PRESS RELEASE
March 25, 2010

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ERCOT Using New Forecasting Tool to Prepare for Wind Variability

The Electric Reliability Council of Texas, grid operator for most of the state, has implemented a first-of-its-kind wind forecasting tool designed to help system operators prepare for large and sudden changes in wind production.

The ERCOT region leads the nation with the most installed wind capacity – now at nearly 9,000 megawatts (MW) – almost a 500 percent increase in the last five years, according to Kent Saathoff, vice president of system planning and operation. On March 5, ERCOT recorded a new high for instantaneous wind output of 6,272 MW – serving 19 percent of the total load at the time.

“With the increased percentage of the system load served by wind, it becomes critical to have not only a good forecast of how wind will generate during the day, but also an assessment of the level of uncertainty in that forecast,” Saathoff said. “Since we don’t have much control over wind, the key for grid reliability is to have a good wind forecast, and be prepared for the variability of wind as we are for load, rather than as a controllable capacity resource,” Saathoff said.

The new forecasting tool developed by AWS Truewind, LLC in collaboration with ERCOT system engineers will help ERCOT plan for “wind ramps” – large and rapid changes in wind power production. Ramps can be caused by air mass changes, thunderstorms, cold fronts, nocturnal stabilization, pressure changes, and other transient atmospheric events.

The large-ramp alert tool makes calculations six hours ahead to warn the system operators of the risk of large and rapid increases or decreases in wind output. The ramp forecast calculates the values of magnitude and duration, and estimates the probability of a large ramp event beginning in a particular interval.

Information regarding the weather event which is most likely to cause the ramping event is also included, as well as additional characteristics for each predicted ramp event, such as most likely start time, duration and maximum ramp rate.

“For example, we can look at the program and see a graph that may indicate a 45 percent chance of a system-wide wind generation decrease of 375 MW over 15 minutes, starting between 6:45 and 7 pm,” Saathoff said.

Because the system operators cannot rely on wind units to deliver the specific scheduled level of energy in real-time, ERCOT is required to maintain adequate dispatchable (or controllable) resources to account for any variance in wind generation. Inaccuracy in the wind forecast can result in under- or over-commitment of generation resources.

In March 2008, ERCOT integrated a wind forecast into the system operators’ planning tools which has helped the operators manage the risks of the increased wind penetration. Other recent market rule changes require wind generation resources to:

- Limit or regulate their ramp rates when being given or released from instructed curtailments;
- Use the ERCOT AWS Truewind forecast in their resource plans so ERCOT can better plan for day-ahead unit commitment;
- Provide primary frequency response (applies to new wind generation).

The nodal market which will launch Dec 1, 2010 will also improve wind dispatch efficiency because nodal dispatch will allow more frequent and specific instructions to controllable generation than the portfolio dispatch under the current zonal market.

The Electric Reliability Council of Texas, Inc., (ERCOT) manages the flow of electric power to approximately 23 million Texas customers - representing 85 percent of the state's electric load and 75 percent of the Texas land area. As the Independent System Operator for the region, ERCOT schedules power on an electric grid that connects 40,500 miles of transmission lines and more than 550 generation units. ERCOT also manages financial settlement for the competitive wholesale bulk-power market and administers customer switching for 6.6 million Texans in competitive choice areas. ERCOT is a membership-based 501(c)(4) nonprofit corporation, governed by a board of directors and subject to oversight by the Public Utility Commission of Texas and the Texas Legislature.

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