

Jackson Sub-Committee on Wind Power Development
Recommendations for Industrial Wind Turbine Land Use Ordinance

Subject: Setbacks

Revision Date: February 26, 2009

Recommendation #1: Setbacks for Occupied Buildings

Each wind turbine shall be set back from an occupied building a distance of no less than 1 mile, as measured from the center of the wind turbine plus blade length to the closest point of the building. Property owners may waive this setback with a written agreement of mitigation (see "Mitigation Waiver"). An "occupied building" means those structures which are, or are likely to be, occupied by persons or animals and include, but are not limited to dwellings, businesses, places of worship, schools and barns.

Rationale:

There is a growing body of evidence that industrial wind turbines can produce serious health problems in people living too close to improperly sited wind farms. Unexpected noise levels from turbines can also seriously affect the quality of life of abutting property owners. Our Wind Power Subcommittee researched many sources and articles over a number of weeks before reaching a unanimous recommendation that the setback for industrial wind turbines from occupied buildings must be a minimum of 1 (one) mile to protect the health, safety and welfare of the citizens of the Town of Jackson.

To support our recommendation our committee references the following sources in ascending order of recommended setback distances (3000' to 6 miles):

- Wendy Todd of Mars Hill, Maine – Recommends setbacks greater than 3000'. Her testimony is summarized in the AEI Special Report: Wind Energy Noise Impacts – "18 families, each with homes less than 3000 feet from the nearest turbine, are experiencing disturbing noise levels; the next closest home is about 5200 feet away, and are only occasionally bothered."

References:

Testimony from Wendy Todd to the Maine Wind Task Force, September 26, 2007. Available at: http://sites.google.com/site/jacksonwindproject/Home/general-information-pages/health-environment/WendyTodd_TestimonyMaineWindTaskForce.pdf?attredirects=0

Letter from Wendy Todd to towns of Roxbury and Byron, March 5, 2008. Available at:
<http://www.windaction.org/documents/15113>

AEI Special Report: *Wind Energy Noise Impacts*. The Acoustic Ecology Institute. Downloaded January 6, 2009 from: <http://www.acousticecology.org/srwind.html#Anchor-11481>

- Kamperman and James in their article “Simple guidelines for siting wind turbines to prevent health risks” completed a comprehensive review of 26 noise studies and conclude that the minimum setback for industrial wind turbines should be 1 kilometer (0.62 mile).

Reference:

Kamperman GW, James RR. Simple guidelines for siting wind turbines to prevent health risks. *NOISE-CON 2008*. 2008 July 28-31. (From INCE Noise-con 2008 Proceedings). Available at:
<http://sites.google.com/site/jacksonwindproject/Home/general-information-pages/health-environment/simple-guidelines-for-siting-wind-turbines-to-prevent-health-risks.pdf?attredirects=0>

- Steve Bennett, a resident of Freedom Maine, in a letter to this committee, identifies noise problems up to 1 mile from the turbines. Of note is that the wind turbines are managed by Competitive Energy, one of three companies seeking to develop wind turbines in Jackson.

Reference:

Memo from Steve Bennett to David McDaniel, Chair, Jackson Planning Board Wind Power Subcommittee. Undated; received by email February 26, 2009. Available at:
<http://sites.google.com/site/jacksonwindproject/Home/general-information-pages/health-environment/SteveBennettLettertoJackson%2C2-25-09.doc?attredirects=0>

- Christopher Bajdek’s paper entitled “Communicating the Noise Effects of Wind Farms to Stakeholders” conducted a comprehensive survey of existing wind farm abutters and found that serious complaints regarding noise do not abate until residences are located a mile or more from wind turbines.

Reference:

Bajdek CJ. Communicating the noise effects of wind farms to stakeholders. *NOISE-CON 2007*. 2007 October 22-24. (From INCE Noise-con 2007 Proceedings). Available at:
www.hmmh.com/cmsdocuments/Bajdek_NC07.pdf

- The United Kingdom’s Noise Association states in their article “Location, Location, Location” that it would be prudent that no wind turbines be sited closer than 1 mile away from the nearest dwellings. ... There may even be occasions where a mile is insufficient depending on the scale and nature of the proposed development”.

Reference:

Location, Location, Location. An investigation into wind farms and noise by The Noise Association. July 2006. Available at:
www.countryguardian.net/Location.pdf

- The French Academy of Medicine, in “Repercussions of wind turbine operations on human health,” has set a recommended set back of 1.5 kilometers (1.24 miles)

Reference:

Wind Turbines: The Academy Cautions. English translation of notice of the report. Available at:
<http://www.windaction.org/news/2218>

Full report in French:

Chouard CH. Le retentissement du fonctionnement des éolines sur la santé de l’homme. [Repercussions of wind turbine operations on human health.] Académie nationale de médecine (France). Available at:
<http://sites.google.com/site/jacksonwindproject/Home/general-information-pages/health-environment/FranceAcademyMedicine.pdf?attredirects=0>

- Frey and Hadden in the article “Noise Radiation from Wind Turbines Installed Near Homes: Effects on Health” recommend a 2 km buffer between dwellings and industrial wind turbines.

Reference:

Frey BJ, Hadden PJ. *Noise Radiation from Wind Turbines Installed near Homes: Effects on Health.* With an annotated review of the research and related issues. February 2007 v.1. Available at:
www.windturbinehealthhumanrights.com

- Dr Amanda Harry in “Wind Turbines, Noise and Health recommends a 1 ½ mile setback based on serious health affects reported.

Reference:

Harry A. *Wind Turbines, Noise and Health.* February 2007. Available at:
www.windturbinehealthhumanrights.com

- Dr Nina Pierpont, MD, PhD in her book Wind Turbine Syndrome, states “2 kilometers, or 1.24 miles, remains the baseline, shortest setback from residences (and hospitals, schools, nursing homes, etc.) that communities should consider. In mountainous terrain, 2 miles (3.2 km) is probably a better guideline. The shorter setbacks currently in use in the USA and elsewhere – 1000 to 1500 ft (305-457 m) – are a convenience and financial advantage for wind developers and participating landowners. They have no basis in research on safety and health, and they make no clinical sense.”

Reference:

Pierpont N. *Wind Turbine Syndrome*. In press (2009). K-Selected Books. Full draft manuscript available upon request. Excerpts available at: www.windturbinesyndrome.com

- In February, 2009 The Medical Staff of the Rumford Community Hospital submitted testimony to Gov. Baldacci and Dr Mills of the Maine Center for Disease Control asking for a statewide moratorium on industrial wind turbine development. Their testimony stated, “there are growing scientific observations and studies suggesting people living within 2 to 6 miles of these industrial wind farms are affected at a variety of levels from a variety of symptoms.

Reference:

Medical Staff of the Rumford Community Hospital. *Health Concerns Generated by Wind Turbines*. Resolution available at:
<http://sites.google.com/site/jacksonwindproject/Home/general-information-pages/health-environment/RumfordHospitalStaffResolution.pdf?attredirects=0>

Recommendation #2: Setbacks for Abutting Property Lines

Each wind turbine shall be set back from the nearest abutting property line a distance of no less than one-half (½) mile, as measured from the center of the turbine plus blade length to the closest point of the abutting property. Property owners may waive this setback with a written agreement of mitigation (see “Mitigation Waiver”).

Rationale:

The subcommittee debated at length what the set back should be for abutting property lines in situations where occupied buildings are not at issue. In the end we adopted a recommended setback of

½ mile to allow abutting property owners some degree of minimal property rights and mitigation from noise and view shed issues caused by 400-foot industrial wind turbines.

Sources for our recommendation include:

- Wind Generator and Wind Generating Facility Ordinance for Trempealeau County, Wisconsin

Reference:

Wind Generator and Wind Generating Facility Ordinance for Trempealeau County.

Available at: <http://sites.google.com/site/jacksonwindproject/Home/general-information-pages/sample-ordinances/TrempealeauCountyOrdinance.pdf?attredirects=0>

- Extensive debate within our subcommittee based on balancing considerations of the competing interests of different landowners (i.e. Lease holders vs. abutters)

Recommendation #3: Mitigation Waiver

Property owners may waive setback requirements for occupied buildings and abutting properties by entering into a written “Mitigation Waiver” negotiated between the wind turbine owner/operator and the affected property owner. The “Mitigation Waiver” must be submitted to the Planning Board as part of the application process. The “Mitigation Waiver” must be recorded in the Waldo County Register of Deeds office, describe the benefited and burdened properties, and advise all subsequent owners of the burdened property.

Rationale:

The subcommittee spent a great deal of time debating this issue. We felt it was important to balance our setback recommendations with an abutter’s right to waive these setbacks. Rather than having setbacks stop a developer’s project, a Mitigation Waiver forces a developer to negotiate with the abutters most likely to be harmed or affected by the wind turbines. It also gives the abutters defined property rights to allow them to negotiate a fair price from the developer.

Sources include:

- Wind Generator and Wind Generating Facility Ordinance for Trempealeau County Wisconsin

Reference:

Wind Generator and Wind Generating Facility Ordinance for Trempealeau County.
Available at: <http://sites.google.com/site/jacksonwindproject/Home/general-information-pages/sample-ordinances/TrempealeauCountyOrdinance.pdf?attredirects=0>

- Extensive debate within our subcommittee

Recommendation #4: Occupied Building Setback Grace Period

As part of the permitting process for each industrial wind turbine development project, the Planning Board will set a grace period for landowners to declare their intent to build an occupied building within one mile of a wind turbine. At the onset of this grace period, landowners will have a one-time, six (6)-month period in which to declare their intent to build an occupied building by submitting a building permit to the Town Clerk, including all required fees and documentation. The property owner will then have two years from submitting the permit to complete the structure. During the initial 6-month period, and the subsequent 2-year period, this project will be treated as an existing occupied building for the purpose of setback requirements. Non-compliance with these deadlines will cause the abutting property owner to forfeit their rights under this setback grace period.

Rationale:

Our subcommittee identified that the highest and best use for much of the rural land in Jackson is for future residential building sites and home construction. There are individuals and families in our community that have bought land with the dream of building on it in the future. Our subcommittee tried to develop a compromise that would recognize that wind turbine development can take away this future highest and best use for property. We also recognized that property owners should not be allowed to hold up development indefinitely with simply the promise of future construction, no matter how sincere their desire to build. Our compromise was to create a finite, one time grace period of six months in which a property owner could indicate their desire to build by starting the permitting process.

They would then have two years to complete their project. During this grace period they would be afforded the protection of the one mile setback.

Sources include:

Extensive debate within our subcommittee

Recommendation #5: Public Road Setbacks

Each wind turbine shall be set back from the nearest public road and its right of way a distance no less than 1680 feet.

Rationale:

Wind turbines can create a number of safety issues for public roadways including ice-fling, turbine blade fling in a catastrophic failure and flicker. According to research done by Professor Terry Matilsky from the Department of Physics and Astronomy at Rutgers University, turbine blades can fling ice 1680 feet. In view of the many recent ice storms occurring in our area, we felt adopting this standard, at minimum, would be a prudent measure.

Sources include:

- Analysis of Ice Flows and Rotor Throw from Wind Turbines by Dr Terry Matilsky Rutgers University

Reference:

Matilsky T. *Document prepared by Matilsky, Professor of Physics, Rutgers University (State U. of New Jersey)*. (including Analysis of Ice Flows and Rotor Throw from Wind Turbines)

Available at: <http://sites.google.com/site/jacksonwindproject/Home/general-information-pages/health-environment/RutgersMatilskynoise%26ice.pdf?attredirects=0>