

# WIND ENERGY ENVIRONMENT & HEALTH

## SOUND

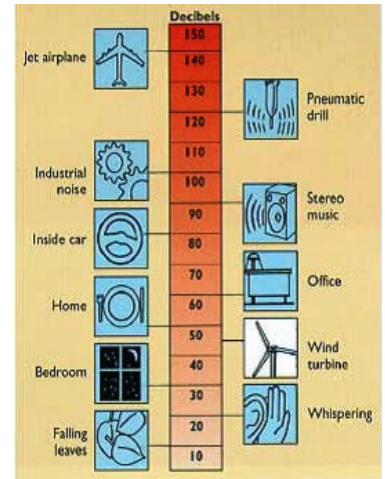
No harmful health effects can be attributed to wind energy.

Excerpts from scientific studies:

*"While it is possible that the human body may detect infrasound in several ways, **there is no evidence to suggest that inaudible infrasound** (either from wind turbines or other sources) **is creating health problems**. In contrast, there is an established literature confirming the existence of psychogenic, or "nocebo", effects in general".<sup>1</sup>*

*"Research demonstrates that **infrasound levels near wind turbines cannot impact the vestibular system**".<sup>3</sup>*

*"...While the scientific literature is clear that low-frequency sounds can affect health, this is at doses typically around **one million times higher** than levels attributable to wind farms."<sup>3</sup>*



## LAND USE

Vermont has the power to harness clean, renewable, homegrown fuel sources.

Sheffield's 16 turbines impact approximately 20 acres of land.

- To generate the same amount of power of Sheffield wind, would require 20,000 home-scale turbines or 400 acres of solar panels.

## WATER QUALITY

Every year wind projects will save the US more than 20 billion gallons of water.

Wind has the lowest impact on water quality compared to other sources of energy.

- Wind energy has been shown to improve downstream water quality.

## FOR COMPARISON:

- Sheffield Wind: 30 dB(a) inside, 45dB(a) outside
- Kingdom Wind: 30 dB(a) inside, 45 dB(a) outside
- Georgia Mountain Community Wind: 45 dB (a) outside
- Vermont Statehouse Lunchroom: 80 dB(a)

## RESOURCES

1. Massachusetts Department of Public Health & Department of Environmental Protection Report. Wind Turbine Health Impact Study. [http://www.mass.gov/dep/energy/wind/turbine\\_impact\\_study.pdf](http://www.mass.gov/dep/energy/wind/turbine_impact_study.pdf)
2. Chapman, Simon. Summary of main conclusions reached in 17 reviews of the research literature on wind farms and health. <http://ewec.net/wp-content/uploads/2012/08/WindHealthReviews-1.pdf>
3. Knopper, L. & Ollson, C. Health effects & wind turbines: A review of the literature. <http://www.ehjournal.net/content/pdf/1476-069X-10-78.pdf>
4. Parkinson, Giles. Tilting at windmills: Senate Committee rejects wind restrictions. <http://reneweconomy.com.au/2012/tilting-at-windmills-senate-committee-rejects-wind-restrictions-25103>



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# WIND ENERGY: ENVIRONMENT & HEALTH



## AIR QUALITY & EMISSIONS

The American Lung Association states : “**Climate, energy and clean air are inexorably linked.** Solutions that lead to cleaner air *must* be included in any approach to cleaner energy use.”<sup>5</sup>

With the new clean energy economy, transportation and building energy will shift from being primarily powered by oil, to electric power.

### Wind resources reduce fossil-fueled energy generation in New England.

- Each unit of wind energy on the grid displaces an equal amount of energy from the most expensive operating plant – most often the dirtiest source of power.<sup>7</sup>
- If 20% of New England’s power were to come from wind, we would see a 25% reduction in carbon dioxide emissions as coal, oil and natural gas sources are taken offline.<sup>10\*</sup>

### Adding wind to the energy mix reduces harmful pollutants and improves air quality.

- Harmful pollutants emitted from burning fossil fuels, such as CO<sub>2</sub>, SO<sub>2</sub>, and NO<sub>x</sub>, cause acid rain, smog and high levels of mercury, all of which are public health hazards.<sup>8</sup>
- A typical 2 mega-watt wind turbine is expected to displace over 1,800 metric tons of CO<sub>2</sub> in a year.<sup>9</sup>

In the U.S., wind energy displaces over 46 million metric tons of carbon dioxide annually, the equivalent of **removing 9.5 million cars from the road.**<sup>10, 11</sup>

The 30 MW Antrim, NH Wind Farm will reduce the same amount of carbon dioxide as the carbon sequestered by **12,000 acres of pine or fir forest.**

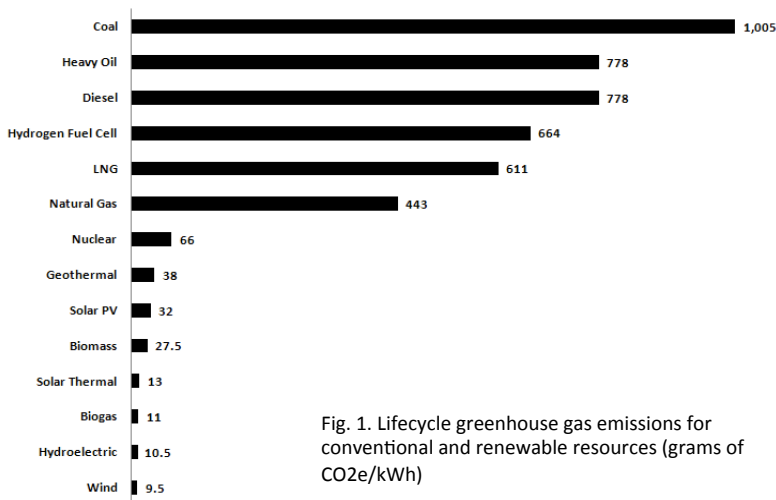


Fig. 1. Lifecycle greenhouse gas emissions for conventional and renewable resources (grams of CO<sub>2</sub>e/kWh)

## RESOURCES

5. American Lung Association & National Parks Conservation Association. An Agenda for Clean Air: Protect the Air We Breathe. (2009). [http://www.npsca.org/assets/pdf/Protect\\_the\\_Air\\_We\\_Breathe.pdf](http://www.npsca.org/assets/pdf/Protect_the_Air_We_Breathe.pdf)
6. ISO-NE Wind Integration Study. 2010. [http://www.iso-ne.com/committees/comm\\_wkgrs/prtconts\\_comm/pac/mtrls/2010/nov162010/newis\\_iso\\_summary.pdf](http://www.iso-ne.com/committees/comm_wkgrs/prtconts_comm/pac/mtrls/2010/nov162010/newis_iso_summary.pdf)
7. Communication between ISO-New England and Michael Goggin, American Wind Energy Association.
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11. Environmental Protection Agency. Clean Energy: Calculations and References. <http://www.epa.gov/cleanenergy/energy-resources/refs.html>



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