only from the audible noise frequencies but also from inaudible low frequency noise waves.

There are growing scientific observations and studies suggesting that some people living within 2 to 6 miles of these industrial "wind farms" area affected at a variety of levels from a variety of symptoms.

In light of these growing serious medical concerns we propose a moratorium on the building of any such "wind farms" for at least a year and possibly longer until more research is being done on the public health impact that such facilities can and will have on a segment of the communities surrounding such technology.

The Medical Staff of Rumford Community Hospital

Breton, Mary B

From: Littell, David P  
Sent: Sunday, February 22, 2009 6:03 PM  
To: Garrett, Deborah N; Fisk, Andrew C  
Subject: Fw: Wind Turbine Editorial

Attachments: Wind Turbine Points 02 15 09.doc



Wind Turbine Points  
02 15 09.d...

Deb, let's discuss after you review.

David Littell, Commissioner  
Maine DEP  
Via Blackberry

----- Original Message -----

From: Mills, Dora A.  
To: Kerry, John; Littell, David P; Farmer, David W; Harvey, Brenda; Green, Geoffrey  
Sent: Sun Feb 22 17:58:34 2009  
Subject: Wind Turbine Editorial

I'm glad to help address the issues raised in the Sun Journal editorial last Thursday, pasted in below. I do not think there is sufficient evidence at all that this needs to be studied (the proponents of the moratorium do not cite credible studies or grossly misinterpret credible studies). ( There is evidence that turbines should be built at an adequate distance from houses to avoid annoyances from the noise and vibrations. I've attached the latest draft of the Q&A/fact sheet I've been developing on the topic. Just let me know what I can do to help. Dora

[http://www.sunjournal.com/story/304299-3/OurView/A\\_case\\_study\\_for\\_windmills\\_and\\_health/](http://www.sunjournal.com/story/304299-3/OurView/A_case_study_for_windmills_and_health/)

A case study for windmills and health

Thursday, February 19, 2009

Of course windmills are dangerous. If one of those turbine blades comes unbolted during a gale, for example, it could boomerang around the whole territory and cause awful carnage.

We're kidding. Maybe if Stephen King were writing a new wind turbine-themed thriller set in rural Maine, that would be his plot. The more possible, yet unproven, dangers from windmills come from their operation, and whether unforeseen health effects could stem from it.

The medical staff of Rumford Hospital has voiced its health concerns about windmills, as turbine projects spring up all around them like tulips. There's Record Hill in Roxbury and now Black Mountain in Rumford, for starters. More are sure to come.

Dr. Albert Aniel has led the scrutiny. His concern is straightforward - there have been plenty of things we, as a culture, thought were health-harmless, only to later discover there were dangers that could have been avoided. History tells us this is a salient point.

**Breton, Mary B**

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**From:** Littell, David P  
**Sent:** Thursday, February 12, 2009 4:13 PM  
**To:** Mills, Dora A.; Harvey, Brenda; Green, Geoffrey; Martins, John A; Kerry, John; Farmer, David W; Ende, Patrick  
**Cc:** Fisk, Andrew C; Garrett, Deborah N; Brooks, James P  
**Subject:** Wind power pollutant reductions

Dora, here is the answer on the pollutant reductions we've checked NRCM's statement that generating 5% of the electricity in Maine from wind power would reduce CO2 emissions by 480,000 tons, SO2 by 1,680 tons, and NOx by 1,152 tons, they are close for CO2, but off for SO2 and NOx (of course it does depend on which sources of power generation are replaced by the wind power). DEP engineers calculations based on the following:

DEP's air bureau engineers have checked the NRCM generated figures.

Our annual reductions would be as follows:

CO2: 464,520 TPY	vs. NRCM's 480,000 TPY
SO2: 252 TPY	vs. NRCM's 1,680 TPY
NOx: 147 TPY	vs. NRCM's 1,152 TPY

The on-peak marginal emission rates represent the energy weighted average emission rates of generating units in New England that typically would increase their output when the energy demand increases. These units are referred to as "marginal fossil" units that are fueled with oil (including distillate, residual, diesel, and jet fuel) and/or natural gas. These are generally the higher cost power generating units that are called upon to operate because the lower cost units are already operating, so these marginal emission rates are probably reasonable to use when determining what type of power generation and associated emissions would be replaced by new wind power.

Maine generates about 16.8 million MW-hrs of electricity annually.  
5% of this would be 840,000 MW-hrs.

The New England on-peak marginal emission rates are as follows:

CO2: 1,106 lbs/MW-hr
SO2: 0.6 lbs/MW-hr
NOx: 0.35 lbs/MW-hr

We are still having our licensors who deal with noise standard details review the talking points in detail.



20

**Breton, Mary B**

FOAA 35

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**From:** Littell, David P  
**Sent:** Thursday, February 12, 2009 12:25 PM  
**To:** Brooks, James P; Severance, Ronald W; Fisk, Andrew C; Cassida, James  
**Cc:** Boutilier, Lynn A; Garrett, Deborah N  
**Subject:** FW: Wind Turbine Points  
**Follow Up Flag:** Follow up  
**Flag Status:** Red  
**Attachments:** Wind Turbine Points 02 11 09.doc

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**Sent:** Thursday, February 12, 2009 8:58 AM  
**To:** Mills, Dora A.; Harvey, Brenda; Green, Geoffrey; Martins, John A; Kerry, John; Farmer, David W; Ende, Patrick  
**Cc:** Fisk, Andrew C; Garrett, Deborah N; Brooks, James P  
**Subject:** RE: Wind Turbine Points

Attached are quick comments and suggestions on the draft document (which is very good for a quick draft). Our Air Bureau can not validate the NRCM numbers on such a short time frame, but Andy Fisk has been able to look at the noise pieces and has provided suggested edits. Given your tight time schedule to get the information back to the reporter we wanted to provide you with these immediate suggestions. We recommend giving us 48 hours to do a fine read of the document if you intend to release the document itself or post in anywhere.

Thank you for pulling this summary together on such a short timeframe.

David Littell

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**From:** Mills, Dora A.  
**Sent:** Wednesday, February 11, 2009 1:57 PM  
**To:** Harvey, Brenda; Green, Geoffrey; Martins, John A; Littell, David P; Kerry, John; Farmer, David W; Ende, Patrick  
**Subject:** Wind Turbine Points  
**Importance:** High

Attached is a rough draft of a Q&A I drafted to answer the questions that the Sun Journal is asking in response to the Rumford Hospital's medical staff letter calling for a moratorium on wind turbines until further research delineates and mitigates health effects. I've pasted the medical staff's letter below this email. I do not find evidence to support their conclusions, and I state that in the last question in the FAQ. There are no firm statements I could find from non-industry sources stating there are no adverse health effects from wind turbines, but that would be true of most

I did not state this in the Q&A, but unless DEP rules have been recently updated and are not online yet, there may be room for improving the noise rules for developments to take in account wind farms. The last time these rules were updated appear to be 1989. Massachusetts has rules that take in account the change over ambient noise levels rather than a level cap. And, there are some proposals from Canada that take into account low frequency noise emissions. However, that said, I am not a noise expert and Maine is fortunate to have statute and rules on noise levels in place, given that many states do not. I will send my findings under separate a cover to Commissioner Littell on this matter.

Please review the enclosed Q&A and provide any feedback. I started working on this very early (2 am) today, and have also been busy doing other things, so I'm sure it needs some refinement. The reporter wanted to talk with me today or tomorrow, so if I can get feedback on this by late today or early tomorrow am, that would be great, and at least I can use this as my speaking points.

Also, I did not spend much time in the Q&A writing about the medical staff's sources of information, but I did check them out, and can tell the reporter, as I did yesterday (I had checked a few out early yesterday morning after reading the email from Dr. Aniel) that they are not from peer-reviewed studies. Most of the information was not from legitimate sources, though some were and had misinterpreted.

Thank you! Dora

## Health hazards Generated by wind turbines

As members of the Rumford Community Hospital medical staff we endorse the concept of alternative energy including but not limited to wind turbines.

As wind turbine generated power has been introduced on an industrial level around the country as well as in the world, there is literature emerging worldwide expressing a multitude of side effects affecting those who live, work, attend school in the vicinity of wind farms.

These health hazards include problems arising not only from the audible noise frequencies but also from inaudible low frequency noise waves.

There are growing scientific observations and studies suggesting that some people living within 2 to 6 miles of these industrial "wind farms" area affected at a variety of levels from a variety of symptoms.

In light of these growing serious medical concerns we propose a moratorium on the building of any such "wind farms" for at least a year and possibly longer until more research is being done on the public health impact that such facilities can and will have on a segment of the communities surrounding such technology.

The Medical Staff of Rumford Community Hospital

22  
**Breton, Mary B**

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**From:** Littell, David P  
**Sent:** Thursday, February 12, 2009 4:13 PM  
**To:** Mills, Dora A.; Harvey, Brenda; Green, Geoffrey; Martins, John A; Kerry, John; Farmer, David W; Ende, Patrick  
**Cc:** Fisk, Andrew C; Garrett, Deborah N; Brooks, James P  
**Subject:** Wind power pollutant reductions

Dora, here is the answer on the pollutant reductions we've checked NRCM's statement that generating 5% of the electricity in Maine from wind power would reduce CO2 emissions by 480,000 tons, SO2 by 1,680 tons, and NOx by 1,152 tons, they are close for CO2, but off for SO2 and NOx (of course it does depend on which sources of power generation are replaced by the wind power). DEP engineers calculations based on the following:

DEP's air bureau engineers have checked the NRCM generated figures.

Our annual reductions would be as follows:

CO2: 464,520 TPY	vs. NRCM's 480,000 TPY
SO2: 252 TPY	vs. NRCM's 1,680 TPY
NOx: 147 TPY	vs. NRCM's 1,152 TPY

The on-peak marginal emission rates represent the energy weighted average emission rates of generating units in New England that typically would increase their output when the energy demand increases. These units are referred to as "marginal fossil" units that are fueled with oil (including distillate, residual, diesel, and jet fuel) and/or natural gas. These are generally the higher cost power generating units that are called upon to operate because the lower cost units are already operating, so these marginal emission rates are probably reasonable to use when determining what type of power generation and associated emissions would be replaced by new wind power.

Maine generates about 16.8 million MW-hrs of electricity annually.  
5% of this would be 840,000 MW-hrs.

The New England on-peak marginal emission rates are as follows:

CO2: 1,106 lbs/MW-hr
SO2: 0.6 lbs/MW-hr
NOx: 0.35 lbs/MW-hr

We are still having our licensors who deal with noise standard details review the talking points in detail.

**Breton, Mary B**

**From:** Mills, Dora A.  
**Sent:** Wednesday, February 25, 2009 4:24 AM  
**To:** Fisk, Andrew C; Littell, David P  
**Cc:** Kerry, John; Farmer, David W; Harvey, Brenda  
**Subject:** FW: references and peer review relating health hazards generated by wind turbines  
**Follow Up Flag:** Follow up  
**Flag Status:** Red  
**Attachments:** pierpont-healtheffects-20050301.pdf; committee\_siting\_of\_windfarms location-location.doc; Dr Amanda Harry study.doc; Todd et al, Human vestibular system & low frequency vibration 2008.pdf; committee\_vibroacoustic\_disease.doc; kamperman-and-james-9-pp.pdf

Dr. Aniel from Rumford Community Hospital has taken his arguments to the Maine Medical Association to try to get their support. Although I was not at their meeting yesterday where this came up (and did not know it was on the agenda, or would have at least attended by phone), I have asked Kellie Miller to allow me to also present to the Committee. I will reach out to a couple of others on the committee ahead of time so this does not come off as a simple point – counter point. Kellie has replied that she is fine for me to present.

My understanding is that one area he discussed that I have a hard time addressing is the DEP regulations on noise levels, essentially being 45 dbL at the property line in rural areas, and the fact that these regulations did not protect residents in Mars Hill who are perceived by some to be living too close from an annoyance perspective from the wind turbine farm there. So, if Andy can arm me with information on the task force process that met last year and how the DEP regulations are being implemented (I understand there are changes underway) to address these concerns or being changed, that would be very helpful.

I've included the documents Dr. Aniel is circulating to the MMA membership. I will also work on an op ed piece these next few days. I thought I'd also email the MMA the fact sheet I did on this topic, so I'd appreciate any feedback on that – let me know if you'd like me to resend it.

Thank you! Dora

---

**From:** Kellie Miller [mailto:kmiller@mainemed.com]  
**Sent:** Tuesday, February 24, 2009 6:23 PM  
**To:** Charles Danielson, MD; David Clark, MD; Mills, Dora A.; Lani Graham, MD; Lisa Letourneau, MD; Amy Madden; Andrew MacLean; Arvind Patel, MD; Barbara Wirth, MD; Daniel Oppenheim, MD; Douglas Boyink, MD; Edward Walworth, MD; Erik Steele, DO; Gordon Smith; Gregory D'Augustine, MD; Jacob W. Gerritsen, MD; James H. Maier, MD; James Schneid, MD; Jeff Benson, MD; Jo Linder, MD; John Garofalo, MD; Julian Kuffler, MD; Kellie Miller; Laura Blaisdell, MD, MPH; Lee Ann Baggott MD; Lynnette Nichols; Mitchell Ross, MD; Norma Dreyfus, MD; Richard Evans, MD; Robert Holmberg, MD; Robert McAfee, MD; Ronald Blum, MD; Stephanie Lash, MD; Stephen Sears, MD; Tim Goltz, MD; William Strassberg, MD  
**Subject:** FW: references and peer review relating health hazards generated by wind turbines

Dear Public Health Committee Members - in regards to following up from today's meeting on wind turbine health effects, Dr. Aniel has provided me with the following information for your review. He has agreed to formally present on this subject matter at our next meeting on March 25th, 4-6pm. I look forward to having you with us as we learn more about this emerging issue.

Regards,  
 Kellie

*Kellie P. Miller, M.S.*  
 Director of Public Health Policy  
 Staff Liaison, Maine Radiological Society & Maine Urological Association

Maine Medical Association  
 30 Association Drive, P.O. Box 190  
 Manchester, Maine 04351  
 Office: 207-622-3374, ext. 229  
 Cell: 207-462-5713  
 Fax: 207-622-3332  
[kmiller@mainemed.com](mailto:kmiller@mainemed.com)

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**Kellie P. Miller, M.S.**  
 Downeast Association of Physician Assistants  
 Staff Liaison  
 30 Association Drive, P.O. Box 190  
 Manchester, Maine 04351  
 Office: 207-620-7577  
 Fax: 207-622-3332  
[deapa@mainemed.com](mailto:deapa@mainemed.com)

*"There's more to see than can ever be seen;  
 more to do than can ever be done." (From the Lion King)*

-----Original Message-----

**From:** athos [mailto:[athos@wildblue.net](mailto:athos@wildblue.net)]  
**Sent:** Tuesday, February 24, 2009 6:11 PM  
**To:** Kellie Miller  
**Subject:** references and peer review relating health hazards generated by wind turbines

Hi Kellie  
 Here are some references but another good and inclusive web site which includes WHO recommendations is: [www.windturbinehealthhumanrights.com](http://www.windturbinehealthhumanrights.com) ( the bible of references covering multiple studies).  
 Also Dr Pierpont's [www.windturbinesyndrome.com](http://www.windturbinesyndrome.com) and [www.wind-watch.org](http://www.wind-watch.org)  
 Let me know if you got this and if further information is needed for now.  
 What I have sent you covers pretty well all the issues  
 Albert Aniel MD

Your message is ready to be sent with the following file or link attachments:

pierpont-healtheffects-20050301  
 committee\_siting\_of\_windfarms location-location  
 Dr Amanda Harry study  
 Todd et al, Human vestibular system & low frequency vibration 2008\_pdf  
 committee\_vibroacoustic\_disease  
 kamperman-and-james-9-pp

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25  
**Breton, Mary B**

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**From:** Mills, Dora A.  
**Sent:** Wednesday, February 25, 2009 1:11 PM  
**To:** Fisk, Andrew C  
**Cc:** Boutilier, Lynn A  
**Subject:** RE: references and peer review relating health hazards generated by wind turbines

It would greatly help me if sooner than later someone sent me a brief update on how DEP is addressing the noise issues. Wasn't there a task force last year? Aren't there revisions to the rules or how they're carried out you're considering or implementing? This issue seems to be gaining traction....

Thanks! Dora

---

**From:** Fisk, Andrew C  
**Sent:** Wednesday, February 25, 2009 8:57 AM  
**To:** Mills, Dora A.  
**Cc:** Boutilier, Lynn A  
**Subject:** RE: references and peer review relating health hazards generated by wind turbines

Dora,

I talked with David this morning. I take it you will be presenting at MMA on 3/25. I will try and talk with you early next week, as we have a pending conversation with our peer reviewer about aspects of our noise rule that you should be aware of in this conversation.

We will get you the minor edits to your piece asap.

Please let me know if this timing doesn't work for your conversations with MMA. I want to be sure your statements and conversations follow what our peer reviewer is presently thinking. We're talking with him today and will likely want to set up something for either you or a delegate on this to discuss with us jointly next week.

Hope you're feeling better.

**Andrew Fisk**  
Bureau Director, Land & Water Quality  
Maine Department of Environmental Protection

207-287-7671  
[www.maine.gov/dep](http://www.maine.gov/dep)

---

**From:** Mills, Dora A.  
**Sent:** Wednesday, February 25, 2009 4:24 AM  
**To:** Fisk, Andrew C; Littell, David P  
**Cc:** Kerry, John; Farmer, David W; Harvey, Brenda  
**Subject:** FW: references and peer review relating health hazards generated by wind turbines

Dr. Aniel from Rumford Community Hospital has taken his arguments to the Maine Medical Association to try to get their support. Although I was not at their meeting yesterday where this came up (and did not know it was on the agenda, or would have at least attended by phone), I have asked Kellie Miller to allow me to also present to the Committee. I will reach out to a couple of others on the committee ahead of time so this does not come off as a simple point - counter point. Kellie has replied that she is fine for me to present.

My understanding is that one area he discussed that I have a hard time addressing is the DEP regulations on noise levels, essentially being 45 dbl at the property line in rural areas, and the fact that these regulations did not protect residents in Mars Hill who are perceived by some to be living too close from an annoyance perspective from the wind turbine farm there. So, if Andy can arm me with information on the task force process that met last year and how the DEP regulations are being implemented (I understand there are changes underway) to address these concerns or being changed, that would be very

10/16/2009

helpful.

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I've included the documents Dr. Aniel is circulating to the MMA membership. I will also work on an op ed piece these next few days. I thought I'd also email the MMA the fact sheet I did on this topic, so I'd appreciate any feedback on that – let me know if you'd like me to resend it.

Thank you! Dora

---

**From:** Kellie Miller [mailto:kmiller@mainemed.com]

**Sent:** Tuesday, February 24, 2009 6:23 PM

**To:** Charles Danielson, MD; David Clark, MD; Mills, Dora A.; Lani Graham, MD; Lisa Letourneau, MD; Amy Madden; Andrew MacLean; Arvind Patel, MD; Barbara Wirth, MD; Daniel Oppenheim, MD; Douglas Boyink, MD; Edward Walworth, MD; Erik Steele, DO; Gordon Smith; Gregory D'Augustine, MD; Jacob W. Gerritsen, MD; James H. Maier, MD; James Schneld, MD; Jeff Benson, MD; Jo Linder, MD; John Garofalo, MD; Julian Kuffler, MD; Kellie Miller; Laura Blaisdell, MD, MPH; Lee Ann Baggott MD; Lynnette Nichols; Mitchell Ross, MD; Norma Dreyfus, MD; Richard Evans, MD; Robert Holmberg, MD; Robert McAfee, MD; Ronald Blum, MD; Stephanie Lash, MD; Stephen Sears, MD; Tim Goltz, MD; William Strassberg, MD

**Subject:** FW: references and peer review relating health hazards generated by wind turbines

Dear Public Health Committee Members - in regards to following up from today's meeting on wind turbine health effects, Dr. Aniel has provided me with the following information for your review. He has agreed to formally present on this subject matter at our next meeting on March 25th, 4-6pm. I look forward to having you with us as we learn more about this emerging issue.

Regards,  
Kellie

*Kellie P. Miller, M.S.*

Director of Public Health Policy  
Staff Liaison, Maine Radiological Society & Maine Urological Association  
Maine Medical Association  
30 Association Drive, P.O. Box 190  
Manchester, Maine 04351  
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Fax: 207-622-3332  
[kmiller@mainemed.com](mailto:kmiller@mainemed.com)

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Downeast Association of Physician Assistants  
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[deapa@mainemed.com](mailto:deapa@mainemed.com)

*"There's more to see than can ever be seen;  
more to do than can ever be done." (From the Lion King)*

-----Original Message-----

**From:** athos [mailto:athos@wildblue.net]

**Sent:** Tuesday, February 24, 2009 6:11 PM

10/16/2009

22  
To: Kellie Miller

FOAA 42

Subject: references and peer review relating health hazards generated by wind turbines

Hi Kellie

Here are some references but another good and inclusive web site which includes WHO recommendations is: [www.windturbineoisehealthhumanrights.com](http://www.windturbineoisehealthhumanrights.com) ( the bible of references covering multiple studies).

Also Dr Pierpont's [www.windturbinesyndrome.com](http://www.windturbinesyndrome.com) and [www.wind-watch.org](http://www.wind-watch.org)

Let me know if you got this and if further information is needed for now.

What I have sent you covers pretty well all the issues,

Albert Aniel MD

Your message is ready to be sent with the following file or link attachments:

pierpont-healtheffects-20050301

committee\_siting\_of\_windfarms location-location

Dr Amanda Harry study

Todd et al, Human vestibular system & low frequency vibration 2008\_pdf

committee\_vibroacoustic\_disease

kamperman-and-james-9-pp

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.



**Breton, Mary B**

**From:** Boutillier, Lynn A  
**Sent:** Thursday, February 26, 2009 9:03 AM  
**To:** Fisk, Andrew C  
**Subject:** FW: Wind Turbine

**Attachments:** Wind Turbine Points 02 15 09.doc



Wind Turbine Points  
 02 15 09.d...

This is what you sent. I'll go look for Jim's on David's computer.

-----Original Message-----

**From:** Fisk, Andrew C  
**Sent:** Thursday, February 19, 2009 8:19 AM  
**To:** Boutillier, Lynn A  
**Subject:** FW: Wind Turbine

Edits and comment attached.

Andrew Fisk  
 Bureau Director, Land & Water Quality  
 Maine Department of Environmental Protection

207-287-7671  
[www.maine.gov/dep](http://www.maine.gov/dep)

-----Original Message-----

**From:** Littell, David P  
**Sent:** Thursday, February 19, 2009 7:00 AM  
**To:** Brooks, James P; Fisk, Andrew C; Cassida, James  
**Cc:** Garrett, Deborah N; Boutillier, Lynn A  
**Subject:** Fw: Wind Turbine

Please review for final comments and coordinate your redlines with Deb and Lynn so we send back one version.

Last week BLWQ's edits were made but BAQ's were missed by CDC because (my fault) we sent over separately due to press of time.

Lynn, please send Jim Brooks my email to Dora et al with final air edits which I cleaned up before sending on. Thanks!

David

David Littell, Commissioner  
 Maine DEP  
 Via Blackberry

----- Original Message -----

**From:** Mills, Dora A.  
**To:** Littell, David P; Fisk, Andrew C  
**Sent:** Thu Feb 19 06:55:14 2009  
**Subject:** Wind Turbine

The wind turbine noise and health issue keeps arising. The Maine Public Health Association has been contacted for their opinion, etc. Attached is a revised version of the Q&A I quickly developed last week. I'd appreciate any further review or suggestions on this. I'd like to be able to provide it as a resource to those interested in this

topic. Thank you! Dora

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**Breton, Mary B**

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**From:** Boutilier, Lynn A  
**Sent:** Tuesday, March 03, 2009 1:46 PM  
**To:** Fisk, Andrew C  
**Subject:** Wind Turbine Points revised 2-26-09.doc

**Attachments:** Wind Turbine Points revised 2-26-09.doc



Wind Turbine Points  
revised 2-...

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**Breton, Mary B**

**From:** Mills, Dora A.  
**Sent:** Thursday, March 19, 2009 5:33 PM  
**To:** Fisk, Andrew C  
**Subject:** RE: Wind Turbine

These are great edits, esp the ones on the LFN. Thank you! Dora

---

**From:** Fisk, Andrew C  
**Sent:** Thursday, March 19, 2009 5:30 PM  
**To:** Mills, Dora A.  
**Subject:** FW: Wind Turbine

Take a read through my suggested edits that get to the recent work we've done with the consultant. If its not clear, give a call and we can chat. 592-0327 is my direct line.

**Andrew Fisk**  
Bureau Director, Land & Water Quality  
Maine Department of Environmental Protection

207-287-7671  
[www.maine.gov/dep](http://www.maine.gov/dep)

---

**From:** Mills, Dora A.  
**Sent:** Thursday, March 19, 2009 1:11 PM  
**To:** Fisk, Andrew C  
**Subject:** Wind Turbine

<http://web.mit.edu/aeroastro/partner/reports/proj1/lfreport-2007-001.pdf>

Next Wednesday afternoon is the discussion at the Maine Medical Association on wind turbines. There are two physicians promoting the moratorium – Dr. Aniel from Rumford and a radiologist from Fort Kent (forget his name, but he's been in the papers on this issue). Angus King will be there as well as myself. This meeting doesn't usually attract too many, but with Angus' appearance, who knows. If you or the noise consultant want to attend, I believe that's fine. It certainly seems like things have ratcheted up a bit!

I'm including the revised FAQ attached, which includes your edits (thank you!) as well as a bit more info. After reading a bit more, including the airport study linked to above, I can see why the consultant and you were discussing how the A filter does not reflect the full impact of LFN.

Are there any updates that I should know about before this meeting – updates about any review of the rules, etc?

Thank you so much! Dora

32

FOAA 47

**Breton, Mary B**

**From:** Mills, Dora A.  
**Sent:** Thursday, March 19, 2009 5:34 PM  
**To:** Fisk, Andrew C  
**Subject:** RE: Wind Turbine

And, just to clarify, adding the requirement for the dBC measurement is being done within the existing rule?

**From:** Fisk, Andrew C  
**Sent:** Thursday, March 19, 2009 5:30 PM  
**To:** Mills, Dora A.  
**Subject:** FW: Wind Turbine

Take a read through my suggested edits that get to the recent work we've done with the consultant. If its not clear, give a call and we can chat. 592-0327 is my direct line.

**Andrew Fisk**  
Bureau Director, Land & Water Quality  
Maine Department of Environmental Protection

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**From:** Mills, Dora A.  
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**To:** Fisk, Andrew C  
**Subject:** Wind Turbine

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Are there any updates that I should know about before this meeting – updates about any review of the rules, etc?

Thank you so much! Dora

33

FOAA 48

**Breton, Mary B**

**From:** Mills, Dora A.  
**Sent:** Friday, March 20, 2009 3:37 PM  
**To:** Fisk, Andrew C; Littell, David P  
**Subject:** Wind Turbine Research  
**Importance:** High

I was contacted by Peter Rabinowitz, MD, who is an Associate Professor of Medicine at Yale School of Medicine as well as the Director of Clinical Services in Occupational and Environmental Medicine at Yale, and specializes in health issues related to noise. As you can see from Yale's website (<http://www.med.yale.edu/intmed/faculty/rabinowitz.html>) he has an impressive track record of conducting peer reviewed original research, including many that were federally-funded.

He is interested in applying for a NIH grant to study health effects of noise related to wind turbines. He'd like to use the Mars Hill community as one of the sites to study. We just talked at length by phone, and his take on the situation is that the increasing expressed concerns about noise and health effects related to wind turbines, especially as they relate to low frequency noise, needs to be addressed with some non-biased research.

I shared with him the FAQ that I wrote recently and that Andy has helped me with. He asked if I would write a letter of support for the grant application. He's going to send me a brief description of it in writing, but it sounds like the kind of research we'd want to support? I'd like to write a letter of support, but certainly would not want to do so without your okay. He is including a community participation component, a focus on the 18 families living within ~half mile, and a measurement piece taken in each season of the year and including some low frequency noise (dBC) measurements. This will go through Yale's IRB.

I told him that Andy is really the person he should be in contact with, and he is eager to talk with you. The grant application is due April 1<sup>st</sup>, so he's eager to connect, though will need to connect more thoroughly if it is funded.

His email address is: [Peter.Rabinowitz@yale.edu](mailto:Peter.Rabinowitz@yale.edu)

His direct line # is: 203-785-7267

Thank you! Dora

**Breton, Mary B**

**From:** Littell, David P  
**Sent:** Friday, March 20, 2009 4:27 PM  
**To:** Mills, Dora A.; Fisk, Andrew C  
**Subject:** RE: Wind Turbine Research

Dora, more data and analysis by a world-class expert can only help. The issue for me is whether Mars Hill is the best site since already evaluated by our expert and the companies. We are putting special conditions for additional monitoring into the permits we are considering now and one of those two sites or both may be better or good for additional data. Andy, any thoughts on which site?

Certainly we can support the NIH grant application.

David

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**From:** Mills, Dora A.  
**Sent:** Friday, March 20, 2009 3:37 PM  
**To:** Fisk, Andrew C; Littell, David P  
**Subject:** Wind Turbine Research  
**Importance:** High

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His direct line # is: 203-785-7267

Thank you! Dora

**Breton, Mary B**

**From:** Mills, Dora A.  
**Sent:** Friday, March 27, 2009 3:57 AM  
**To:** Fisk, Andrew C; Littell, David P  
**Subject:** RE: Wind Turbine Issue at MMA

I probably dropped the ball – I think Dr. Rabinowitz is expecting to hear from you at your convenience. The application to NIH is due I think today, but he's very interested in any monitoring data you have to provide insights. I think Dr. Nissenbaum's non-scientific study points out the need for a scientific approach if there is to be more research. His contact info is below. Thanks!  
Dora

[pmr9@email.med.yale.edu](mailto:pmr9@email.med.yale.edu)

[peter.rabinowitz@yale.edu](mailto:peter.rabinowitz@yale.edu)

(203) 785-7267

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**From:** Fisk, Andrew C  
**Sent:** Thursday, March 26, 2009 9:15 AM  
**To:** Mills, Dora A.; Littell, David P  
**Subject:** RE: Wind Turbine Issue at MMA

Thanks – the Sun Journal article seemed reasonable.

Let me know if you need anything else in the interim. I have not heard from the Yale researcher you mentioned.

**Andrew Fisk**  
Bureau Director, Land & Water Quality  
Maine Department of Environmental Protection

207-287-7671  
[www.maine.gov/dep](http://www.maine.gov/dep)

---

**From:** Mills, Dora A.  
**Sent:** Thursday, March 26, 2009 6:00 AM  
**To:** Fisk, Andrew C; Littell, David P  
**Subject:** Wind Turbine Issue at MMA

The meeting last evening at the Maine Medical Association went okay - very interesting, as it was my first experience with a number of players in the room. Besides some genuinely interested physicians and leadership from the medical society, there were several representatives from the wind industry, including from an association, First Wind, and the company that former Gov Angus King is heading up. There was also Drs. Nissenbaum and Aniel, to present their case for a moratorium.

The latter two were very insistent that they present last, which seemed odd since the only reason we were all there was because of the issues they were bringing forward. But, I didn't push too strongly on that.

Angus presented first, and was quite eloquent. He made the case that the entire issue boils down to siting, and he talked about how he thought a number of homes in Mars Hill are just too close. I then talked for 15 minutes as well - telling my story of how I was contacted by Dr.



36

**Breton, Mary B**

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**From:** Mills, Dora A.  
**Sent:** Friday, March 27, 2009 4:01 AM  
**To:** Peter Rabinowitz, MD 2; Peter Rabinowitz, MD ; Fisk, Andrew C; Littell, David P  
**Subject:** Maine DEP - Yale Connections

This email's purpose is to connect Dr. Peter Rabinowitz with Maine DEP. Andy Fisk is the Director of Land and Water Quality, and David Littell is DEP Commissioner.

Peter – DEP has expressed interest in your possible research in the Mars Hill area, but I know you can describe your proposal better than I can. Additionally, they have quite a bit of monitoring data that may be helpful.

Thank you! Dora

**Breton, Mary B**

**From:** Littell, David P  
**Sent:** Friday, March 27, 2009 2:22 PM  
**To:** Fisk, Andrew C; 'Peter Rabinowitz'; Mills, Dora A.  
**Cc:** 'Peter Rabinowitz, MD 2'  
**Subject:** RE: Maine DEP - Yale Connections

Andy, thanks. I'll let you brief Dr. Rabinowitz. My thinking is that we've looked hard at Mars Hill with a year of data, albeit not necessarily the quality or scope of data the Dr. Rabinowitz would collect.

Because sound propagation and receptor impacts in mountainous, hilly and/or forested terrain is potentially influenced by topography, time of year issues (snow, ice cover, lack of foliage), we know we want to collect such data at one or both of the current wind sites under review by the department if permitted. My thinking is it is worth considering looking at one or both of those sites if they are permitted and built this summer (study beginning next winter over all four seasons).

Having a different and extensive data set to compare to Mars Hill in different topography, conditions and different receptor locations may be more helpful to develop a comprehensive expertise with our consultants and the CDC as Maine is projected to continue to see wind power proposals given our wind resource in many areas of the state. Dr. Rabinowitz's expert analysis would be most helpful.

Dora, thank you for thorough work and providing your independent expertise to date and identifying Dr. Rabinowitz's as a resource for both CDC and DEP.

Best,

David

-----Original Message-----

**From:** Fisk, Andrew C  
**Sent:** Friday, March 27, 2009 1:26 PM  
**To:** Peter Rabinowitz; Mills, Dora A.  
**Cc:** Peter Rabinowitz, MD 2; Littell, David P  
**Subject:** RE: Maine DEP - Yale Connections

Peter,

Let's talk at your convenience about your study design and scope. We can offer some thoughts given the existing and pending projects coming on line in several locations in the state.

My direct line is 207-592-0327.

Andrew Fisk  
Bureau Director, Land & Water Quality  
Maine Department of Environmental Protection

207-287-7671  
[www.maine.gov/dep](http://www.maine.gov/dep)

-----Original Message-----

**From:** Peter Rabinowitz [mailto:[Peter.Rabinowitz@yale.edu](mailto:Peter.Rabinowitz@yale.edu)]  
**Sent:** Friday, March 27, 2009 11:26 AM  
**To:** Mills, Dora A.  
**Cc:** Peter Rabinowitz, MD 2; Fisk, Andrew C; Littell, David P  
**Subject:** Re: Maine DEP - Yale Connections

Mills, Dora A. wrote:

>

**Breton, Mary B**

**From:** Mills, Dora A.  
**Sent:** Friday, April 10, 2009 6:18 PM  
**To:** Littell, David P; Fisk, Andrew C; Farmer, David W  
**Cc:** Harvey, Brenda; Green, Geoffrey  
**Subject:** FW: I suspect you already received the certified mail letter please acknowledge receipt

I'll go ahead and draft a response but not send it until you've reviewed it. Dora

---

**From:** athos [mailto:athos@wildblue.net]  
**Sent:** Friday, April 10, 2009 9:34 AM  
**To:** Mills, Dora A.  
**Subject:** I suspect you already received the certified mail letter please acknowledge receipt

Dear Dr.Mills

I believe that the meeting of 03/25/09 was useful on several fronts.

As Dr.Nissenbaum has shown ,the Mars Hill people living within 3500 feet of the Turbine project there are truly suffering, in a real medical sense. Clearly, any regulation that results in placement of turbine, anywhere, in Maine, at less than 3500 feet setback is courting a bad human outcome, regardless of the sound modeling used by the industry to show that there will be no ill effects in that range.

Mr.King acknowledged that the Mars Hill project was a total fiasco. His partner Mr.Gardiner went on to acknowledge serious problems in Freedom, Me. He went on at some length about this after the meeting closed.

Please note that the same acoustic consultants used at Mars Hill performed the noise modeling studies for Stetson II , Rollins and Record Hill and the same assumptions were used for each of these projects. This is worrisome.

As is clearly demonstrated by the post construction measurements at Mars Hill, the model used by the wind industry for that project was seriously flawed. Among other things it seems to have disregarded line source effects of multiple turbines in a linear arrangement perpendicular to residential neighborhoods, and of course ignores low frequency dBC detected noise even though low frequencies are known to travel much longer distances and are shown to correlate with turbine related health effects, particularly sleep disturbance, and all the negatives that flow from that fundamental ill effect.

We can reasonably conclude that the MDEP and DHHS are currently unprepared and largely unaware of the noise and health issues related to wind factories. We can all agree that we need to ensure that additional Maine citizens should not suffer the same results as those Mars Hill residents who live within 3500 feet. In this regard, please note that there are no residents living between 3500 feet and approximately a mile and a quarter or so. As such, we cannot state what distance between those two is the point at which ill effects abate, if they do at all within that range. The sound regulations imposed by European jurisdictions effectively result in setbacks of 1 to 1.5 miles depending upon the topography. We can now state with some confidence that ill effects are likely when homes are placed within 3500 feet of a ridge line arrangement of turbines. Ridgeline placements seems to be the prevalent pattern of turbine placement the industry would like to impose upon Maine.

It is logical for us to expect the State regulatory agencies to familiarize themselves as soon as possible with the relevant physics and physiology, and put appropriate setback regulations in effect before additional turbines are placed.

For example we noted that the MDEP, in its variance issued to First Wind regarding Mars Hill, described the

allowance to 50 dBA as creating a noise "similar to songbirds". This statement alone speaks to the lack of understanding of the nature of sound and a failure to appreciate that a dBA level alone is just one component of a sound's makeup. One can no more describe a sound by its dBA level alone than describe a Van Gogh painting by saying "it is blue"

We believe that if poor outcomes such at Mars Hill and Freedom are to be avoided, it becomes necessary to stop rushing ahead with a "gold rush" mentality, relying solely on the clearly faulty wind modeling currently used by the projects we are aware of, which have to this point been rubberstamped by MDEP and LURC.

Tangentially we note that Mr. King was in error when he stated that Maine's guidelines were close to those of the World Health Organization.

There is a world of difference between 30 dBA and 45dBA. The WHO furthermore goes on to state that when low frequency sounds are part of the noise pollution, levels lower than 30 dBA or incorporating dBC parameters should be used.

As physicians and clinicians it is our foremost duty to do no harm. It is reasonable to adopt the current best practices of jurisdictions that have decades of experience with these technologies. We must look to France, Germany, Holland and the like in this regard, and slow down the permitting until those regulations are in place. France enacted regulations in 2006 stipulating that a level of 25 dBA should not be exceeded in the home and the WHO recommends that no industry should be allowed to increase ambient daytime noise (L90) by 5 dBA and nighttime noise (L90) by 3 dBA. The WHO also recommends that bedroom noise level should not exceed 30 dBA.

Modeling done by the wind companies must take into account allowances for icing on the blades (+6dBA) as well as pulsatility and line source effects among other things. It is easy for the industry to manipulate the models to provide results that they are looking for, which can then be somehow overlooked by the third party consultants hired by MDEP, if they are not diligent.

We know this can happen since it has happened and is now fully documented in the case of Mars Hill. First Wind representatives at the MMA meeting admitted to having made a serious mistake, yet we have no regulations on the books to ensure they do not do so again.

Furthermore the State must have means to not only check for compliance but also enforce compliance with credible threats to insure compliance, up to and including the ordering of stopping turbine rotation and where necessary the removal of non compliant turbines.

We have concerns that MDEP is currently not up to this task, given their recent statements regarding their current overburdened status.

As you see there are many issues that still need to be worked out. A moratorium under such circumstances is certainly logical, unless we quickly move to the adoption of more stringent European and Australian standards.

The State's failure to act responsibly on this issue is equivalent to abandoning it's responsibility to protect the health of Maine's citizens, leaving them with little option but to seek remedy and redress thru the courts.

Sincerely and respectfully,

Michael Nissenbaum MD

Northern Maine Medical Center

Albert Aniel MD

Rumford Hospital

cc. Honorable John Baldacci Governor

Senator P. Bartlett : Senate Majority

10/16/2009

FOAA 54

> Dear Dora, David, and Andy,

>

Thank you for the email. As Dora has mentioned, we have been working on a grant to NIEHS to do an assessment study of wind turbine sound (including low frequency, "infrasound" and vibration) and shadow flicker exposures and also do some surveying of reported health symptoms and annoyance of nearby residents. It does seem there is a need for some objective research in this regard, ~~I realize the topic is getting pretty polarized and there may be more hyperbole than evidence at present.~~ We had been planning to use Mars Hill as a potential study site, although this was before another party (unbeknownst to us) conducted a symptom survey there recently.

It would be wonderful to share some ideas about these issues, especially since you have spent so much time in the field doing some assessments.

We are trying to identify the most valuable ways to add to existing knowledge, not reinvent wheels, looking forward to being in touch, best, Peter Rabinowitz MD MPH

> This email's purpose is to connect Dr. Peter Rabinowitz with Maine  
> DEP. Andy Fisk is the Director of Land and Water Quality, and David  
> Littell is DEP Commissioner.

>

> Peter - DEP has expressed interest in your possible research in the  
> Mars Hill area, but I know you can describe your proposal better than  
> I can. Additionally, they have quite a bit of monitoring data that may  
> be helpful.

>

>

> Thank you! Dora

>

Senator K.Ray : Senate Minority

FOAA 56

Representative J.Piotti : House Majority

Representative J.A.Tardy : House Minority

Doctor C. Danielson : Chair MMA Public Health Committee

David P.Littel : MDEP

4/2

Breton, Mary B

From: Mills, Dora A.  
Sent: Monday, August 03, 2009 7:30 PM  
To: Fisk, Andrew C  
Subject: FW: August 12th Wind Energy Subcommittee Meeting cancelled

Attachments: Wind Energy Draft Resolution 7-29-09.doc



Wind Energy Draft  
Resolution 7...

Can you provide comments on this draft resolution - I'm glad to submit them to MMA? Thanks! Dora

-----Original Message-----

From: Kellie Miller [mailto:kmiller@mainemed.com]  
Sent: Monday, August 03, 2009 2:12 PM  
To: Albert Aniel, MD; Charles Danielson, MD; Mills, Dora A.; Gordon Smith; Kellie Miller; Lani Graham, MD; Larry and Daniel Muttly, MD; Michael Nissenbaum, MD; Norma Dreyfus, MD; Richard Jennings, MD; Ted Walworth, MD  
Subject: August 12th Wind Energy Subcommittee Meeting cancelled

Sent on behalf of Dr. Danielson:

Re: Wind Energy Subcommittee:

Many members of this subcommittee are passionate and hold strong views on this issue. Our mission is to recommend a policy direction for the MMA. It is my opinion and that of the MMA Executive Committee that another meeting of the subcommittee is unlikely to result in a better recommendation. Therefore we are canceling the 8/12/09 subcommittee meeting. We will present a draft (current form is attached) to the Public Health Committee on 8/26/09, 4-6pm at the MMA office. I appreciate your having taken the trouble to compile a great deal of information. Since we are under time constraints to develop the policy statement for this draft resolution, the most efficient way to get this done will be for me to sit down with Kellie and go over the material that has already been submitted, along with any new evidence-based information you would like to provide by August 12th.

Regards,  
Charles Danielson, MD, Chair, MMA Public Health Committee

<<Wind Energy Draft Resolution 7-29-09.doc>>

Kellie P. Miller, M.S.  
Director of Public Health Policy  
Staff Liaison, Maine Radiological Society & Maine Urological Association Maine Medical Association 30 Association Drive, P.O. Box 190 Manchester, Maine 04351  
Office: 207-622-3374, ext. 229  
Cell: 207-462-5713  
Fax: 207-622-3332  
kmiller@mainemed.com

Kellie P. Miller, M.S.  
Downeast Association of Physician Assistants Staff Liaison 30 Association Drive, P.O. Box 190 Manchester, Maine 04351  
Office: 207-620-7577  
Fax: 207-622-3332  
deapa@mainemed.com

**Breton, Mary B**

**From:** Mills, Dora A.  
**Sent:** Monday, September 14, 2009 8:34 PM  
**To:** Fisk, Andrew C  
**Subject:** RE: Maine Med resolution on wind power

I just found it - it's actually awful. Especially the "Whereas" I'm appalled they passed something like this! Kellie Miller said the few people in the room were all new to the issue, had no idea what the issue was about, and were quite swayed that this was pretty harmless...At least someone can say in response that the membership that spent time on this issue - the Public Health Committee - voted 9 to 1 against a similar resolution.

Dora

-----Original Message-----

**From:** Fisk, Andrew C  
**Sent:** Monday, September 14, 2009 8:29 PM  
**To:** Mills, Dora A.  
**Subject:** Re: Maine Med resolution on wind power

Tx. I saw it on the industrial wind action page. No need to send it.

Andrew Fisk  
Maine DEP, Land & Water Quality

- sent via Blackberry, apologies for brivty or typos

----- Original Message -----

**From:** Mills, Dora A.  
**To:** Fisk, Andrew C  
**Sent:** Mon Sep 14 20:13:33 2009  
**Subject:** RE: Maine Med resolution on wind power

It's a long story, but yes, the Public Health Committee voted about a month ago 9 to 1 not to forward a resolution. However, any MMA member can introduce a resolution on their own. So, Dr. Aniel submitted a resolution on his own. The resolutions were taken up and discussed early Saturday morning, when there were not many members present, and I understand no members of the PH Committee were present. So, he made his case, and some kind of resolution passed, though I guess it was fairly harmless sounding. I think Kellie has sent me a copy of it, and I'll forward it to you. Ugh....I was due to arrive not until Sunday morning, so did not attend Saturday morning. Dora

---

**From:** Fisk, Andrew C  
**Sent:** Monday, September 14, 2009 4:49 PM  
**To:** Mills, Dora A.  
**Subject:** FW: Maine Med resolution on wind power

Kellie is out this week, do you know the answer?

Andrew Fisk

Bureau Director, Land & Water Quality

Maine Department of Environmental Protection



**Breton, Mary B**

---

**From:** Mills, Dora A.  
**Sent:** Monday, September 14, 2009 8:14 PM  
**To:** Fisk, Andrew C  
**Subject:** RE: Maine Med resolution on wind power

It's a long story, but yes, the Public Health Committee voted about a month ago 9 to 1 not to forward a resolution. However, any MMA member can introduce a resolution on their own. So, Dr. Aniel submitted a resolution on his own. The resolutions were taken up and discussed early Saturday morning, when there were not many members present, and I understand no members of the PH Committee were present. So, he made his case, and some kind of resolution passed, though I guess it was fairly harmless sounding. I think Kellie has sent me a copy of it, and I'll forward it to you. Ugh.....I was due to arrive not until Sunday morning, so did not attend Saturday morning. Dora

---

**From:** Fisk, Andrew C  
**Sent:** Monday, September 14, 2009 4:49 PM  
**To:** Mills, Dora A.  
**Subject:** FW: Maine Med resolution on wind power

Kellie is out this week, do you know the answer?

**Andrew Fisk**  
 Bureau Director, Land & Water Quality  
 Maine Department of Environmental Protection

207-287-7671  
[www.maine.gov/dep](http://www.maine.gov/dep)

---

**From:** Fisk, Andrew C  
**Sent:** Monday, September 14, 2009 4:35 PM  
**To:** kmiller@mainemed.com  
**Subject:** Maine Med resolution on wind power

Kellie,

Someone sent me this link:

<http://www.windaction.org/documents/23095>

which indicates MMA did adopt a resolution on windpower on 9/12. Is this accurate? I thought the Public Health committee didn't vote to endorse a resolution.

Let me know if you could, thanks. Hope things are well,

Andy

**Andrew Fisk**  
 Bureau Director, Land & Water Quality  
 Maine Department of Environmental Protection

207-287-7671  
[www.maine.gov/dep](http://www.maine.gov/dep)

**Breton, Mary B**

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**From:** Callahan, Beth  
**Sent:** Wednesday, August 19, 2009 4:09 PM  
**To:** Fisk, Andrew C; Richardson, Marybeth; Kelley, Lorraine; Woods, Melanie R  
**Subject:** Record Hill Wind, LLC L24441AN&BN

Done with revisions. Ready for your review and signature.

Z:\L&WLAND-RRITowns CMRO Internal\LICENSES\Record Hill Wind, LLC. L24441AN&BN.doc

Melanie – See Lorraine. I know she would like your help with the final distribution of this Order. I will send you the email distribution list in a separate email.

Thanks,  
**BETH CALLAHAN**  
*Project Manager*  
*ME Dept. of Environmental Protection*  
*Division of Land Resource Regulation*



# Policy Options for Renewable Energy Incentives: the View from Europe

or

What's with Feed-in Tariffs?

Massachusetts Wind Working Group

November 9, 2006

J. F. Manwell



# Overview

- Renewable energy in Europe today
- Historical wind energy growth
- Need for incentives
- Renewable energy policy incentives in US
- The situation in Europe
- Implications for Massachusetts?



# Context for European Interest in Renewable Energy

- Meltdown at Chernobyl nuclear plant, 1986
- Awareness of “social costs” of energy production
  - Olav Hohmeyer (Germany, 1990’s) initiated the discussion
- Climate change/ attempt to meet Kyoto protocol requirements
- Relatively limited conventional fuels in Europe
- Renewable energy products/economic growth



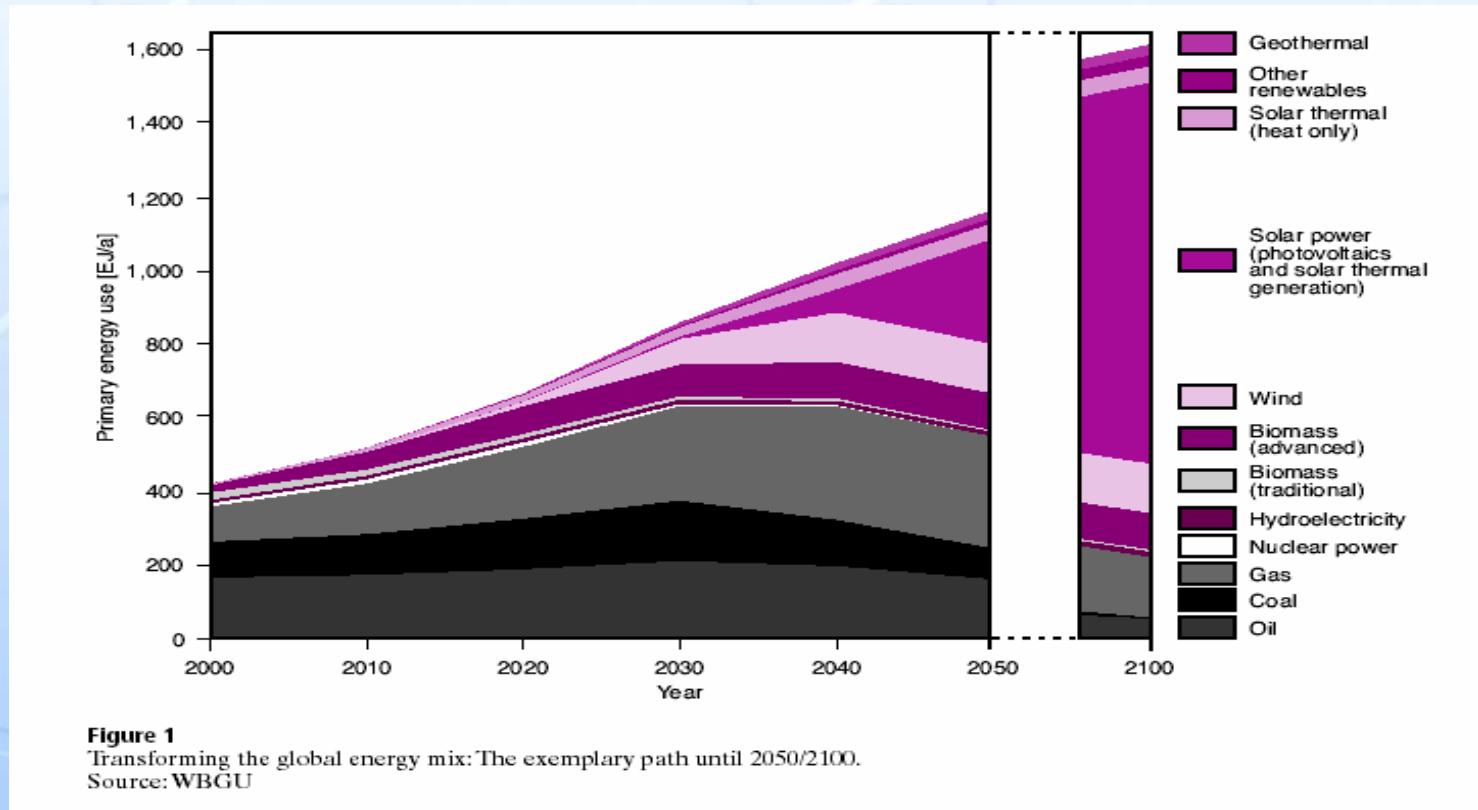
# Renewable Energy Vision in Europe

- A very high rate of deployment of renewable energy projects is needed
- Some form of financial support is required
  - Cannot rely on market alone
- Regulatory encouragement
  - e.g. building codes
- Support of research and development
  - Comprehensive approach
- Support for education at all levels
  - e.g. European Masters in Renewable Energy



# A Significant Role for Renewable Energy is Envisioned

- Possible transformation of world's energy supply:





# The Debate in Europe

- There is a general consensus that incentives are needed for renewable energy systems
- There has been considerable debate over which incentive should be used: RPS vs. Feed-in Tariffs
- Arguments particularly between Germany and the UK
- Have resulted in rifts within the European renewable energy community
  - World Wind Energy Assoc. (“German”)
  - Global Wind Energy Council (“UK”)
- Consensus in favor of feed-in may be emerging





# The Debate Has Sometimes Been Difficult!





# The Central Difference

- RPS (Renewable Portfolio Standard)
  - Fixed quota for RE projects/unspecified price for electricity sold (set by bidding)
- Feed-in Tariffs
  - Fixed price for electricity sold/unspecified quantity of RE capacity (deployment rate is function of price)



# Wind Energy Historical Background (1)

- Widely used throughout world (for mechanical power) until industrial revolution; decline through 19<sup>th</sup> century
- Little development anywhere in last 200 yrs until approx. 1975
  - Except wind water pumpers in U.S. west in 1800's and small wind electric systems in U.S. in 1930's
  - Some R&D projects and proposals



## Wind Energy Historical Background (2)

- Occasional efforts to revive wind energy (for electricity) throughout 20<sup>th</sup> century
- Oil crises of 1970's lead to federal R&D and policy changes in US, especially due to Pres. Carter and Gov. Brown (California)
- US was early leader in 1970's (95% of wind energy capacity before 1980)
  - Beginning of the “wind farm” era
- World leaders are now Germany and Spain



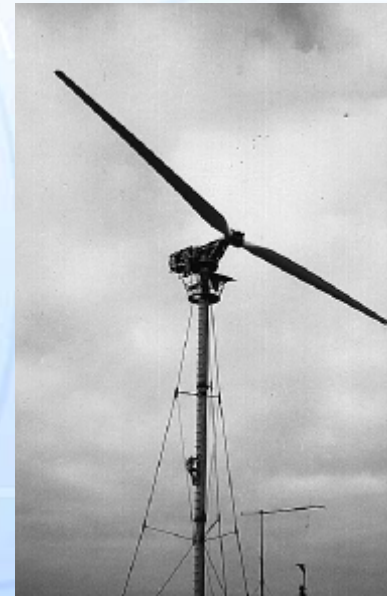
# Some pre-Wind Farm Era Wind Turbines



*Smith-Putnam, VT,  
1930's-40's*



*Gedser, Denmark,  
1950's*



*Hütter, Germany,  
1950'-60's*



*WF-1, UMass, 1970's*





# 1970's Policy Incentives in US

- Investment tax credits in US and California
  - Tax incentives based on cost of wind turbines
- Public Utility Regulatory Policy Act of 1978 (PURPA)
  - Guaranteed access to grid
  - Required utilities to buy electricity at “avoided cost”
  - Utilities offered attractive “standard offers” for sales in California
- These lead to the growth of California wind farms (among other projects)



Renewable Energy Research Laboratory

# Wind Farm Era Turbines

1970's-80's



*Enertech (from  
VT), in California*

*US Windpower (from  
Massachusetts), in  
California*





# More Recent Wind Turbines



*Vestas (from Denmark),  
in Hull, MA, 2001*



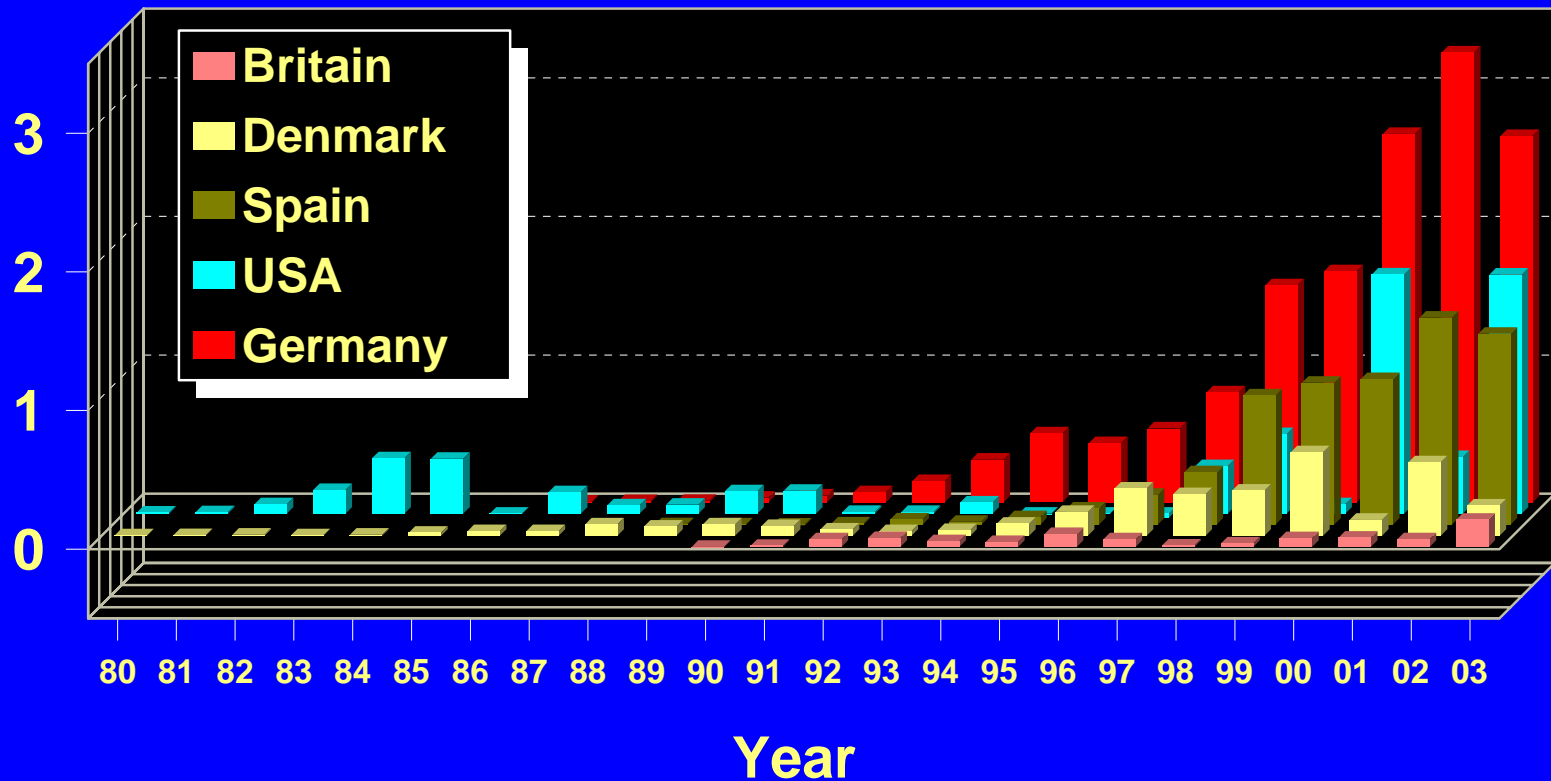
*REpower (Germany) 2006*





# Sample Wind Energy Installation Rates

Thousands MW Installed Per Year





# Current Incentives in the US

- Tax credits
- RPS (in some states)
- Systems benefit charges (SBC)
  - Such as Renewable Energy Trust Fund
- Net metering
- Green power

*See [www.dsireusa.org](http://www.dsireusa.org) for information by state*



# Tax Credits

- Investment tax credits
  - No guarantee that generator actually works
  - No longer commonly used for wind energy
- Production tax credits (PTC)
  - Often required to make projects economic
  - Boom/bust cycles
  - Need tax liability
  - Not applicable to public entities
- Renewable Energy Production Incentive (REPI)
  - Somewhat analogous to PTC, but for public entities
  - Appropriation of funds needed annually



# Renewable Portfolio Standards (RPS)

- RPS in place in some US states (e.g. Texas, Mass.) and some European countries (e.g. UK)
- Based on **quota**
- Retail suppliers required to supply certain fraction of electricity from renewable sources
- Requirement translates to a value for each kWh
  - Upper limit set by penalty for non-compliance



## RPS (2)

- Typically, renewable aspect of electricity is “unbundled” from the electrons
- Renewable aspect is represented by renewable energy credits (REC's)
- REC's can be bought and sold
- Obligation is met by acquiring sufficient REC's
- Price set by bidding; supply and demand



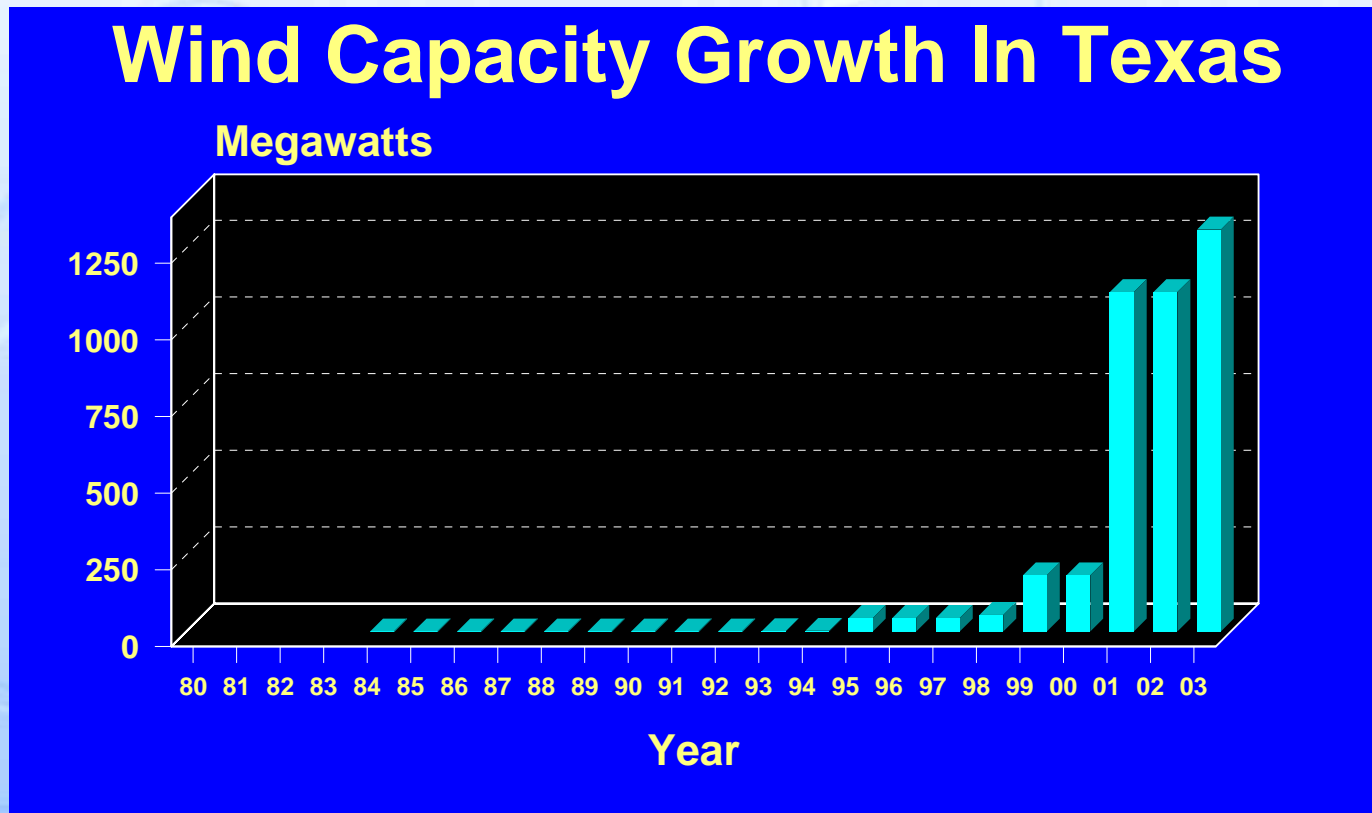
## RPS (3)

- Value of REC's difficult to quantify *a priori*
- Power purchase agreement (PPA) for REC's needed for project financing
  - PPA for energy sale needed as well
- Value of REC's could change with time, making a PPA difficult to obtain
- Supply/demand effect on REC's value creates difficulties when changing eligibility
  - E.g. hydro or biomass in Mass.



# RPS in Texas

- RPS has had some success in Texas:

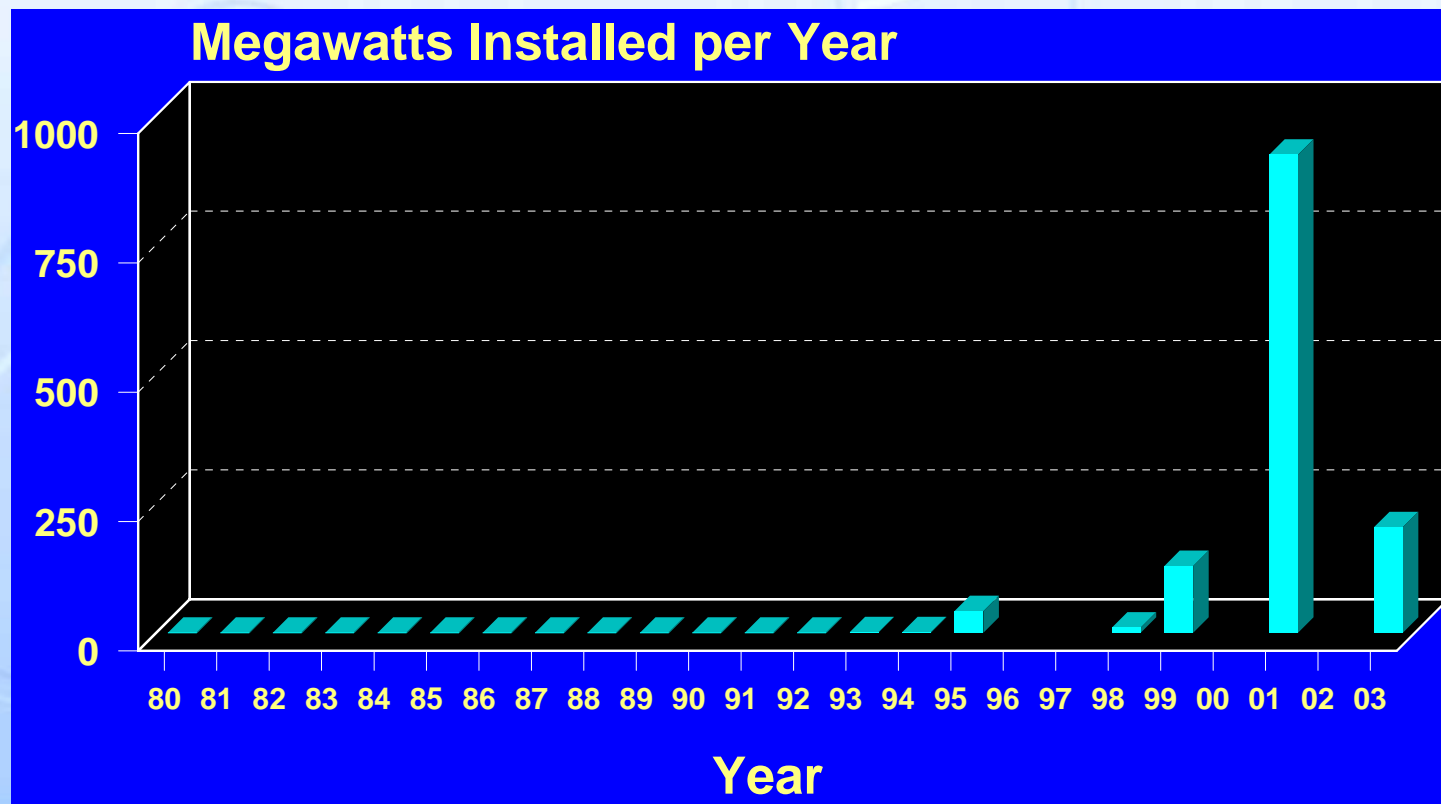


Source: Gipe, OSEA



## RPS in Texas (2)

- PTC has been needed as well:

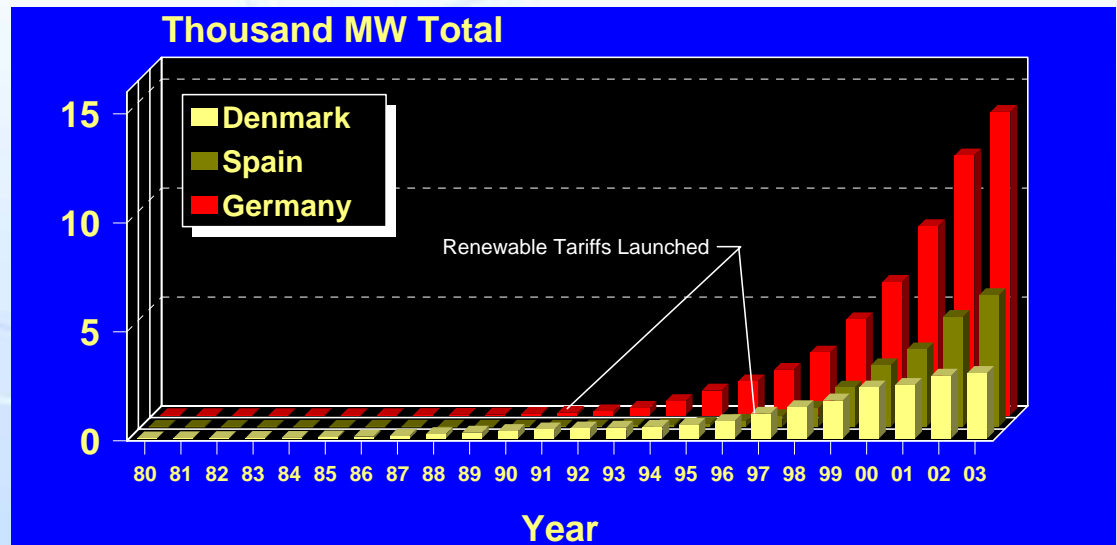






# Wind Energy Growth in Europe

- Growth in Germany, Spain started when renewable tariffs implemented
- Growth in Denmark declined when renewable tariffs stopped



Source: Gipe, OSEA



# The European Feed-in/RPS Breakdown

- Note: Denmark switched from feed-in after change of government
- Conservatives in UK are now recommending feed-in tariffs

Feed-in	RPS
Austria	Belgium
Denmark	Italy
France	Sweden
Germany	UK
Greece	Poland
Ireland	
Luxembourg	
Netherlands	
Portugal	
Spain	
Czech Republic	
Estonia	
Hungary	
Latvia	
Lithuania	
Slovak Republic	
Slovenia	



# Feed-in Tariff

- Also known as “EEG tariff” or “Advanced Renewable Energy Tariff”
- Used in most European countries (e.g. Germany, Spain)
- Based on mandated **price** of electricity sold into the electric grid from RE source
- Different prices for different **sources**
- Different prices for different **wind regimes**



# Origin of Feed-in Tariffs

- Denmark had something like the feed-in tariff for wind in the 1980's
- Germany introduced method in 1991
  - *Stromeinspeisungsgesetz für Erneuerbare Energien* (Act on **Feeding in** to the Grid Electricity Generated from Renewable Energy Sources)
- Has been updated (2000)
  - *Erneuerbare Energie Gesetz (EEG, Renewable Energy Sources Act)*



# EEG: Obligation to Purchase Renewable Energy and Pay for it

- Utility is obliged to connect RE power plants to their grid at connection point that is technically and economically suitable
- Suitability includes reasonable upgrade if required
- Utility must purchase electricity at fixed rates of EEG



# EEG: Grid Connection Costs

- Costs to connect to the grid must be paid by project operator
- Costs to upgrade grid paid for by grid operator



# EEG: Payment

- Local utility pays project operator for electricity at required rates
- Excess costs are distributed throughout German electricity networks



# Overview of German EEG Tariffs

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Solar power	48,1	45,7	43,4	41,2	39,1	37,1	35,2	33,4	31,7
Wind power initial tariffs/ prolongation*	9	8,9	8,8	8,7	8,6	8,5	8,4	8,3	8,2
Wind power final tariffs	6,1	6	5,9	5,8	5,7	5,6	5,5	5,4	5,3
Biomass < 500 kW	10,1	10	9,9	9,8	9,7	9,6	9,5	9,4	9,3
Biomass 500 kW - 5 MW	9,1	9	8,9	8,8	8,7	8,6	8,5	8,4	8,3
Biomass 5 MW - 20 MW	8,6	8,5	8,4	8,3	8,2	8,1	8	7,9	7,8
Hydropower and Gas (from landfills, mines, sewage plants) < 500 kW	7,65	7,65	7,65	7,65	7,65	7,65	7,65	7,65	7,65
Hydropower and Gas < 5 MW	6,63	6,63	6,63	6,63	6,63	6,63	6,63	6,63	6,63
Geothermal power < 20 MW	8,93	8,93	8,93	8,93	8,93	8,93	8,93	8,93	8,93
Geothermal power more than 20 MW	7,14	7,14	7,14	7,14	7,14	7,14	7,14	7,14	7,14

\*windpower: initial tariffs: first 5 years (onshore), first 9 years (offshore, if installed till 2006),  
Prolongation 0-15 years depending on site quality, Feed-In tariff duration 20 years

*J. Lackman, Bundesverband Erneuerbare Energie e.V., 2002*





# Close-Up of Some German EEG Rates

- Rates for **wind** depend on onshore or offshore
  - Early years have higher rates
  - Length of time depends on percentage of reference yield
- Rates for PV depend on size and type of application

	Years	Rate (USD) *
<b>On Land Wind</b>		
60% Reference Yield	11.5	0.109
100% Reference Yield	9.2	0.109
150% Reference Yield	5	0.109
All	To year 20	0.069
<b>Offshore</b>		
60% Reference Yield		0.114
100% Reference Yield		0.114
150% Reference Yield		0.114
All	To year 20	0.069
<b>Solar PV</b>		
< 100 kW rooftop	20	0.681
> 100 kW rooftop	20	0.674
Freestanding	20	0.570

*\*converted from Euros*



# Wind Turbine Energy Yields

- Consider reference yield, 60% and 150% of reference
- Example: Vestas V47 on 50 m tower (“Hull I”)\*

Reference Yield	kWh/yr	Mean Wind, m/s	Capacity Factor
100%	1,331,800	6.0	0.230
60%	799,080	4.9	0.138
150%	1,997,700	7.4	0.346

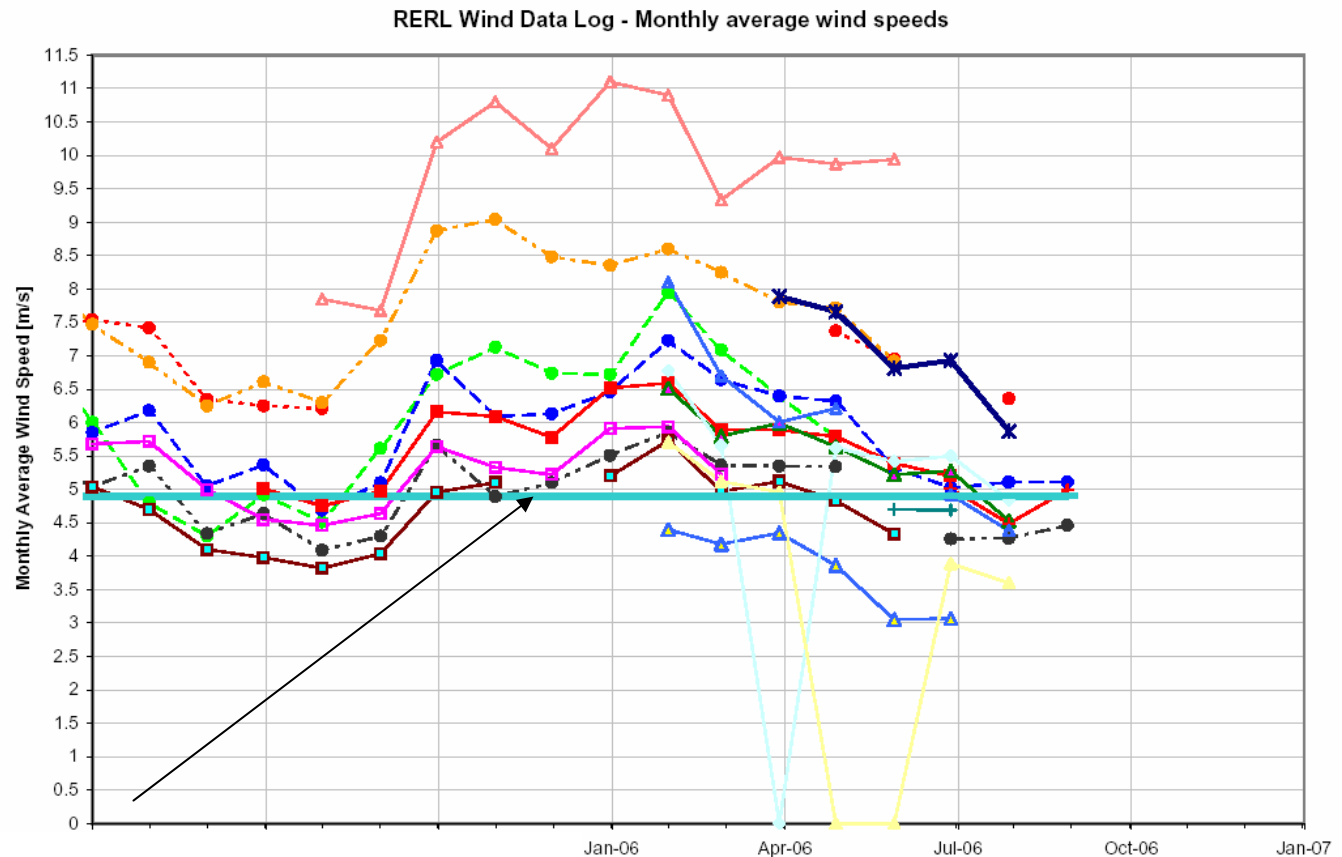
- Implication: Hull I site is better than reference (CF = approx. 0.28)
- Many sites in Massachusetts are better than 60% of reference (see next slide)

*\*Assumes Rayleigh distribution, 97% availability*

Also see <http://www.wind-fgw.de/>



# Measured Wind Data in Massachusetts



*Line corresponds to annual wind speed for EEG 60% reference yield*



# Example: Dortmund

- Inland Germany
- Unremarkable wind: 5.1 m/s
- Municipal electric company
- Enercon 500 kW turbine
- Capacity factor: 0.17
- Cost: Eur 511k (~\$639k)
- Financed with bonds



[http://www.energie-cites.org/db/dortmund\\_139\\_en.pdf](http://www.energie-cites.org/db/dortmund_139_en.pdf)



# More on the Debate



# Feed-in EEG

- Advantages claimed
  - High efficiency
  - Allows price differentiation and reduces costs
  - Planning certainty
  - Low administration expense
  - No effect on government budgets
- Disadvantages noted
  - Lack of a acceptance by some sectors



# Arguments for Feed-in

- Rapid deployment of resources
- Rapid development of local manufacturing
- Increases in local acceptance and participation
- Encourages geographic distribution
- Transparent and lower administrative cost
- More jobs, more investment, more competition in manufacturing, equipment suppliers
- Projected costs minimal

*Source: Rickerson and Zytaruk, AWEA, 2006*





# Arguments for RPS

- Predictable market growth
- Minimizes costs to taxpayers and/or rate payers through increased competition among developers
- No picking technological winners
- Market based system of tradable credits
- Projected costs minimal

*Source: Rickerson and Zytaruk, AWEA, 2006*





# Issues with RPS

- Focus on lower price
  - Geographic concentration
  - NIMBY and best sites first
  - High contract failure rates
- Targets near market technologies and leaves technology market to foreign manufactures
- Deployment rates relatively slow
- Single price means “windfall” for best sites
- Favors large developers
- Less portfolio diversity
- Administratively cumbersome and costly



# German Building Code

- For building in rural areas, “Paragraph 35”
- Wind turbines in designated regions are permitted **by right**
- **Evidence** now has to be given as to **why** turbines should **not** be permitted
  - Rather than the other way around.
  - Streamlined the planning and approval process
- Cities and communities are obliged to **identify local** wind resource areas.



# Feed-in Tariff in North America?

- Already implemented in Canada (Ontario and Prince Edward Island)
- In place to some degree in US in Washington state, Minnesota, Wisconsin (PV and biogas), New Mexico (PV only) and California (PV only)



# Recent Experience in Massachusetts

- Wind studies reveal that resource is often as good as much of Germany
  - In spite of that, resource often thought of as too low for development
- Deployment is still slow
- NIMBY is a problem
- Most of the action is in towns with municipal utilities



# Lessons from Europe for Massachusetts?

- Massachusetts RPS still relatively young
  - Results not in
  - Should be closely watched
- Could system be developed that includes some of the advantages of RPS and feed-in?
  - Hybrid system with quotas for various sectors (e.g. wind, PV, biomass, hydro); set minimum prices?
- State wide wind zoning law
  - Reduce impact of NIMBY
- Municipal utilities have some intrinsic advantages
  - More encouragement needed?



# References

- Much information is available on the Internet
- Links to many documents of relevance:  
*<http://www.wind-works.org/>*

## Elizabeth Enos

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**From:** Front Desk  
**Sent:** Wednesday, February 01, 2012 10:55 AM  
**To:** Kristy Senatori; Elizabeth Enos  
**Subject:** FW: Comments on draft decision regarding New Generation Wind  
**Attachments:** re Bourne wind project.pdf

-----Original Message-----

**From:** James Manwell [mailto:manwell@ecs.umass.edu]  
**Sent:** Wednesday, February 01, 2012 10:21 AM  
**To:** Front Desk  
**Subject:** Comments on draft decision regarding New Generation Wind

Greetings,

I would appreciate it you could forward this attached letters to the members of the Cape Cod Commission.

Thank you.

J. F. Manwell

James F. Manwell, Professor

Dept. of Mechanical and Industrial Engineering University of Massachusetts Amherst, MA 01003 tel. 413-577-1249



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## Wind Energy Center

January 30, 2012

To the Cape Cod Commission:

My name is James Manwell and I am writing concerning the draft decision of the Cape Cod Commission on the Bourne "New Generation Wind Project". I am a professor of Mechanical Engineering at the University of Massachusetts and the Director of the Wind Energy. The draft decision was brought to my attention by the applicants of the New Generation Wind Project, but I am not associated with the New Generation Wind Project in any way. My concern is with the conclusions of the draft decision, the basis on which they were made and the precedent that would be set if the draft decision becomes final. My recommendation is to review the basis of the draft decision and to base the final decision on the facts as they can best be determined.

Under BDF2, the draft decision states the following:

"The Commission finds the project's probable detriments include probable negative effects on Bourne's water supply, probable diminishment of property values, probable negative impacts on the local Native American tribe, the proximity of the proposed project to the nearby elementary school, the possibility that this project could detract from tourism, that the proposed project would dilute efforts to pursue alternate sources of renewable energy, probable health effects of the project, the effect of the project on community morale, and the negative effect on wildlife, including birds and bats."

The body of the draft decision should provide the basis for the decision, but in general sufficient detail is lacking. My specific comments are below:

**Water supply:** How is the presence of wind turbines likely to adversely affect the water supply? What mechanism is anticipated whereby contamination of the water supply could occur? Are there other means available for mitigating the effect of possible contamination?

**Impacts on Native Americans:** The only discussion of Native Americans in the body of the draft decision (HPCCF6) has to do with archaeological resources. The conclusion was that "no significant historic or archaeological resources were identified within the project area." Thus, it appears that, based on the evidence, there will be no impacts on Native Americans.

**Proximity of elementary school:** The body of the draft decision does not discuss any elementary school or its distance from the turbines. In any case, no evidence is presented that the turbines would have any effect on the elementary school, regardless of distance.



**Potential of project to detract from tourism:** The body of the draft decision does not discuss tourism. No evidence is presented that the project would be likely to affect tourism, one way or the other.

**Potential of project to dilute efforts to pursue alternate sources of renewable energy:** The body of the draft decision does not discuss any other efforts to pursue alternate sources of renewable energy and does not provide any evidence that the wind turbine project could affect any such efforts, one way or the other.

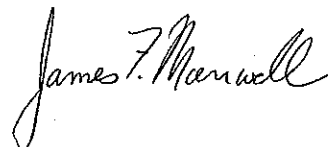
**Probable health effects of the project:** The body of the draft decision does not discuss health effects of the turbines. Since the draft decision was written, the Massachusetts Department of Environmental Protection and the Massachusetts Department of Public Health have issued a report prepared by an independent expert panel (of which I was a member) on wind turbine health impacts. That report contains Findings and Best Practices which are relevant to the proposed project. I recommend that the Commission review that report and make their final decision in consideration of the Findings and Best Practices.

**Effect of the project on community morale:** The body of the draft decision does not discuss community morale, nor does it provide any evidence that the proposed project would affect community morale, one way or the other.

**Negative effect on wildlife, including birds and bats:** The body of the draft decision does not discuss birds or bats *per se*. The draft decision does consider wildlife habitat and makes the following statement: "The Commission finds that the proposed project complies with MPS WPH1.3 as fragmentation of wildlife and plant habitat is minimized to the extent feasible." The draft decision also states the following: "The Commission finds that proposed development has been designed to minimize impacts to critical wildlife and plant habitat and significant scenic roads and vistas and as such is consistent with MPS OS1.4 (Sensitive Natural Resources)." In addition, the Commission noted that applicant had offered to "permanently protect two parcels" and appeared to agree that such protection would have a positive effect on wildlife.

In summary, the negative conclusion of the draft decision is not supported by the evidence presented or referred to. Accordingly, I recommend that the decision be reconsidered.

Sincerely,

A handwritten signature in cursive script that reads "James F. Manwell".

James F. Manwell, Ph.D.  
Professor and Director