New Study Sheds Light on U.S. Wind Power Market

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(PhysOrg.com) -- The U.S. was one of the fastest-growing wind power markets in the world in 2009, second only to China, according to a report released today by the U.S. Department of Energy and prepared by Lawrence Berkeley National Laboratory.

Wind power additions in the United States set a new record in 2009, with 10 gigawatts of new capacity installed, representing a $21 billion investment. “At this pace, wind power is on a path to becoming a significant contributor to the U.S. power mix,” says co-author Ryan Wiser, a scientist in Berkeley Lab’s Environmental Energy Technologies Division (EETD). “Wind power projects accounted for 39 percent of all

new electric generating capacity added in the U.S. in 2009, and wind energy is now able to deliver 2.5 percent of the nation's electricity supply ."

The 2009 edition of the "Wind Technologies Market Report" provides a comprehensive overview of developments in the rapidly evolving U.S. wind power market. The need for an annual report of this type has grown as the wind power industry has entered an era of unprecedented expansion, both globally and in the United States.

At the same time, as the report documents, the past year has been one of upheaval. The global financial crisis and lower wholesale electricity prices have negatively impacted the near-term growth prospects for the wind power industry, while new federal policies are pushing the industry towards continued aggressive expansion.

"With the market evolving at such a rapid pace, keeping up with the latest developments has become increasingly difficult," says co-author Mark Bolinger of EETD. "Yet, the need for timely, objective information on the industry and its progress has never been greater…this report seeks to fill this need."

The report analyzes trends in wind power capacity growth, industry and manufacturing trends, turbine size, turbine prices, installed project costs, project performance, wind power prices, and how wind prices compare to the price of conventional generation. It also describes trends among developers, project owners, and wind power purchasers, and discusses financing issues. Finally, the report examines other factors impacting the domestic wind power market, including grid integration, transmission issues, and policy drivers. It concludes with a preview of possible near-term market developments.

For the first time, the report presents estimates of the proportion of U.S.

wind turbine equipment costs that have derived from imports from other countries, finding that a growing percentage of equipment is being manufactured domestically. “The overall fraction of wind turbine equipment manufactured domestically grew from 50 percent in 2008 to roughly 60 percent in 2009,” notes Wiser.

Some of the key findings from the just-released 2009 edition include:

- **The U.S. is the second-fastest-growing wind market worldwide.** After leading the world for the past four years, the U.S. lost its top-market status in 2009, being overtaken by China as the country with the fastest pace of new wind power additions. Nonetheless, despite earlier grim predictions due to the financial crisis, the U.S. market continued to expand in 2009 and shattered its 2008 record for new wind power additions.

- **Growth is distributed across much of the U.S.** Texas led the nation with 2,292 MW of new wind power capacity, but 28 states saw new wind power plants constructed within their borders in 2009. Wind power now provides more than 10 percent of in-state electricity generation in four states: Iowa (20 percent), South Dakota (13 percent), North Dakota (12 percent), and Minnesota (11 percent). Offshore wind power project and policy developments also accelerated in 2009.

- **Market growth is spurring manufacturing investments in the U.S.** Wind turbine manufacturers with modern wind turbines installed in the United States now hail from not just the United States, Europe, and Japan, but also from India and, for the first time in 2009, China. Seven of the 10 wind turbine manufacturers with the largest share of the U.S. market in 2009 now have one or more manufacturing facilities operating in the United States,

and two of the remaining three have announced plans to open facilities in the future.

- **A growing percentage of the equipment used in U.S. wind projects is domestically manufactured.** Trade data show that the United States remained a large importer of wind turbine equipment in 2009, with $4.2 billion of imports, up from $2.5 billion in 2006, but down from $4.6 billion in 2007 and $5.4 billion in 2008. Wind power capacity growth has outpaced growth in imports in recent years, and a growing amount of the equipment used in wind power projects is therefore being sourced domestically as domestic and foreign companies seek to minimize transportation costs and currency risks by establishing local manufacturing capabilities.

- **Wind power project costs continued to increase into 2009, but reductions may be on the horizon.** Installed wind power project costs in 2009 averaged $2,120/kW, up by 9 percent over the 2008 figure. There are expectations that costs will drop in the near future as past cost pressures ease and work their way through to average installed costs.

- **Wind project performance has improved over time but dropped off in 2009**. The longer-term improvement in project performance has been driven in part by taller towers and larger rotors. The drop in 2009 is, in part, attributable to a relatively poor wind resource year in many parts of the country along with increasing amounts of wind power curtailment—particularly in Texas, where 17 percent of all potential wind energy generation was curtailed in 2009 because of transmission inadequacy.

- **Rising wind power prices and sharply lower wholesale prices make the near-term economics of wind energy more**

challenging. Although some of the cost pressures facing the industry in recent years have eased, 2009 was another year of rising average wind power prices. The average 2009 sales price from projects built in 2009 was roughly $61/MWh.

- **Looking ahead, expectations are for a slower year in 2010.** Lower expectations stem from a combination of the financial crisis, lower wholesale electricity prices, and lower demand for renewable energy. Projections among industry analysts range from 5,500 MW to 8,000 MW of wind power capacity likely to be installed in the United States in 2010, a drop of 20 to 45 percent compared to the nearly 10,000 MW installed in 2009. After a slower 2010, most predictions show market resurgence in 2011 and 2012, as programs funded by the American Recovery and Reinvestment Act mature and as financing constraints ease. Beyond 2012, however, the picture is considerably less certain, because of the scheduled expiration of a number of federal policies at the end of that year.

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More information: The report, "2009 Wind Technologies Market Report", can be downloaded here.
A PowerPoint presentation summarizing key findings from the report can be found here.

Provided by Lawrence Berkeley National Laboratory

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