US wind power overview

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Development and installation of US wind energy production facilities in 2005 blew past records set in previous years. Europe still leads the global market in total installed wind generating capacity and, in fact, has already reached the 2010 target of 40,000MW set by the European Commission. But in 2005, the US led the global market in terms of new installed capacity with 2,431MW. With the renewal of the federal production tax credit, making investment in new wind farms more attractive, and the Bush administration's newly rejuvenated interest in renewable energy, the US is likely to see continuing aggressive growth in the wind sector.

2005 highlights

As analysts expected, 2005 was a record-breaking year for US wind energy development. The US now ranks third in the world in total installed capacity with 9,149MW and currently has enough wind capacity to serve the equivalent of 2.3 million homes. Highlights from 2005 include:

- California remains the state with the most wind energy installed (2,150MW);
- FPL Energy remains the largest owner of wind energy facilities in the US and is also the fastest growing owner, adding 500MW of new capacity in 2005;
- GE turbines accounted for the highest percentage of newly installed capacity (1,433MW); and
- Xcel Energy purchased the most wholesale wind power in 2005 (1,048MW).

The trend has continued in 2006.

Federal production tax credit

For the first time in its history, the US Congress renewed the elusive production tax credit (PTC) before the expiration of its eligibility period. The PTC, which was set to expire in December of 2005, provides an approximately 1.9 cent-per-kilowatt-hour federal tax credit for wind energy generated during the first 10 years of a project's operations. Current market prices for wind energy in most regions of the US do not, and cannot, support wind project development absent the PTC. The instability of the PTC, which has expired and later been renewed numerous times since its origin in 1992, has created a roller coaster development pattern for the US wind industry. With its most recent extension, the PTC will be in place through 2007, creating a meaningful but still rather short period of stability for the wind industry.

Natural gas prices

The stability and opportunity for growth that the PTC extension provides comes at a time when dependence on foreign sources of energy is an area of considerable concern for the US. During the fall of 2005, spiking natural gas prices drove the cost of electricity generated by combustion turbines above the average price of wind energy. The Idaho Public Utilities Commission recently noted in its approval of an integrated resource plan for a local utility that the higher forecasted prices for natural gas generated electricity have allowed resources previously found uncompetitive, such as wind, to move up on the list of cost-efficient choices for meeting demand.

The buzz around wind energy reached a peak in early 2006 when President Bush toured the country to publicise his Advanced Energy Initiative. One of the main goals of the initiative is to diversify energy sources for American homes and businesses by utilising coal, solar and wind power. The initiative calls for a US$44 million budget in 2007 for wind energy research, a US$5m increase from 2006. This increase, the White House maintains, will help improve the efficiency and lower the costs of new wind technologies for use in low-speed wind environments. The initiative also contemplates the expansion of access to Federal lands for wind energy development with the goal of significantly increasing the use of wind energy in the US.

Renewable portfolio standards

Despite the US government's increased interest in wind energy, the US has not yet passed a federal renewables portfolio standard. A renewables portfolio standard (RPS) requires that certain retail electricity providers maintain a predetermined percentage of renewable energy resources in their

wholesale energy supply. Several states have adopted RPS targets, including California (20% by 2017), Colorado (10% by 2015), Hawaii (20% by 2020), New Mexico (10% by 2011) and New York (25% by 2013). A total of 19 states have some type of RPS requirement. A study conducted by the American Wind Energy Association predicts that state RPS initiatives will stimulate the development of 52,000MW of new renewable energy projects between 2005 and 2020. By comparison, the European Union has established a target of 22% renewable energy resources for the generation of electricity, and 12% of all energy from renewable sources by 2010.

The challenges related to the implementation of RPS requirements are not to be overlooked. In order for the requirements to work, a trading scheme must be established to allow successful renewable energy distributors to sell renewable energy credits to other generation companies who do not produce the required level of renewable energy. Creating the appropriate regulatory scheme and monitoring such credit trading markets creates complex issues for government officials and the industry, particularly when RPS requirements are imposed on a state-by-state basis.

Evolution of the industry

As wind power development becomes a more attractive business, a growing number of energy companies are entering the market. New small and medium sized developers are entering the market continuously. Clipper Windpower is a relatively new wind turbine manufacturer that plans to produce 60 of its 2.5MW turbines per month by mid-2006 and a total of 250 turbines in 2007. At the same time, many of the industry's strongest players are buying smaller entities to increase their market impact. In mid-2005, Goldman Sachs purchased Houston-based wind energy developer Zilkha Renewables, creating Horizon Wind Energy. In early 2006, AES Corporation, a Virginia-based global energy developer, acquired California-based wind energy developer SeaWest Wind Power.

Challenges

Although the US wind industry should, for a time, be able to continue its stable expansion and is enjoying

widespread public support, issues that have plagued the industry for many years still exist. A regulatory scheme that is still adjusting to the special needs of wind-generated electricity combined with a lack of transmission capacity have constrained the growth of the wind industry since its inception. In an effort to address these issues, the Federal Energy Regulatory Commission recently adjusted some of its regulations related to transmission to take into account the higher degree of fluctuation that is inherent to wind-generated electricity. The lack of transmission capacity posses an even more difficult challenge. The Earth Policy Institute asserts that North Dakota, Kansas, and Texas have enough harnessable wind energy to satisfy substantial electricity needs, but delivering that energy to the nation would be impossible using the current transmission system. In January of 2006, New Mexico passed legislation to create the New Mexico Renewable Energy Transmission Authority with the goal of facilitating the construction of transmission lines necessary to accommodate the development of that state's considerable renewable energy potential and deliver the energy to other markets. There are numerous other proposals to develop large-scale transmission lines throughout the interior of the US, especially in the Western region.

Conclusions

Despite its challenges, wind energy has the potential to make a continuing and substantial impact on the US energy market. The industry continues to gain political and investor support as US regulations governing renewable energy improve and the cost of natural gas rises. Because of the benefits of wind energy, including lower energy costs, less dependence on foreign energy sources, and low environmental impact, expansion of wind energy development in the US is likely to continue.

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