DOE, ERCOT, PJM All Find Wind Reduces Emissions

Wind power was among the contributors to an overall reduction in carbon dioxide (CO2) emissions from the electric sector in 2008, according to preliminary findings by the U.S. Department of Energy's Energy Information Administration (EIA).

The economic slowdown led to reduced overall power generation, which in turn lowered emissions associated with the power sector; however, emission intensity was even further reduced due to the increase in wind power generation, according to the EIA report. "The decrease in the emissions intensity of generation of 1.1% in 2008 reflected, among other factors, an increase in wind-powered generation," EIA stated in its May 20 press release.

Wind generation, which produces zero emissions, increased by over 60% between 2007 and 2008 and produced over 52 million MWh in 2008.

The historic trend noted by EIA supports the results found recently by two regional power markets, the Electricity Reliability Council of Texas (ERCOT) and PJM Interconnection, LLC, in the mid-Atlantic. Together, these reports illustrate that additional wind generation not only reduces carbon emissions, it would also lower the cost of compliance with carbon regulations, such as the Waxman-Markey climate bill recently passed out of the key House Energy & Commerce Committee.

The May ERCOT study found that the additional wind that would be facilitated by the approved transmission lines in Texas under the state's Competitive Renewable Energy Zone (CREZ) process—which is intended to enable the build-out of transmission to remote renewable resources—would reduce emissions by nearly 10% more than a carbon price alone. The report notes, "[T]he integration of wind resources results in the ERCOT system consistently meeting specific CO2 reduction levels at a lower CO2 allowance price. These results indicate that the additional CREZ resources are expected to have a positive impact on achieving CO2 reduction targets."

Compared to a carbon regulation scenario without wind, the 18,400 MW wind expected in Texas would reduce wholesale power costs in ERCOT, saving consumers $3 billion, or roughly 30%. The total savings translates into a $5 reduction in the average consumer's monthly bill, roughly a 19% decrease. Even in a scenario without a carbon-regulation scheme and with no carbon cost, the additional CREZ-enabled wind energy is expected to reduce wholesale power costs approximately $1 billion, and reduce average annual location marginal prices (LMPs) by $2.80/MWh.

Meanwhile, in its January report that analyzed the cost of compliance with carbon regulations, PJM found that an additional 15,000 MW of wind in the region would reduce CO2 by 35 million

tons and lower wholesale power costs by $3.5 to $4.7 billion, compared to a total increase of $5.9 to $36 billion under a no-wind scenario. The additional wind would lower LMPs by roughly $5.50 per MWh and reduce household bills by up to $4 per month.

Source: Wind Energy Weekly, 29 May 2009