Wind Energy:

# The safe choice for your family's health

The World Health Organization considers wind power to be one of **the healthiest forms of energy generation available.**[1]

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

*2014 study conducted by the Canadian Government's Health and Statistics Divisions*[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*

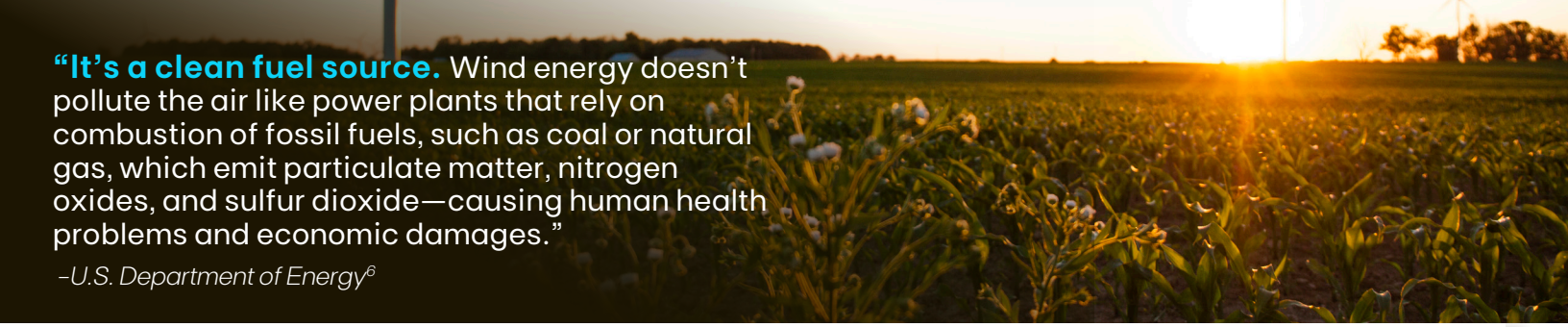
[1] World Health Organization. (2017, November 07). Interventions: Power generation.

[2] Government of Canada. Wind Turbine Noise & Health Study: Summary of Key Findings. 2014.

[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] Jaekl, 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 Energy*[6]

## "Wind Turbine Health Impact Study: Report of Independent Expert Panel"

*Prepared for Massachusetts Department of Environmental Protection, 2012*[7]

- *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, 2011*[8]

- *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.*

- **25 scientific reviews** *since 2003 have found that there is* **very poor evidence** *that wind turbines are the direct cause of any disease.*[10]
- *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]

**$9.4 billion**

**avoided by wind power** *in public health impacts in 2018.*[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., & Ollson, 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] American Wind Energy Association, U.S. Wind Industry Annual Market Report. 2018.

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