



Industrial Wind Action Group

facts, analysis, exposure of wind energy's real impacts

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U.S. DOE REPORT “20% Wind Energy by 2030” PRESENTS IMPLAUSIBLE SCENARIO *Report ignores back-up generation, real growth rate, and capacity factors*

NEW HAMPSHIRE (June 6, 2008) -- The U.S. Department of Energy's report, “20% Wind Energy by 2030”¹ released last month has generated media headlines claiming “Wind Power Could be Savior”². The report, produced in collaboration with the wind industry, asserts that wind energy could supply twenty percent of the nation's electricity needs by the year 2030, representing 305,000 MegaWatts (MW) of electricity generation, up from the current capacity of 16,800 MW, or about 1% of U.S. electricity today.

In their enthusiasm to promote industrial wind power, the authors of the DOE report failed to accurately characterize the scale of such development, the technology challenges and staggering financial costs, and the fundamental changes to electricity infrastructure needed to achieve the hoped-for 2030 levels of production.

Windaction.org analysts have reviewed the DOE report and found problems that should call into question the report's validity, including:

Wind energy does not provide capacity; redundant and reliable backup generation is needed.

Electricity production in the US is predicated on reliability, affordability, and security. The ability to produce capacity -- electricity on demand -- is fundamental, since electricity cannot be stored at bulk levels. In one significant statement in the report (but entirely ignored in the media excitement) the authors state “Wind is an *energy* resource, not a *capacity* resource.”³ In other words, while utilities are obligated to provide electricity, instantaneously, when customers demand it, wind does not, nor can it ever, do that.

¹ 20% Wind Energy by 2030 - <http://www1.eere.energy.gov/windandhydro/pdfs/41869.pdf>

² San Francisco Chronicle - <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2008/05/13/MNLE10L2KM.DTL>

³ 20% Wind Energy by 2030, page 87

When installed wind capacity increases as a percentage of energy on the grid, up to ninety-percent⁴ of this amount may be required as backup from coal or gas plants to ensure supply when the winds die out. Without such companion power plants, utilities will not be able to meet peak demand, and grid reliability will be compromised.

The report states: "Wind power *cannot replace* the need for many 'capacity resources'," that is power plants needed to meet peak load. Any capacity value for wind is "*a bonus, but not a necessity.*" [emphasis added] Thus, in addition to building 305,000 MW of wind to satisfy the 20% wind energy goal, up to 275,000 MW of redundant conventional-fuel generation would also be needed. The associated CO2 emissions from back-up generation would need to be tallied and deducted from claimed CO2 benefits accrued from wind energy.

Unrealistic projected rate of growth.

The DOE report forecasts 305,000 MW of wind development by 2030 including 54,000 MW of off-shore wind. Put another way, up to 13,000 MW of new wind turbines would need to be installed *year after year* through to 2030 – an amount equivalent to nearly all the wind turbines so far erected in the U.S. by the end of 2007. To achieve this goal, critical challenges facing wind development would need to be overcome, including,

- a) acceptance of wind turbines sited on publicly-owned lands including national forests and wilderness areas, where a large percentage of potential development sites are located⁵,
- b) rising operational and maintenance problems and related costs⁶,
- c) sustained and substantial taxpayer-funded subsidies to ensure project viability,
- d) building costly powerlines to access remote areas of the country where wind plants are typically installed⁷, and
- e) the vigorous and growing public opposition to industrial wind development and attendant infrastructure (power lines) due to noise, view-shed, and other impacts⁸;

⁴ E.ON warns over backup for renewable - <http://www.windaction.org/news/16197> ;
Alberta turns to natural gas after wind lessens reliability - <http://www.windaction.org/news/9093>
Rapid Tex wind growth a warning to U.S. power market - <http://www.windaction.org/news/16110>

⁵ O'Malley says no turbines - <http://www.windaction.org/news/15245>

⁶ The dangers of wind power - <http://www.windaction.org/news/11519>

⁷ Retrofitting blades will hurt the firm's profits - <http://www.windaction.org/news/14489>

⁷ Wind power to Texas cities may cost \$6 billion - <http://www.windaction.org/news/15068>

⁸ Some community organizations formed to protect environmental heritage - <http://www.windaction.org/orglist>

Windaction.org believes each of these represents a major hurdle which will impede and slow the expansion of new wind power-plant developments in the U.S. Taken together, the DOE conclusion of 20% by 2030 is more wishful thinking than a feasible goal.

Optimistic capacity factors will not meet the 20% goal.

According to the DOE report, U.S. demand for electricity will reach 5.8 billion megawatt-hours (MWh) by 2030, with 20% or 1.16-billion MWh satisfied by wind.

Assuming 305,000 MW of installed wind capacity, as asserted in the report, the entire fleet of wind turbines would need to operate with an annual average capacity factor of 43.4%. Yet, few existing wind plants in the U.S. today, and none east of the Mississippi, come close to meeting this level of annual average capacity. According to the Wiser-Bolinger study⁹ used by DOE to justify the high capacity factors, the latest technology projects installed in 2006 carried an average capacity factor of just 33.4% for 2007. Many U.S. wind projects located in areas touted to have outstanding wind resources now report average capacity factors under 25%¹⁰.

For comparison, if all the turbines installed by 2030 operated on average at an optimistic 35% capacity (vs. 43.4%), nearly 400,000 MW would be needed to yield 1.16-billion MWh in one year (rather than 305,000 MW).

“These are just three of many issues we found as problematic within the “20% Wind Energy by 2030” report,” said Lisa Linowes, Executive Director of Windaction.org. “Before wind energy proponents push for national policy that mandates twenty percent of our nation’s electricity be supplied by industrial wind turbines, it’s essential the Department of Energy provide independent and comprehensive analysis that looks past lofty goals and acknowledges the limitations and risks of relying on largely unpredictable and non-dispatchable energy sources like wind turbines.” Given the country’s lack of energy policy and the difficult times the U.S. is likely to face moving forward, Linowes cautioned “the public deserves answers and not unrealistic advocacy”

About Windaction.org: Industrial Wind Action Group seeks to promote knowledge and raise awareness of the risks and damaging environmental impacts of industrial wind energy development. Information and analysis on the subject is available through its website, www.windaction.org. To subscribe to the Windaction.org weekly newsletter, visit <http://www.windaction.org/subscribe>

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⁹ Annual report on U.S. wind power installation, cost, and performance trends: 2007 - <http://eetd.lbl.gov/EA/EMS/reports/lbnl-275e.pdf>

¹⁰ <http://www.windaction.org/documents/8950>