SAINT FRANCIS UNIVERSITY renewable ENERGYCENTER

Energy Fact Sheets

Wind Power: The Full Story

The Renewable Energy Center supports wind power; however we do understand that all energy sources have advantages and disadvantages, and that in order to make an informed decision it is important to understand both. This Fact Sheet has been created to address both sides of wind power.

Price stability – because wind (not fuel) powers production, operating costs are kept low and are not subject to the unpredictable price fluctuations caused by mining and transportation costs found with fossil fuels or nuclear.

We Won't Run Out – wind is in constant supply unlike coal, oil, and gas whose supplies are limited.

Zero Emissions – no CO2, sulfur, nitrogen oxide, particulates, trace materials, or solid waste associated with global warming, acid rain, pollution, asthma, and other negative consequences.

Small Footprint – wind turbine towers interfere little with surface activity (including farming and grazing of livestock) and may actually preserve open space because buildings cannot be built within a certain distance of them. Typically, a wind turbine uses, about ¼ acre including access roads.

Local, regional economic benefit – wind energy can diversify the economies of rural communities, and providing new jobs and new types of income. Wind turbines can add a new source of property taxes in rural areas that otherwise have a hard time attracting new industry. Landowners with wind turbines on their land can earn between 3 to 6 thousand dollars per turbine per year, and some townships in Pennsylvania are already earning $50,000 a year.

It's Waterless – Wind energy conserves water resources. Producing equal amounts of electricity can take about 600 times more water with nuclear power than wind, and about 500 times more water with coal than wind.

Quick installation – once a site has been selected and permits approved, wind turbine installation can be completed in months (compared to 5 - 10 years for a gas, coal, or nuclear plant).

National Security/Energy Independence – wind turbines diversify our energy portfolio and reduce our dependence on foreign fossil fuel. Distributed generation facilities, like many community wind projects, provide a safeguard against potential terrorist threats to power plants.

> *"The key question with respect to wind and the environment is: If we don't build wind turbines, what will we build instead?"* – Ed DeMeo, Renewable Energy Consulting Services, Inc.

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High initial investment – about 80% goes to machinery, and 20% to site preparation and installation. A typical large wind turbine costs between 2 and 3 million installed.

Intermittent – since the speed of wind varies depending on the time of day and the season, a turbine won't generate the same amount of electricity all year.

Noise – while today's turbines are much quieter than older models, depending on the wind speed, the size of the turbine, and your proximity to the turbine itself, there could be some noise from the turbine turning or from the wind itself. Most wind farms generate a noise level of 35-45 decibels (roughly the same amount as a quiet bedroom) at a distance of 350m, which is greater than the minimum distance any buildings must be from the turbines.

Accessibility – just because the wind is strong enough doesn't mean that it is close enough to powerlines or people who need the electricity to be useful.

Aesthetics – some people do not like the appearance of wind turbines.

Biological resource impacts – as with any construction project or large structure, wind energy can impact plants and animals, depending on the sensitivity of the area. Direct fatalities from collisions and loss of wildlife habitat and natural vegetation are the primary wildlife concerns associated with wind energy. Extensive environmental impact analyses are an integral and required part of project development to reduce impacts.

Construction impacts – wind systems can involve the transportation of large and heavy equipment. This can cause a large temporarily disturbed area near the turbines, leading to forest fragmentation. Erosion is another potential environmental problem that can stem from construction projects. The single most reliable technique for limiting erosion is to avoid grading roads and to perform site reclamation post construction.

Shadow flicker – shadow flicker occurs when the blades of the rotor cast a shadow. In the worst-case conditions, those living within ¼ mile of the turbine would be affected a total of 100 minutes per year, and only 20 minutes per year under normal circumstances.

Conclusion

National security, escalating prices, and the human health costs of air pollution insist that make informed choices--understanding that no choice will be perfect. If you'd like to continue this conversation, don't hesitate to give us a call with your questions or comments or ideas.

Information gathered from:

American Wind Energy Association
www.awea.org

Department of Energy's Wind Powering America
www.eere.energy.gov/windandhydro/windpoweringamerica/

Windustry
www.windustry.org

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