

Facts on Wind





REALITY CHECK

High Costs & Impacts

Wind turbines . . .

- Kill bats and birds — many already endangered.
- Destroy and fragment wildlife habitat and wetlands.
- Industrialize rural landscapes with sprawling facilities of 400-ft turbines, heavy-duty access roads, transformers, and power lines.
- Cause ill health from loss of sleep and throbbing low-frequency noise.
- Are subsidized by taxpayers for the benefit of big energy and private investors — as pioneered in the U.S. by Enron.
- Introduce instability, balancing costs, and inefficiencies to the electric grid.
- Increase electricity rates.

Minuscule Benefit

- Intermittent, highly variable, nondispatchable power production rarely corresponds with demand.
- Complete backup is required for periods of no and low wind — no conventional power plants can be shut down.
- High-wind areas are far from high-load areas.
- No meaningful reduction of fossil fuel use per unit of electricity consumed has ever been documented.

Wind: It's Not Worth It.

*For more information, visit www.wind-watch.org.
Photo of Cefn Croes, Wales, by Emyr Griffiths.*

Are wind turbines bad for my health?

(1)

"The ExternE Project considered wind energy to have the lowest level of impacts (health and environmental), of all the fuel cycles considered. The increased use of renewable energy, especially wind, solar and photovoltaic energy, will have positive health benefits, some of which have been estimated. Studies show that the health and the environmental benefits easily make up for the higher costs associated with renewable energy use."

Source:

World Health Organization: Energy, sustainable development and health - Background document for the Fourth Ministerial Conference on Environment and Health, 2004

(2)

"...despite the existence of large scale commercial wind turbines in densely populated areas for over 20 years, there is no credible evidence in the peer reviewed published scientific literature that there are any direct adverse physiological health effects from exposure to wind turbines; [...] ...wind power is associated with a high degree of safety compared to the significant and well documented adverse health impacts of fossil fuels and the risks of nuclear energy;"

Source:

Climate and Health Alliance (CAHA): Position Statement – Health and Wind Turbines, January 2012

(3)

"This review of the available evidence, including journal articles, surveys, literature reviews and government reports, supports the statement that: There are no direct pathological effects from wind farms and that any potential impact on humans can be minimised by following existing planning guidelines."

Source:

Australian Government, National Health and Medical Research Council: Wind Turbines and Health – A Rapid Review of the Evidence, July 2010

(4)

"The committee concludes that, 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, and at least one study suggesting they may be responsible for symptoms in some wind turbine cases."

Source :

Commonwealth of Australia , The Senate, Environment and Communications Legislation Committee: Renewable Energy (Electricity) Amendment - (Excessive Noise from Wind Farms) Bill 2012, November 2012

(5)

"The strongest epidemiological study suggests that there is not an association between noise from wind turbines and measures of psychological distress or mental health problems. 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."

Source:

Massachusetts Department of Environmental Protection, Massachusetts Department of Public Health: Wind Turbine Health Impact Study: Report of Independent Expert Panel , January 2012

(6)

"There is no evidence that the audible or sub-audible sounds emitted by wind turbines have any direct adverse physiological effects. The ground-borne vibrations from wind turbines are too weak to be detected by, or to affect, humans. The sounds emitted by wind turbines are not unique. There is no reason to believe, based on the levels and frequencies of the sounds and the panel's experience with sound exposures in occupational settings, that the sounds from wind turbines could plausibly have direct adverse health consequences."

Source:

Wind Turbine Sound and Health Effects - An Expert Panel Review. Commissioned by American Wind Energy Association (AWEA) and the Canadian Wind Energy Association (CANWEA)

(7)

"On health effects and nuisance of the shadow flicker effect, it is considered that the frequency of the flickering caused by the wind turbine rotation is such that it should not cause a significant risk to health."

Source:

Parsons Brinckerhoff : Update of UK Shadow Flicker Evidence Base, Final Report Prepared for: UK, Department of Energy and Climate Change

(8)

"There are large spatio-temporal variations in wind farm noise and health complaints. 33/51 (64.7%) of Australian wind farms including 18/34 (52.9%) with turbine size >1MW have never been subject to noise or health complaints. These 33 farms have some 21,592 residents within 5km of their turbines and have operated complaint-free for a cumulative total of 267 years. Western Australia and Tasmania have seen no complaints. Only 131 individuals across Australia representing approximately 1 in 250 residents living within 5km of wind farms appear to have ever complained, with 94 (72%) of these being residents near 6 wind farms which have been targeted by anti wind farm groups. About 1 in 87 (126/10901) of those living near turbines >1MW have ever complained. The large majority 104/131 (79%) of health and noise complaints commenced after 2009 when anti wind farm groups began to add health concerns to their wider opposition. In the preceding years, health or noise complaints were rare despite large and small turbined wind farms having operated for many years."

"In view of scientific consensus that the evidence for wind turbine noise and infrasound causing health problems is poor, the reported spatio-temporal variations in complaints are consistent with psychogenic hypotheses that health problems arising are "communicated diseases" with nocebo effects likely to play an important role in the aetiology of complaints."

Source:

Professor Simon Chapman, The University of Sydney, Sydney eScholarship Repository (March 2013)

(9)

"To date, no peer reviewed articles demonstrate a direct causal link between people living in proximity to modern wind turbines, the noise they emit and resulting physiological health effects. If anything, reported health effects are likely attributed to a number of environmental stressors that result in an annoyed/stressed state in a segment of the population."

Source:

Knopper and Olson: Health effects and wind turbines: A review of the literature, published in Environmental Health 2011, 10:78

Does wind impact negatively on wildlife?

Or, Who cares if we kill even more, especially raptors and bats?

(1)

“Studies show that for every 10,000 bird fatalities, less than one is caused by wind turbines. For comparison, cats cause about 10 percent of bird deaths and nearly half are caused by collisions with buildings or windows. In fact, a recent study published Intergovernmental Panel on Climate Change shows that 40 percent of all species could face extinction because of global warming.”

“Monitoring of existing wind farms suggests that with proper location and construction, there is no adverse impact on bird populations. It's important for wind farms to conduct a thorough analysis of the risk to bird life as part of the environmental impact assessment of every proposal. With rigorous review, thorough monitoring, and sensitive design, wind power can be deployed without significant harm to birds (and other wildlife).”

Source:

Greenpeace USA: Get the Facts About Wind

(2)

“Overall, non-renewable electricity generation sources, such as coal and oil, pose higher risks to wildlife than renewable electricity generation sources, such as hydro and wind. Based on the comparative amounts of SO₂, NO_x, CO₂, and mercury emissions generated from coal, oil, natural gas, and hydro and the associated effects of acidic deposition, climate change, and mercury bioaccumulation, coal as an electricity generation source is by far the largest contributor to risks to wildlife found in the NY/NE region.”

Source:

New York State Energy Research and Development Authority: Comparison of reported effects and risks to vertebrate wildlife from six electricity generation types in the New York/New England region, 2009

(3)

Bird mortality across mortality sources

- Buildings: 550 million (annual mortality estimate)
- Power lines: 130 million
- Cats: 100 million
- Automobiles: 80 million
- Pesticides: 67 million
- Communication towers: 4.5 million
- Wind turbines: 28.5 thousands
- Airplanes: 25 thousands
- Other sources (oil spills, oil seeps, fishing by-catch etc.): not calculated

Source:

Erickson, W. P., Johnson, G. D., Young Jr., D. P.: A Summary and Comparison of Bird Mortality from Anthropogenic Causes with an Emphasis on Collisions, General Technical Report – US Forest Service, USDA Forest Service Gen. Tech. Rep. PSW-GTR-191, 2005

Can society afford wind energy?

(1)

"Renewable energy is even more competitive when the negative externalities associated with fossil fuel technologies are taken into account. The combustion of fossil fuels has both pollution and human health impacts. Many renewable energy technologies would become highly competitive if these externalities were factored into the production costs of fossil fuels, and the considerable subsidies for both their production and consumption were removed (globally totalling US\$500-700 billion per year according to IEA, OECD, and World Bank estimates)."

Source:

United Nations Environment Programme (UNEP): Renewable energy, Investing in energy and resource efficiency, 2011

(2)

"When taking account of the environmental and social costs related to fossil fuels and nuclear power production and of the subsidies to conventional energy, wind power is a cost-effective and easily accessible source of energy. Jointly with other renewable energy sources, it can replace base-load power from conventional sources."

[...]

"In comparison with fossil and nuclear fuels the environmental impacts associated with wind power are small. During operation, no carbon dioxide or any other atmospheric pollutants are emitted, and once dismantled, no dangerous waste is left behind."

Source:

World Wildlife Fund (WWF): WWF Position on Wind Power, June 2004

(3)

"Subsidies to fossil fuels continue to distort energy markets and expanded considerably last year despite international efforts at reform. Global fossil fuel consumption subsidies totalled \$523 billion in 2011, almost 30% higher than in 2010. The increase reflects higher international energy prices and rising consumption of subsidised fuels. The subsidy bill would have been even more expensive without reform efforts in several countries. Financial support to renewable energy, by comparison, amounted to \$88 billion in 2011."

Source:

IEA: World Energy Outlook 2012 Factsheet, 2012

(4)

"If these currently externalised costs of electricity on climate change and health from Australian power stations were accounted for, the cost of power generated by fossil fuels would be considerably higher. The additional climate and health costs that are presently unaccounted for are estimated at: \$A19/MWh for natural gas, \$A42/MWh for black coal and \$A52/MWh for brown coal, while the external costs of wind are only \$ \$A1.50/MWh. This means the real costs of coal and gas fired electricity is more likely in the vicinity of \$100/Mwh, while on-shore wind power is around \$70/Mwh."

Source:

Climate and Health Alliance (CAHA): Position Statement – Health and Wind Turbines, January 2012

Are wind farms noisy?

(1)

“This study concludes that the level of infrasound at houses near the wind turbines assessed is no greater than that experienced in other urban and rural environments, and that the contribution of wind turbines to the measured infrasound levels is insignificant in comparison with the background level of infrasound in the environment.”

Source:

Environment Protection Authority (EPA) – Evans, T.; Cooper, J.; Lenchine, V.: Infrasound levels near windfarms and in other environments, January 2013
Report undertaken in conjunction with: Resonate Acoustics, Adelaide

(2)

“The perceived sound decreases rapidly with the distance from the wind turbines. Typically, at distances larger than 400 m, sound pressure levels for modern wind turbines are less than 40 dB(A), which is below the level associated with annoyance in the epidemiological studies reviewed.”

Source:

Massachusetts Department of Environmental Protection, Massachusetts Department of Public Health: Wind Turbine Health Impact Study: Report of Independent Expert Panel, January 2012

(3)

“The dominant source of wind turbine low frequency noise, LFN (20–200 Hz), is incoming turbulence interaction with the blade. Infrasound (1–20 Hz) from wind turbines is not audible at close range and even less so at distances where residents are living.”

“There is no evidence that infrasound at these levels contributes to perceived annoyance or other health effects. LFN from modern wind turbines are audible at typical levels in residential settings, but the levels do not exceed levels from other common noise sources, such as road traffic noise.”

Source:

Nilsson, M. E., Bluhm, G., Eriksson, G., Bolin, K.: Infrasound and low frequency noise from wind turbines: exposure and health effects, Environmental Research Letters, Volume 6, 2011

(4)

“... in terms of the number of people affected, wind farm noise is a small-scale problem compared with other types of noise; for example the number of complaints about industrial noise exceeds those about windfarms by around three orders of magnitude.”

Source:

Moorhouse, A., Hayes, M., von Hünerbein, S., Piper, B., Adams, M.: Research into Aerodynamic Modulation of Wind Turbine Noise: Final report, University of Salford, July 2007

Do nearby wind farms reduce property values?

(1)

“No statistical inference to demonstrate that wind farms negatively affect rural residential market values in Chatham-Kent was apparent in this analysis. Furthermore, this study did not find any consistent evidence from the analysed data that such negative correlation exists in the municipality of Chatham-Kent. During the course of gathering data, there were no unusual quantities of rural residential properties listed for sale in the study area. Four unrelated data processes were used in studying the property sales information for Chatham-Kent. The only consistency was that each evaluation methodology found that it was highly unlikely that any type of a causal relationship exists between wind farms and the market values of rural residential real estate.”

Source:

George Canning, AACI, P.App.: Wind Energy Study – Effect on Real Estate Values in the Municipality of Chatham-Kent, Ontario, February 2010
Prepared for the Canadian Wind Energy Association

(2)

“Therefore, based on the data sample and analysis presented here, no evidence is found that home prices surrounding wind facilities are consistently, measurably, and significantly affected by either the view of wind facilities or the distance of the home to those facilities. Although the analysis cannot dismiss the possibility that individual homes or small numbers of homes have been or could be negatively impacted, it finds that if these impacts do exist, they are either too small and/or too infrequent to result in any widespread, statistically observable impact.”

Source:

Hoen, B.; Wiser, R.; Cappers, P.; Thayer, M.; Sethi, G.: The Impact of Wind Power Projects on Residential Property Values in the United States: A Multi-Site Hedonic Analysis, ER-NEST ORLANDO LAWRENCE BERKELEY NATIONAL LABORATORY, December 2009

(3)

“An assessment of 78 property sales around the Crookwell wind farm over the period 1990-2006 found no reductions in property values (Henderson and Horning, 2006). A more recent assessment prepared for the NSW Valuer General (NSW Department of Lands, 2009) analysed property sales transaction data for 45 properties near six wind farms in Australia. No reductions in sale price were evident for properties located in townships with views of the wind farm.”

Source:

Exploring community acceptance of rural wind farms in Australia: a snapshot. CSIRO Science into Society Group. 2012

Is there public support for wind energy?

Or, More people live in cities than in the places where wind turbines are erected.

(1)

"There is strong community support for the development of wind farms, including support from rural residents who do not seek media attention or political engagement to express their views.

This finding contrasts with the level of opposition that may be assumed from the typically 'conflict-oriented' portrayal of wind farm proposals in the popular media. This media coverage frequently gives significant attention to legal challenges, political protests, and vocal opponents including 'Landscape Guardian' and high profile individuals, but fails to balance this with coverage of middle ground views, or with equivalent attention to the potential benefits of with wind farms."

Source:

Commonwealth Scientific and Industrial Research Organisation (CSIRO): Exploring community acceptance of rural wind farms in Australia: a snapshot, January 2012

(2)

"Community support for wind energy remains strong nationally and in each state with 83% nationally, 84% in Victoria, 90% in South Australia and 77% in NSW. Nationally, over 7 in 10 people support for wind farms being built nearby and over 8 in 10 agree that "wind farms are an important part of our clean energy future."

Source:

Pacific Hydro: 2011 Community Polling Results, Attitudes to wind energy in Victoria, NSW and South Australia, 2011

(3)

"Effective public participation in and direct benefits from wind energy projects (such as receiving electricity from the neighboring wind turbines) have been shown to result in less annoyance in general and better public acceptance overall."

Source:

Massachusetts Department of Environmental Protection, Massachusetts Department of Public Health: Wind Turbine Health Impact Study: Report of Independent Expert Panel, January 2012

Are there community benefits of wind?

(1)

"Wind power is commonly touted as a "win-win" for the environment and local communities, generating virtually emission-free electricity and spurring economic opportunities in the construction and operation of wind parks, particularly in agricultural communities (e.g., creation of local jobs, generation of lease income for land owners, enhanced tax revenues for local schools and community services, etc.)."

Source:

U.S. Department of Energy: An Analysis of the Economic Impact on Box Elder County, Utah, from the Development of Wind Power Plants, 2006

(2)

"Wind Power as Cash Crop: In recent years, farmers and ranchers have found it increasingly difficult to earn a living from traditional crops and cattle causing them to search for "off-farm" sources of income.

Because wind turbines use only a small footprint of land, farmers and ranchers can continue their agricultural operations. Consequently, wind-energy development offers a unique economic benefit as a supplemental "on-farm" source of income."

"In fact, if the goal of the U.S. Department of Energy's Wind Powering America program for producing 5% of the nation's electricity from wind by 2020 is achieved, it will result in \$60 billion of capital investment in rural communities, \$1.2 billion of new income for rural landowners, and 80,000 new jobs for rural industry."

Source:

U.S. Department of Energy: An Analysis of the Economic Impact on Box Elder County, Utah, from the Development of Wind Power Plants, 2006

(3)

"For every 50 megawatts of capacity, a wind farm [in Australia] generates:

- Direct employment of up to 48 construction jobs, with each worker spending approximately \$25,000 in the local area in shops, restaurants, hotels and other services – a total of up to \$1.2 million
- Direct employment of around five staff – a total annual influx of \$125,000 in personal expenditure locally
- Results in indirect employment during the construction phase of approximately 160 people locally, 504 state jobs and 795 nationwide jobs
- Provides up to \$250,000 for farmers in land rental income and \$80,000 on community projects each year."

Source:

Clean Energy Council, Landmark report shows economic benefits of wind farms, 2012

(4)

"A typical 50 megawatt (MW) wind farm pays host farmers some \$250,000 per year, is constructed by workers who spend up to \$1.2 million locally, and contributes up to \$80,000 annually to community projects, according to a landmark study into the economic benefits of wind farms."

Source:

Clean Energy Council, Landmark report shows economic benefits of wind farms, 2012

(5)

"The renewable energy sector generates more jobs per (1) unit of energy delivered than the fossil fuel-based sector. This is true for all technologies within the renewable energy sector."

Source:

Kammen, D.M.; Engel, D.: Green Jobs and the Clean Energy Economy, Climate Council Copenhagen, Thought Leadership Series 04, 2009

WHAT HAVE I DONE?

Now each morning when I awake, I pray and then ask myself, "What have I done?"

I am involved with the BlueSky/GreenField wind turbine project in N.E. Fond du Lac County. I am also a successful farmer who cherishes his land. My father taught me how to farm, to be a steward of my fields, and by doing so, produce far better crop production. As I view this year's crops, my eyes feast on a most bountiful supply of corn and soybeans. And then my eyes focus again on the trenches and road scars leading to the turbine foundations. **What have I done?**

In 2003, the wind energy company made their first contacts with us. A \$2000 "incentive" started the process of winning us over, a few of us at a time. The city salesman would throw out their nets, like fishermen trawling for fish. Their incentive "gift" lured some of us in at first. Then the salesmen would leave and let us talk with other farmers. When the corporate salesmen returned, there would be more of us ready to sign up; farmers had heard about the money to be made. Perhaps because we were successful farmers, we were the leaders and their best salesman. **What have I done?**

Sometime in 2004 or 2005, we signed \$4000.00 turbine contracts allowing them to "lease" our land for their needs. Our leases favored the company, but what did we know back then? Nobody knew what we were doing. Nobody realized all the changes that would occur over which we would have no control. How often my friends and I have made that statement! **What have I done?**

I watched stakes being driven in the fields and men using GPS monitors to place markers here and there. When the cats and graders started tearing 22 foot wide roads into my fields, the physical changes started to impact not only me and my family, but unfortunately, my dear friends and neighbors. Later, a 4 foot deep by 2 foot wide trench started diagonally across my field. A field already divided by their road was now being divided again by the cables running to a substation. It was now making one large field into 4 smaller, irregularly shaped plots. Other turbine hosts also complained about their fields being subdivided or multi cable trenches requiring more land. Roads were cut in using anywhere from 1000 feet to over a 1/2 mile of land to connect necessary locations. We soon realized that the company places roads and trenches where they will benefit the company most, not the land owner. One neighbor's access road is right next to some of his out buildings. Another right next to his fence line. **What have I done?**

At a wind company dinner presented for the farmers hosting the turbines, we were repeatedly told - - nicely and indirectly - - to stay away from the company work sites once they start. I watch as my friends faces showed the same concern as I had, but none of us spoke out. Months later, when I approached a crew putting in lines where they promised me they would definitely would not go, a representative told me I could not be here. He insisted that I leave. The line went in. The company had the right. I had signed the lease. **What have I done?**

Grumbling started almost immediately after we agreed to a 2% yearly increase on our 30 year lease contracts. Some felt we should have held out for 10%. What farmer would lock in the price of corn over the next 5 years, yet alone lock one in at 2% yearly for 30 years? Then rumors leaked that other farmers had received higher yearly rates, so now contracts varied. The fast talking city sales folk had successfully delivered their plan. Without regard for our land, we were allowing them to come in and spoil it. All of the rocks we labored so hard to pick in our youth were replaced in a few hours by miles of roads packed hard with 10 inches of large breaker rock. Costly tiling we installed to improve drainage has now been cut into pieces by company trenching machines. **What have I done?**

Each night, a security team rides down our roads checking the foundation sites. They are checking for vandals and thieves. Once, when I had ventured with guests to show them foundation work, security stopped us and asked me, standing on my own property, what I was doing there. **What have I done?**

Now, at social functions, we can clearly see the huge division this has created among community members. Suddenly, there are strong-sided discussions and heated words between friends and, yes, between relatives about wind turbines. Perhaps this is of greater consequence than the harm caused to my land! Life is short and my friendships precious. **What have I done?**

I tried, as did some of the other farmers, to get out of our contracts, but we had signed a binding contract and a contract is a contract. If you are considering placing wind turbines on your property, I strongly recommend that you please reconsider. Study the issues. Think of the all the harm versus benefits to your land and, in the future, to your children's land by allowing companies to lease your land for turbines.

WHAT HAVE I DONE?

**PLEASE DO NOT DO
WHAT I HAVE DONE!**

