

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Agenda: NERC Workshop on Accommodating High Levels of Variable Generation: *Planning and Operations for Reliability*

Crowne Plaza Kansas City Downtown
1301 Wyandotte
Kansas City, Missouri 64105
United States
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April 12, 2011 | 8:30 a.m. – 3 p.m. Central

The 2011 UWIG Spring Technical Workshop will provide attendees an expanded perspective on the status of wind generation in utility systems in the United States and other countries. The NERC workshop will provide insight to the industry stakeholder groups on developing recommendations for the reliable integration of high levels of variable generation. Recommendations include best practices for bulk power system planning and operations, risks to reliability that must be considered, and identification of NERC reliability standard implications.

Tuesday April 12, 2011 General Session

Time	Item	Leader
8:30 am	1. Welcome – Opening Remarks and Administrative Matters	J. Charles Smith Utility Wind Integration Group <i>Executive Director</i>
8:45 am	2. Keeping Reliability In Focus <i>Accommodating High-Levels of Variable Generation: Summary Report</i>	John N. Moura North American Electric Reliability Corporation <i>Manager, Reliability Assessment</i>
9:00 am	Q&A	

9:15 am	<p>3. Probabilistic Techniques</p> <p><i>TASK 1.2 - Consistent and accurate methods are needed to calculate capacity values attributable to variable generation.</i></p> <p><i>TASK 1.4 - Resource adequacy and transmission planning approaches must consider needed system flexibility to accommodate the characteristics of variable resources as part of bulk power system design.</i></p> <p><i>TASK 1.6 - Probabilistic planning techniques and approaches are needed to ensure that system designs maintain bulk power system reliability.</i></p>	<p>Michael Milligan National Renewable Energy Laboratory <i>Consultant</i></p> <p>Mark O'Malley University of Dublin <i>Professor of Electrical Engineering</i></p>
10:00 am	Break	
10:15 am	<p>4. Planning</p> <p><i>TASK 1.1 - Standard, valid, generic, non-confidential, and public power flow and stability models (variable generation) are needed and must be developed, enabling planners to maintain bulk power system reliability.</i></p> <p><i>TASK 1.5 - Integration of large amounts of plug-in hybrid electric vehicles, storage and demand response programs may provide additional resource flexibility and influence bulk power system reliability and should be considered in planning studies.</i></p> <p><i>TASK 1.8 - Variable distributed resources can have a significant impact on system operation and must be considered and included in power system planning studies</i></p>	<p>Daniel Brooks Electric Power Research Institute <i>Manager, Power Delivery System Studies</i></p>
11:15 am	<p>5. Interconnection</p> <p><i>TASK 1.3 - Interconnection procedures and standards should be enhanced to address voltage and frequency ride-through, reactive and real power control, frequency and inertial response and must be applied in a consistent manner to all generation technologies.</i></p> <p><i>TASK 1.7 - Existing bulk power system voltage ride-through performance requirements and distribution system anti-islanding voltage drop-out requirements of IEEE Standard 1547 must be reconciled.</i></p>	<p>J. Charles Smith Utility Wind Integration Group <i>Executive Director</i></p> <p>Dick Piwko GE Energy <i>Director</i></p> <p>Mahendra Patel PJM Interconnection</p>

	<p><i>TASK 2.2 - Balancing Areas must have sufficient communications for monitoring and sending dispatch instructions to variable resources.</i></p>	<p>William Grant Xcel Energy <i>Manager Transmission Control</i></p>
12:15 pm	Lunch on your own	
1:00 pm	<p>6. Operating</p> <p><i>TASK 2.1 - Forecasting techniques must be incorporated into day-to-day operational planning and real-time operations routines/practices including unit commitment and dispatch.</i></p> <p><i>TASK 2.3 - Impact of securing ancillary services through larger balancing areas or participation in wider-area balancing management on bulk power system reliability must be investigated.</i></p> <p><i>TASK 2.4 - Operating practices, procedures and tools will need to be enhanced and modified.</i></p>	<p>Steven J. Beuning Xcel Energy, Inc. <i>Director Market Operations</i></p> <p>Mark Ahlstrom WindLogics Inc Jay Caspary Southwest Power Pool <i>Director, Transmission Development</i></p> <p>Brendan Kirby <i>Consultant</i></p>
2:00 pm	<p>7. Reference Manual</p> <p><i>TASK 3.1 - NERC should prepare a reference manual to educate bulk power and distribution system planners and operators on reliable integration of large amounts of variable generation.</i></p>	<p>John N. Moura North American Electric Reliability Corporation <i>Manager, Reliability Assessment</i></p>
2:30 pm	Q&A	
2:45 pm	8. Closing Remarks and Future Activities	<p>John N. Moura North American Electric Reliability Corporation <i>Manager, Reliability Assessment</i></p>
3:00 pm	Adjourn for the day	

Antitrust Compliance Guidelines

I. General

It is NERC's policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition.

It is the responsibility of every NERC participant and employee who may in any way affect NERC's compliance with the antitrust laws to carry out this commitment.

Antitrust laws are complex and subject to court interpretation that can vary over time and from one court to another. The purpose of these guidelines is to alert NERC participants and employees to potential antitrust problems and to set forth policies to be followed with respect to activities that may involve antitrust considerations. In some instances, the NERC policy contained in these guidelines is stricter than the applicable antitrust laws. Any NERC participant or employee who is uncertain about the legal ramifications of a particular course of conduct or who has doubts or concerns about whether NERC's antitrust compliance policy is implicated in any situation should consult NERC's General Counsel immediately.

II. Prohibited Activities

Participants in NERC activities (including those of its committees and subgroups) should refrain from the following when acting in their capacity as participants in NERC activities (e.g., at NERC meetings, conference calls and in informal discussions):

- Discussions involving pricing information, especially margin (profit) and internal cost information and participants' expectations as to their future prices or internal costs.
- Discussions of a participant's marketing strategies.
- Discussions regarding how customers and geographical areas are to be divided among competitors.
- Discussions concerning the exclusion of competitors from markets.
- Discussions concerning boycotting or group refusals to deal with competitors, vendors or suppliers.
- Any other matters that do not clearly fall within these guidelines should be reviewed with NERC's General Counsel before being discussed.

III. Activities That Are Permitted

From time to time decisions or actions of NERC (including those of its committees and subgroups) may have a negative impact on particular entities and thus in that sense adversely impact competition. Decisions and actions by NERC (including its committees and subgroups) should only be undertaken for the purpose of promoting and maintaining the reliability and adequacy of the bulk power system. If you do not have a legitimate purpose consistent with this objective for discussing a matter, please refrain from discussing the matter during NERC meetings and in other NERC-related communications.

You should also ensure that NERC procedures, including those set forth in NERC's Certificate of Incorporation, Bylaws, and Rules of Procedure are followed in conducting NERC business.

In addition, all discussions in NERC meetings and other NERC-related communications should be within the scope of the mandate for or assignment to the particular NERC committee or subgroup, as well as within the scope of the published agenda for the meeting.

No decisions should be made nor any actions taken in NERC activities for the purpose of giving an industry participant or group of participants a competitive advantage over other participants. In particular, decisions with respect to setting, revising, or assessing compliance with NERC reliability standards should not be influenced by anti-competitive motivations.

Subject to the foregoing restrictions, participants in NERC activities may discuss:

- Reliability matters relating to the bulk power system, including operation and planning matters such as establishing or revising reliability standards, special operating procedures, operating transfer capabilities, and plans for new facilities.
- Matters relating to the impact of reliability standards for the bulk power system on electricity markets, and the impact of electricity market operations on the reliability of the bulk power system.
- Proposed filings or other communications with state or federal regulatory authorities or other governmental entities.
- Matters relating to the internal governance, management and operation of NERC, such as nominations for vacant committee positions, budgeting and assessments, and employment matters; and procedural matters such as planning and scheduling meeting