

The Difference Wind Makes



Wind power is a reality today. More than 5,200 megawatts of wind generation – enough to serve more than 1 million average American homes – was installed in 2007, and 2008 is expected to be at least as strong. With continued government encouragement to accelerate its development, this increasingly competitive source of energy will provide a steadily growing share of U.S. electricity and revitalize farms and rural communities – without consuming any natural resource or emitting any pollution or greenhouse gases. Wind energy works for our economy, environment, and energy security.

Worldwide wind power capacity has expanded at a rate of 25% annually from 2002 to 2006.

Globally, over 20,000 MW of new wind capacity was added in 2007. Current installed capacity worldwide at the end of 2006 was over 94,000 MW.

Denmark and some regions of Spain and Germany now have 10% to 25% of electricity generated from wind power.

President Bush has stated that wind energy can provide as much as 20% of the nation's electricity.



Wind energy makes a REAL CONTRIBUTION TO OUR ENERGY NEEDS

- 16,818 megawatts (MW) of wind power plants were in place in the U.S. at the end of 2007, serving the equivalent of 4.5 million average households. By the end of 2008, AWEA expects that number to jump to over 22,000 MW, which can serve the equivalent of over 5.5 million average households.
- Wind energy contributes to our energy security: an inexhaustible, domestic resource, it helps reduce our dependence on imports of natural gas (for electricity generation and residential use), oil and other fuels, often from unstable countries like Nigeria and Russia. The US currently burns about 13 billion cubic feet per day (Bcf/day) of natural gas for electricity generation. During 2007, wind power will be reducing natural gas use for power generation by approximately 5%.
- Although wind energy is variable, PacifiCorp, a major electric utility in the Northwest, assigned its wind projects a 20% capacity credit.¹ That means that the wind energy on PacifiCorp's system has the same value as 20% of an equivalent amount of traditional fossil-fuel generation in contributing to overall utility system reliability (i.e., adding 100 MW of wind is equivalent to adding 20 MW of fossil fuels in improving reliability).
- Modern wind turbines are equipped with high-tech computers and power electronics that process over 200 types of data, from wind speeds and oil temperature to voltage dips on the grid. "Smart" wind turbines can help make the electricity transmission system more reliable.
- Once approved, wind farms can be built relatively quickly to respond to electricity demand.
- Wind is "inflation-proof" – once a wind plant is built, the cost of energy is known, and is not affected by fuel market price volatility.

¹ *Integrated Resource Plan 2004*, PacifiCorp (Jan 2005)
<http://www.pacificorp.com/File/File47422.pdf>



The Difference Wind Makes, Continued

Wind energy delivers REAL ECONOMIC BENEFITS

- In 2007, new tower, blade, turbine and assembly plants opened in Illinois, Iowa, South Dakota, Texas and Wisconsin. In the same year, seven other facilities were announced in Arkansas, Colorado, Iowa, North Carolina, New York, and Oklahoma. Altogether, the new and announced facilities are expected to create some 6,000 jobs. Investment in manufacturing capability signals confidence in the market and lays the groundwork for expanded growth.
- New York's 322-MW Maple Ridge Wind Farm, which began operating in September 2006, provides \$8 million annually in local property tax revenue, pays landowners \$1.65 million each year in lease payments, and created 163 new local long-term jobs.
- In Washington State, 1,000 MW of installed wind capacity is estimated to create 2,650 new local jobs during construction, an additional 400 new local long-term jobs during the operational years of the wind farms, and a \$1.1 billion total economic benefit over the lifetime of the wind projects.
- One large (108-turbine, 162-MW) project in rural Prowers County, Colorado, increased the county's tax base by 29%, adding annual payments of about \$917,000 to the general school fund, \$203,000 to the school bond fund, \$189,000 to a county medical center, and \$764,000 in new county revenues, as well as 15-20 permanent and well-paying full-time jobs at the wind farm.¹
- In 2007, an analysis from global energy consulting firm Wood Mackenzie found that providing 15% electricity from renewable energy resources by 2020 [through a Federal renewable electric standard] could lower consumer expenditures by nearly \$100 billion, reducing both natural gas prices and electricity prices.²

Wind energy offers REAL ENVIRONMENTAL BENEFITS

Wind energy offsets other, more polluting sources of energy. That is important because electricity generation is the largest industrial source of air pollution in the U.S. When wind projects generate electricity, fuel at other power plants is not consumed.

- To generate the same amount of electricity as today's U.S. wind turbine fleet (16,818 MW) would require burning 23 million tons of coal (a line of 10-ton trucks over 9,000 miles long) or 75 million barrels of oil *each year*
- In 2007, the clean generation provided by wind prevented the emissions of approximately 28 million tons of carbon dioxide. A 2007 report estimates that wind power alone could lower emissions by 150 million tons of carbon dioxide in the year 2020, avoiding nearly 33% of expected emission increases in the electric sector.³
- Wind power requires no mining, drilling, transportation of fuel, or water usage, and does not generate radioactive or other hazardous or polluting waste.
- Emissions from the manufacture and installation of wind turbines are negligible. The "energy payback time" (a measure of how long a power plant must operate to generate the amount of electricity required for its manufacture and construction) of a wind project is 3 to 8 months, depending on the wind speed at the site – one of the shortest of any generation technology.
- A study by the Midwest Independent System Operator (ISO) showed that 16,000 MW of additional wind capacity would avoid 43 million tons of CO₂, or approximately 1,300 pounds of CO₂ for every megawatt-hour of wind generation.⁴

¹ *From Snack Bars to Rebar: How Project Development Boosted Local Businesses Up and Down the Wind Energy 'Supply Chain' in Lamar, Colorado*, (March 2004) Craig Cox, Interwest Energy Alliance.

² *The Impact of a Federal Renewable Portfolio Standard*, Wood Mackenzie (Feb 2007)

³ *Tackling Climate Change in the U.S.*, American Solar Energy Society (Jan 2007) http://www.ases.org/climatechange/climate_change.pdf

⁴ *Transmission Expansion Plan, Vision Exploratory Study*, Midwest ISO (2006) <http://www.midwestiso.org/page/Expansion+Planning>