

The safe choice for your family's health

Decades of peer-reviewed, scientific studies from universities and government agencies have consistently found wind energy to be among the safest energy sources available for nearby residents.

Extreme Weather Safety

Wind farms are designed and built to meet industry best practices, codes, and standards that require them to withstand extreme weather conditions in a certain time period based on site-specific seismic, wind, temperature, lightning, and flooding conditions.

Wind turbines and the weather impacting them are monitored 24/7. If extreme weather were to occur, the turbines can be turned off and secured to decrease the likelihood of damage to components.

If rare weather conditions were to exceed a turbine's site-specific endurance threshold, EDPR would thoroughly inspect the equipment and conduct necessary repairs.

Hundreds of peer-reviewed scientific studies conducted on health effects and wind turbines clearly demonstrate that there is no direct link between adverse physical health effects and exposures to wind turbine sound (audible, low frequency noise, or infrasound), shadow flicker, or EMF associated with wind turbines and associated infrastructure.

"Wind Turbine Noise & Health Study: Summary of Key Findings"

Based on Canadian Government's Health and Statistics Divisions, 2014.²

Study Design:

- Three-part study of 1,238 households.
- Sent questionnaires to randomly selected participants living at various distances from wind turbines.
- Looked at physical health measures to assess stress levels including hair cortisol, blood pressure, resting heart rate, and sleep quality.
- Reviewed more than 4,000 hours of wind turbine sound measurements conducted by Health Canada.

Findings:

- No association was found between wind turbine sounds and self-reported illnesses or stress levels.
- No observed association found between physical or self-reported measures of stress and wind turbine sound exposure, including in hair cortisol concentrations, blood pressure, resting heart rate or measured sleep.
- No support of an association between wind turbine sound and self-reported or measured sleep disturbance was found.
- No significant changes in reported quality of life and satisfaction with health were found.

Comparing Common Sound Levels^{3,4}

| Sound | Decibel Level |
|---|--------------------|
| Vacuum Cleaner | 75 dB(A) |
| Normal Conversation | 60–70 dB(A) |
| Noise in a Busy Office | 60 dB(A) |
| Household Refrigerator | 55 dB(A) |
| 10 Turbines 1,148 Feet Away | 35–45 dB(A) |
| Quiet Bedroom | 35 dB(A) |
| Background Noise in a Rural Area at Night | 20–40 dB(A) |

This chart is provided for comparison purposes only. Actual recorded sound levels may vary.

Everyone is surrounded by infrasound every day.

It's emitted by natural sources like the surf, storms, wind itself, our own heartbeat, and respiration.

We also are exposed to it in cars, from ceiling fans, motors, and urban noise.⁵

– Simon Chapman
Professor Emeritus, University of Sydney

¹ World Health Organization. (2017, November 07). *Interventions: Power generation*.

² Ohio Department of Health. *Wind Turbines and Wind Farms: Summary and Assessments*. April 12, 2022.

³ Australian National Health and Medical Research Council. 2010. *Wind Turbines and Health: A Rapid Review of the Evidence*.

⁴ Yale Environmental Health & Safety. *Decibel Level Comparison Chart*.

⁵ Jaekel, P. (2017, June 19). *Why People Believe Low-Frequency Sound Is Dangerous*. The Atlantic.

“It’s a clean fuel source. Wind energy doesn’t pollute the air like power plants that rely on combustion of fossil fuels, such as coal or natural gas, which emit particulate matter, nitrogen oxides, and sulfur dioxide—causing human health problems and economic damages.”

–U.S. Department of Energy⁶



“Wind Turbine Health Impact Study: Report of Independent Expert Panel”

Prepared for Massachusetts Department of
Environmental Protection, 2012⁷

- Turbines as close as 223 feet are well below required levels of infrasound to cause feelings of non-auditory perception, such as bodily vibrations and chest pressure.
- There is no evidence of a set of health effects from wind turbine exposure that could be characterized as “Wind Turbine Syndrome.”
- Shadow flicker from turbines does not pose a risk for causing seizures.

“Health Effects and Wind Turbines: A Review of the Literature”

Published in Environmental Health, 2011⁸

- No peer reviewed scientific journal article demonstrates a causal link between people living near wind turbines, turbine sounds, and physiological health effects.
- Turbine infrasound cannot impact health due to the low sound pressure levels and the common presence of infrasound in nature.
- Shadow flicker typically occurs for less than 30 hours a year.
- Wind turbines do not spin nearly fast enough to trigger strobing-light induced seizures.

Nocebo Effect:

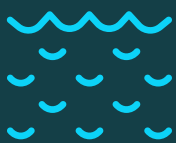
Occurs when expectations of poor health outcomes result in negative health symptoms. It is the flipside of the placebo effect.⁹

Research into the perceived health impacts of wind energy has found that the “nocebo effect” best explains why people report symptoms despite the lack of scientific evidence.

- Wind farms targeted by opposition groups attract more complaints. In Australia, **90 percent of all complaints came after wind farm opponents spread misinformation** about the supposed health impacts of wind farms, **despite numerous wind farms operating in Australia for many years.**⁹
- In a double-blind study, subjects shown internet content about wind farm health risks then **reported symptoms matching the internet content when exposed to sham infrasound.**¹⁰

Health Benefits of Wind Energy

When wind energy increases, harmful pollution decreases.



Wind energy provides power without releasing any toxic chemicals into the air or water.⁶



**Heart Disease
Chronic Asthma
Stroke
Cancer**

When wind **power decreases** air pollution, the rates of many **illnesses decrease.**¹¹



**\$249
billion**

Total **wind and solar climate and health benefits** from 2019 – 2022.¹²

⁶ U.S. Department of Energy. *Advantages and Challenges of Wind Energy*.

⁷ Boston, MA: Commonwealth of Massachusetts, Dept. of Environmental Protection. 2012. *Wind Turbine Health Impact Study: Report of Independent Expert Panel*.

⁸ Knopper, L. D., & Olsson, C. A. 2011. *Health Effects and Wind Turbines: A Review of the Literature*. Environmental Health, 10(1).

⁹ Chapman, S. (2017, November 29). *How to catch 'wind turbine syndrome': By hearing about it and then worrying*. The Guardian.

¹⁰ Crichton, F., Chapman, S., Cundy, T., & Petrie, K. J. 2014. *The Link between Health Complaints and Wind Turbines: Support for the Nocebo Expectations Hypothesis*. Frontiers in Public Health, 2. doi:10.3389/fpubh.2014.00220.

¹¹ World Health Organization. *Ambient (outdoor) air quality and health*.

¹² Energy Technologies Area, Berkeley Lab. *New study finds U.S. wind and solar generation provided \$249 billion in climate and air quality health benefits from 2019 – 2022*. May 2024.