

LOWERING THE VOLUME

on the Wind Turbine Sound Debate



The debate over alleged health effects of wind turbine sound is not a new one. Despite numerous peer-reviewed scientific studies clearly showing that wind turbine sound does not create extraordinary levels of noise or risks, the issue is still a favorite of those who oppose expanding clean energy in America. Let's set the record straight on this important issue.

WIND TURBINE SOUND

Like almost anything in motion—the ocean, tractors, cars, the wind itself—wind turbines do create sound. Sound emitted from wind turbines can be mechanical, from equipment such as the gearbox, or aerodynamic, from air moving past the rotor blades. The distance from the turbine, height of the turbine, topography, vegetation, wind conditions and direction all affect the level of the turbine sound. Multiple independent studies conducted around the world, including the U.S., have consistently found no evidence that properly sited wind farms cause any negative physical health effects.

ADDRESSING REAL CONCERNS

Avangrid Renewables takes community concerns regarding potential real or perceived impacts on residences in a project area very seriously, and we can assure you that minimizing the project's potential impacts is a key issue that always guides siting and development of our projects. We own and operate more than 50 wind projects, most of which have multiple residences within the project area. We work hard to be a positive part of the communities where we operate, and addressing concerns neighbors have about sound is a vital part of that mission. Today, our U.S. fleet of wind turbines has more than 3,000 project neighbors within one mile of a turbine.

WHAT DOES IT SOUND LIKE?

We invite you to visit an operating facility to see and listen to an operating project for yourself. It is difficult to compare sounds from different sources without listening to them but standing close to a turbine requires no hearing protection and people can have a normal conversation.



THE IMPORTANCE OF COMMUNITY ENGAGEMENT

Any power plant is at least a 20-year commitment to a community and we want to establish positive relationships that last for generations. The location of residences relative to a project site is one of the many factors that we consider when developing a project, and local community concerns are carefully reviewed as part of the permitting process. Avangrid Renewables works hard to earn the trust and respect of the communities where we do business. Our goal is to benefit the local economy and be a productive member of the local community from the very start of the project planning process.

PROPER SITING REQUIRES TEAMWORK

We are committed to working with our stakeholders, neighbors, landowners and regulators to develop a safe and healthy wind farm with adequate setbacks from homes. We use acoustical engineers to model sound levels and work with regulators and landowners to design our wind projects responsibly.

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THE FACTS

Currently, hundreds of thousands of people live and work near operating wind farms without any adverse health effects. There are very real and far greater threats to human health from conventional energy production. Emitting virtually no air or water pollution, wind energy is essential to reducing the energy-sector's public health impacts.

Numerous public health professionals have noted wind energy's public health benefits. For example, the Australian Medical Association position¹ notes:

- Electricity generation by wind turbines does not involve production of greenhouse gases, other pollutant emissions or waste, all of which can have significant direct and indirect health effects.
- Individuals residing in the vicinity of wind farms who do experience adverse health or well-being, may do so as a consequence of their heightened anxiety or negative perceptions regarding wind farm developments in their area.

Health Canada and Statistics Canada published the most comprehensive multi-disciplinary multi-year health study to date. They found that self-reported sleep issues, illnesses and stress were "not found to be associated with WTN [wind turbine noise] exposure."² This research team found that "WTN was not observed to be related to hair cortisol concentrations, blood pressure, resting heart rate or measured sleep (e.g., sleep latency, awakenings, sleep efficiency)..."³ Health Canada's findings have been published in Environmental Research as well as the Journal Sleep, both professional peer reviewed journals.⁴ Their most recent assessment noted that "Self-reported and objectively measured sleep outcomes consistently revealed no apparent pattern or statistically significant relationship to [wind turbine sound] levels."

Prior to the Health Canada and Statistics Canada study, the Massachusetts Department of Public Health reached similar conclusions⁵ stating:

- Claims that infrasound from wind turbines directly impacts the vestibular system have not been demonstrated scientifically. Available evidence shows that the infrasound levels near wind turbines cannot impact the vestibular system.
- The strongest epidemiological study suggests that there is not an association between noise from wind turbines and measures of psychological distress or mental health.
- None of the limited epidemiological evidence reviewed suggests an association between noise from wind turbines and pain and stiffness, diabetes, high blood pressure, tinnitus, hearing impairment, cardiovascular disease, and headache/migraine.

Other public health professionals have reached similar conclusions, for example:

"I found no evidence in peer-reviewed medical and public health literature of adverse health effects from the kinds of noise and vibrations heard by wind turbines other than occasional reports of annoyances."

– Dr. Dora Anne Mills, MD, MPH Maine Center for Disease Control and Prevention



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¹ Australian Medical Association

<https://ama.com.au/position-statement/wind-farms-and-health-2014>

² <http://www.hc-sc.gc.ca/ewh-semt/noise-bruit/turbine-eoliennes/summary-resume-eng.php>

³ Ibid.

⁴ Feder, K., Michaud, D. S., Keith, S. E., Voicescu, S. a., Marro, L., Than, J., ... van den Berg, F. (2015). An assessment of quality of life using the WHOQOL-BREF among participants living in the vicinity of wind turbines. Environmental Research, 142, 227–238. <http://doi.org/10.1016/j.envres.2015.06.043>

⁵ <http://www.mass.gov/eea/docs/dep/energy/wind/turbine-impact-study.pdf>