

Transmission Update

December 2007

Summary

- ✓ Welcome to the Fourteenth National Wind Coordinating Collaborative (NWCC) Transmission Update! Kevin Porter of Exeter Associates, Inc., led the December 18, 2007, Transmission Update conference call. As always, this written brief is being distributed after the call to conference call participants, other NWCC members and participants, and to interested NWCC observers.
- ✓ This update features Rick Sergel from the North American Electric Reliability Corporation (NERC) and Charlie Reinhold of WestConnect. Mr. Sergel discussed the recent 2007 Long-Term Reliability Assessment that NERC issued in October, which includes a number of items of interest and relevance to wind. Mr. Reinhold talked about activities and initiatives at WestConnect, an association of utility companies that provide electricity transmission services in the southwestern United States.
- ✓ Specific topics covered in this brief include:
 - The NERC 2007 Long-Term Reliability Assessment that highlights the need for significant transmission infrastructure investment and development that is needed to keep up with increasing electricity demand and to fully integrate wind energy resources into grid operations.
 - The WestConnect initiative is exploring the development of a regional rate structure that will eliminate rate-pancaking, with the goal of leading to better transmission service and more attractive pricing for market participants.
- ✓ The next Transmission Update call is February 19th at 1:00 pm Eastern Time. Please mark your calendars!

North American Electric Reliability Corporation

Background

NERC is a non-profit organization that oversees the reliability of the North American electric grid through the development of reliability standards; ensuring compliance with the standards; monitoring of the bulk power system; assessing and reporting on future resource adequacy; evaluating owners, operators, and users; and educating and certifying industry personnel. In June 2007, in response to the Energy Policy Act of 2005, the U.S. Federal Energy Regulatory Commission (FERC) made compliance with NERC standards mandatory for all U.S. wholesale power entities and designated NERC as the national reliability electric organization.

**2007 Long-Term
Reliability
Assessment
2007 – 2016**

Every year, NERC prepares a Long-Term Reliability Assessment report forecasting future generation supply and transmission issues and needs over the next ten years. The 2007 report was released in October of this year. Mr. Sergel began by discussing NERC's responsibilities and some of the results from this latest reliability assessment. He noted that NERC's authority is now recognized through most of Canada and eventually will cover Mexico as well. Along with NERC having legal authority to enforce the standards it can also impose penalties for non-compliance.

Mr. Sergel highlighted the following results from the 2007 Assessment:

- The transmission system is increasingly operating close to its capacity margin;
- Many areas of the grid are regularly under stress;
- Electricity demand continues to increase throughout the U.S.;
- Long-term adequacy of the workforce is in question; and,
- Not enough energy supply diversity, including too much reliance on natural gas generation.

Mr. Sergel noted that renewable energy has an opportunity to play a role in meeting growing energy demand and diversifying energy supply but that significant transmission infrastructure development was needed to fully integrate these resources into the grid and get them transmitted to market. NERC is also working with the industry to develop additional control room procedures for operators in order to allow for safe and reliable operation of a grid with large amounts of variable energy resources. Mr. Sergel said that NERC needs to work together with the industry to make this happen and hence, has formed the Variable Generation Integration Task Force (VGI), which will bring together NERC and industry representatives to develop recommendations.

Q & A Session

The following questions were posed to Mr. Sergel:

- A wind industry representative said they want to work with NERC and noted that AWEA's report on the goal of 20 percent wind by 2030 (prepared with the U. S. Department of Energy) would be coming out soon. The caller asked how the VGI group would fit in with other similar groups and the NERC Standards Committee. Mr. Sergel said the 20 percent by 2030 goal was admirable and the potential to build that amount of wind generation is present, but work is needed in order to integrate this amount of new generation into the transmission grid. The VGI committee can examine this issue with respect to standards and control room procedures and ensure there is not a disconnect between project development and transmission feasibility.
- Another caller asked what kinds of standards the VGI group would be examining. Mr. Sergel replied that NERC currently has 83 mandatory and enforceable standards for the bulk power system. Most of these standards require operators to take specific actions with respect to balancing load and generation and maintaining reserve requirements. Increasing amounts of wind will change these control room conditions making balancing operations more challenging. New procedures, for example, are needed to integrate intermittent resources into the equation and balance these resources with the needs of must-run generators.

- In response to a question about what was meant in the NERC report with respect to systems operating close to the margin and which regions are most affected. Mr. Sergel said the system as a whole is increasingly being operated under tighter margins, even in areas with healthy reserves (such as SERC that encompasses most of the southeastern United States). Some of the most constrained areas are in New England, California, and New York. This does not necessarily mean these systems are running short of resources, but they are operating under tighter margins.
- A caller asked what wind scenarios analyses were proposed for the 2008 NERC assessment. Mr. Sergel noted that the assessments begin with a base case, built through a bottom-up process starting with the regional assessments provided by the various regional reliability organizations. For the 2008 assessment, NERC will be examining several scenarios of interest, such as what might happen with the introduction of carbon constraints, and different levels of wind integration.
- Someone inquired about the VGI Task Force, i.e., who would be on it and how it would be organized. Mr. Sergel said the Task Force was only just approved last week and they would be accepting members on a volunteer basis to work with the NERC coordinators. If anyone is interested in joining the VGI Task Force, please contact Julia Souder or Mark Lauby at NERC for more information. Mr. Sergel noted that meetings would be open and non-task force members were welcome to come as observers and/or act as reviewers posing questions and comments. When asked if the Task Force would be examining the question of capacity values for wind energy, Mr. Sergel responded that this was a more technical issue that would probably need to be tackled through a formal NERC modeling assessment. The task force expects to contribute to the next assessment due out in October 2008.

WestConnect

Background

WestConnect is an association of utility companies that provide electricity transmission services in the southwestern United States. Members include utilities from Arizona, California, Colorado, Nevada, New Mexico, Texas, and Wyoming. The group's intent is to collaborate on transmission issues by assessing stakeholder and market needs in order to develop cost effective enhancements for the western electricity market. Mr. Reinhold said current members include 14 utilities in the Western Interconnection, covering 34,000 miles of transmission lines 115 kV and higher and accounting for about 46,000 MW of load.

Regional Point-to-Point Transmission Service Pilot Program

Mr. Reinhold talked about the Regional Point-to-Point Transmission Service Pilot Program, an initiative created by the WestConnect Pricing Workgroup that involves the implementation of a single regional price for a transmission transaction in place of the current multi-rate "pancaked" structure. Mr. Reinhold said they will seek FERC approval for a two-year pilot program for an experimental design that will eliminate hourly firm and non-firm and daily pancaked rates. Rates in this program will be determined for each transaction using the individual rates of all the transmission owners along the route. The regional rate for a transaction will be set as the highest individual rate. Mr. Reinhold gave an example involving a transaction running from

Nebraska to Palo Verde which involves four different transmission owners, with the highest rate being that of Tri-State Generation and Transmission at \$8/MWh. The Tri-State rate then becomes the regional rate for this transaction. The open-access system will be set up to track transactions and calculate rates. Start-up and implementation costs will be shared amongst all users as a transmission adder, while scheduling and ancillary services will remain the responsibility of individual transmission owners.

Mr. Reinhold said the Pilot Program arose from data collected during four representative months in 2005 that indicated there was extra transmission capability available on the Western Interconnection that was not being utilized. He mentioned that by participating in the new model the transmission owners risk under-collecting on individual transactions but it is hoped that extra volume will more than compensate for any revenue reductions. The Workgroup is drafting the final FERC documents and hopes to have the filing submitted towards the end of the first quarter of 2008. Mr. Reinhold mentioned that none of the transmission owners wants to begin the experiment during the summer peak period and so they hope to have the pilot program in place by Fall 2008. He also noted that the Sacramento Municipal Utility District and Sierra Pacific Power Company would not be participating in the Pilot as municipalities are worried about jurisdictional issues.

Q & A Session

Someone asked for clarification about what jurisdictional issues Mr. Reinhold was referring to. He responded by saying that in a previous wheeling transaction involving the City of Vernon and the California Independent System Operator, the City had run up against issues dealing with FERC jurisdiction. When asked about start-up costs with respect to the Pilot Program, Mr. Reinhold said start-up costs involved configuring the OASIS system for the program and administrative costs for the third party that would be conducting the billing for the Pilot. These costs were predicted to amount to about an 8 or 9-cent transmission adder.

Referring back to the Nebraska to Palo Verde example, a caller asked what the cost under the current rate structure would be. Mr. Reinhold said that with the pancaked rates of four different transmission owners, the cost is about double that of the Pilot Program. The caller responded by asking if the experiment proved to be successful in increasing the number of transmission transactions, would that imply that current rates are too high or that the system lacks efficiency? Mr. Reinhold replied that the current transmission owner rates are based on FERC revenue requirements and hence, the transmission owners are not overcharging. Tri-State's rates are higher because the system is mostly rural, with long stretches of transmission lines and low load. Success in the Pilot Program would be the result of an efficiency gain, said Mr. Reinhold, showing that entities are taking advantage of the increase in market opportunities.

Another caller asked for clarification on how revenues would be allocated amongst transmission owners. Mr. Reinhold explained that the transmission owners had all agreed to share transaction losses equally and so revenue from a transaction would be allocated to all transmission owners involved in proportion to their individual posted rates and what their pancaked revenue would have been.

Other WestConnect Initiatives

Mr. Reinhold went on to summarize some other WestConnect initiatives:

- *ACE Diversity Interchange (ADI) Pilot Project*
This is a project hosted by the British Columbia Transmission Corporation that WestConnect's transmission owners are in the process of joining. ADI involves the pooling of area control errors for individual control areas to take advantage of a larger footprint for balancing generation and load on the Western Interconnection. WestConnect will be meeting with the other participants in January to iron out the technical questions and to set up data points. The ADI program looks at the magnitude of area control errors and balances them over the entire participant's footprint by sending signals to the most appropriate generators. This results in a sharing of the transmission system regulation burden over a larger area and reduces the load on any one balancing authority. The system will be automated and interactive so that a balancing authority has the ability to deny a generation change request if required. This program is seen as a step towards the creation of a virtual control area in the Western Interconnection similar to how a regional transmission organization operates, and hopefully will lead to significant savings through increased efficiency. Mr. Reinhold pointed out that this new system should help areas with large amounts of intermittent resources to meet their regulation requirements.
- *Business Practice Guidelines*
FERC Order 890 contained a set of Business Practices Guidelines that have been adopted by the Western Electricity Coordinating Council. WestConnect is involved with implementing these guidelines and, among other things, WestConnect is working on standardizing timelines for system impact studies and making it a more regional process.
- *Virtual Control Area Project*
WestConnect is working with NREL on a large-scale wind and solar grid integration project covering the WestConnect geographic footprint. The project is in an early stage but will be conducting some type of analysis in 2008 on ways of sharing long-term reserves.

NERC's most recent Long-Term Reliability Assessment report is yet another indication of the rapid growth of wind energy in the United States, and the prominent role wind energy will likely play in the future. NERC's Variable Generation Integration Task Force represents another opportunity for the wind industry to educate stakeholders on how to incorporate wind on the electric grid.

The failure of the West to adopt and implement a regional transmission organization, outside of California, is well known. Yet the various WestConnect projects discussed on this NWCC Transmission Update call suggests that at least some of the efficiencies of a regional transmission organization may be captured through greater regional cooperation and innovative thinking and experimentation. Should WestConnect's pilot projects succeed, some of the barriers facing wind energy projects, such as transmission rate pancaking, may be minimized.

**For more
Information**

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To review NERC's Long-Term Reliability Assessment, see
<http://www.nerc.com/~filez/rasreports.html>.

For more information on WestConnect's regional transmission service pilot program,
and other initiatives, visit <http://www.westconnect.com/initiatives.php>.

Next Update: February 19, 2008

**The next NWCC Transmission Update will be held on February 19, 2008 at 1 pm
Eastern Time.**

*Please email Kevin Porter (porter@exeterassociates.com) with any suggestions for topics or
how to improve the call.*