

# ISSUES OF SLEEP DISTURBANCE IN COMMUNITIES WITH WIND TURBINES ARE COMMON

A Compilation of Basic Facts: Peg Schwabel

Source of copy shown below: <http://www.windvigilance.com/about-adverse-health-effects/sleep-disturbance-and-wind-turbines>

## Sleep Disturbance and Wind Turbines

*“Sleep is an essential part of healthy life and is recognized as a fundamental right under the European Convention on Human Rights (European Court of Human Rights, 2003).”* [1]

“Some people with wind turbines located close to their homes have reported a variety of clinical symptoms that in rare cases are severe enough to force them to move away. These symptoms include sleep disturbance...” [2]

The American Wind Energy Association and Canadian Wind Energy Association sponsored literature review entitled “Wind Turbine Sound and Health Effects” acknowledges wind turbine noise, including low frequency noise, may cause annoyance, stress and sleep disturbance and as a result people may experience adverse physiological and psychological symptoms. [3]

Wind turbine induced sleep disturbance is consistently reported by those experiencing adverse health effects from exposure to wind turbines. [4], [5], [6], [7]

“The recent analyses of the WINDFARM Perception and earlier Swedish studies by Pedersen and her colleagues gives, for the first time, robust evidence that wind turbines cause sleep disturbance and impair health and that this occurs at set-back distances previously regarded as adequate... Unfortunately all government and industry sponsored research in this area has used reported awakenings from sleep as an index of the effects of turbine noise and dismisses the subjective symptoms. Because most of the sleep disturbance is not recalled, this approach seriously underestimates the effects of wind turbine noise on sleep.” [8]

“Harry (2007) ... subsequently investigated 42 people in various locations in the U.K. living between 300 meters and 2 kilometers (1000 feet to 1.2 miles) from the nearest wind turbine. The most frequent complaint (39 of 42 people) was that their quality of life was affected. Headaches were reported by 27 people and sleep disturbance by 28 people. Some people complained of palpitations, migraines, tinnitus, anxiety and depression.... Pierpont does report that her study subjects maintain that their problems are caused by noise and vibration, and the most common symptoms reported are sleep disturbances and headache.” [9]

“In Ontario “WindVOiCe recently published the updated results of a self-reporting survey of communities affected by wind turbine noise. As of March 2010, 141 responses had been received of which 115 reported one or more health effects. 83 of the 115 (72%) reported sleep disturbance.”

Describing the preliminary results of his controlled study Dr Michael Nissenbaum states:

“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.

The Mars Hill study will soon be completed and is being prepared for publication.” [\[11\]](#)

“The sound level associated with wind turbines at common residential setbacks ...may lead to annoyance and sleep disturbance.” [\[12\]](#) and evidence demonstrates “Annoyance and sleep disruption are common when sound levels are 30 to 45 dBA.” [\[13\]](#)

Sleep disturbance is acknowledged to be an adverse health effect. [\[14\]](#), [\[15\]](#)

The consequences of sleep disturbance can be serious.

In 2009 World Health Organization released a 184 page peer reviewed summary of research regarding the risks to human health from noise induced sleep disturbance. Some of the adverse health effect documented in the report include poor performance at work, fatigue, memory difficulties, concentration problems, motor vehicle accidents, mood disorders (depression, anxiety), alcohol and other substance abuse, cardiovascular, respiratory, renal, gastrointestinal, musculoskeletal disorders, obesity, impaired immune system function and a reported increased risk of mortality. [\[16\]](#)

A 2009 court decision mandated that a wind turbine facility in France shut down operations at night in order to prevent the sleep disturbance that the local population had been enduring.[\[17\]](#)

## Conclusions

Based on the best available science the following conclusions can be made

- Wind turbine noise, including low frequency noise, may cause annoyance, stress and sleep disturbance.
- Wind turbine induced sleep disturbance occurs at common residential setbacks and when sound levels are higher than 30 dBA.
- The consequences of sleep disturbance can be serious. Acknowledged symptoms include poor performance at work, fatigue, memory difficulties, concentration problems, motor vehicle accidents, mood disorders (depression, anxiety), alcohol and other substance abuse, cardiovascular, respiratory, renal, gastrointestinal, musculoskeletal disorders, obesity, impaired immune system function and a reported increased risk of mortality.

- [1] World Health Organization, Night Noise Guidelines for Europe, 2009, [http://www.euro.who.int/InformationSources/Publications/Catalogue/20090904\\_12](http://www.euro.who.int/InformationSources/Publications/Catalogue/20090904_12)
- [2] Salt, A.N., Hullar, T.E., Responses of the ear to low frequency sounds, infrasound and wind turbines, Hearing Research (2010), doi:10.1016/j.heares.2010.06.007
- [3] W. David Colby, M.D et al., Wind Turbine Sound and Health Effects, An Expert Panel Review 2009, Prepared for American Wind Energy Association and Canadian Wind Energy Association
- [4] Pierpont, N., 2009. Wind turbine syndrome. K-selected books.
- [5] Harry, A., 2007. Wind turbines, noise and health. [www.windturbinehealthhumanrights.com/wtnoise\\_health\\_2007\\_a\\_barry.pdf](http://www.windturbinehealthhumanrights.com/wtnoise_health_2007_a_barry.pdf)
- [6] Dr Michael Nissenbaum, Wind Turbines, Health, Ridgelines, and Valleys, Montpelier, VT, May 7 2010 <http://www.windvigilance.com/news/preliminary-findings---controlled-study-mars-hill>
- [7] Wind Vigilance for Ontario Communities (WindVOiCe©) [http://www.windvigilance.com/windvoice\\_home](http://www.windvigilance.com/windvoice_home)
- [8] Hanning, Wind Turbine Noise, Sleep And Health, April 2010, <http://www.windvigilance.com/about-adverse-health-effects/wind-turbine-noise-sleep-and-health-by-dr-hanning>
- [9] Minnesota Department of Health (MDH) 2009 Public Health Impacts of Wind Turbines
- [10] Hanning, Wind Turbine Noise, Sleep And Health, April 2010, <http://www.windvigilance.com/about-adverse-health-effects/wind-turbine-noise-sleep-and-health-by-dr-hanning>
- [11] Dr Michael Nissenbaum, Wind Turbines, Health, Ridgelines, and Valleys, Montpelier, VT, May 7 2010 <http://www.windvigilance.com/news/preliminary-findings---controlled-study-mars-hill>
- [12] Rideout K, Copes R, Bos C. Wind turbines and health. Vancouver: National Collaborating Centre for Environmental Health; 2010 Jan [cited 2010 June 3]. Available from: [http://www.nceeh.ca/files/Wind\\_Turbines\\_January\\_2010.pdf](http://www.nceeh.ca/files/Wind_Turbines_January_2010.pdf)
- [13] Rideout K, Copes R, Bos C. Wind turbines and health. Vancouver: National Collaborating Centre for Environmental Health; 2010 Jan [cited 2010 June 3]. Available from: [http://www.nceeh.ca/files/Wind\\_Turbines\\_January\\_2010.pdf](http://www.nceeh.ca/files/Wind_Turbines_January_2010.pdf)
- [14] World Health Organization, Guidelines for Community Noise, 1999
- [15] World Health Organization, Night Noise Guidelines for Europe, 2009
- [16] World Health Organization, Night Noise Guidelines for Europe, 2009
- [17] France news report , December 7 2009, [http://www.ouest-france.fr/actu/actuLocale\\_-La-justice-demande-l-arret-nocturne-des-huit-eoliennes-de-Cast\\_-1183050-----29103-abd\\_actu.Htm](http://www.ouest-france.fr/actu/actuLocale_-La-justice-demande-l-arret-nocturne-des-huit-eoliennes-de-Cast_-1183050-----29103-abd_actu.Htm)

**ONCE TURBINES ARE IN PLACE, LITTLE IS DONE TO ADDRESS ISSUES WITH THEM. IT IS TOO LATE. DEVELOPERS WILL NOT REMOVE THEM. THE SCENARIO DESCRIBED BELOW IS RELATED TO A SEACOAST TOWN IN MASSACHUSETTS THAT LIES BETWEEN BOSTON AND PLYMOUTH. SINCE THE TURBINE BECAME OPERATIONAL FIVE (5) YEARS AGO, NOTHING HAS BEEN RESOLVED:**

2017:

<http://scituate.wickedlocal.com/news/20170922/scituate-wind-turbine-noise-still-problem-for-some>

Scituate, MA, has recently been in the news for this issue. In part: “The 400-foot wind turbine was installed in its spot on the Driftway in early spring 2012. Shortly after it went online, people in the neighborhood began to complain about the noise and the flicker associated with the

turbine.

“There have been varying degrees of discomfort and sleep interruption during the last five years,” Dardi said. “I have experienced constant ringing in my ears, better known as tinnitus, during times that the turbine is operational. It is unacceptable and inconsistent with the Nuisance Law that in order to mitigate the noise I am forced to shut my windows on a lovely summer evening and play background music so that I can try to sleep. Many nights I am forced to take prescription sleeping pills in order to sleep.”

2012. The source below shows early reporting of issues with the single 400' turbine:

<https://www.illwind.org/reports/view/285>

In part: “Resident David Dardi gave a presentation on behalf of his neighbors. “Our struggle is not against renewable energy sources, our struggle is to resolve the public health crisis affecting our families that has resulted from the Scituate wind turbine being located so close to residential neighborhoods,” Dardi said. “We are advocating for our homes and properties to be returned to a place that provides a safe living condition for our children, free from the harmful impacts of the Scituate wind turbine emissions.” Dardi said the noise from the wind turbine travels depending on the wind direction, and that while those traveling along the Driftway may not hear anything, families living in the area are subjected to a constant drone that sounds like a jet airplane that never lands. “The number one adverse effect so far has been sleep deprivation,” Dardi said. “The sound travels through closed windows. Other people have complained about headaches, ringing in the ears, nausea, anxiety, and the flicker effect.” Dardi pointed out that other areas of the country, and other countries, are experiencing problems with the adverse effects of wind turbines on residents who live nearby. . . .

He cites a paragraph from the January 2012 Massachusetts DEP/DPH Wind Turbine Health Impact Study which states, “Given the effects of sleep deprivation on health and well-being, including problems with mood and cognition, it is possible that cognitive and mood complaints and other medical or psychological issues associated with sleep loss can stem from living in immediate proximity to wind turbines, if the turbines disrupt sleep.”

**Background Reading Regarding Turbine Noise Showing Awareness of issues in 1979:**

**Updated September 2017:**

<https://patch.com/massachusetts/falmouth/block-island-rhode-island-wind-turbine-infra-sound-1979>