Remarks of Gerry Cauley, President and Chief Executive Officer
North American Electric Reliability Corporation
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Good morning Chairman Bingaman, fellow panelists and those joining us in the audience. My name is Gerry Cauley and I am the President and CEO of the North American Electric Reliability Corporation (NERC). I am a graduate of the U.S. Military Academy, a former officer in the U.S. Army Corps of Engineers, and have more than 30 years experience in the bulk power system industry, including service as a lead investigator of the August 2003 Northeast blackout and coordinator of the NERC Y2K program.

Background

NERC's mission is to ensure the reliability of the bulk power system of North America and promote reliability excellence. NERC was founded in 1968 to prevent cascading outages like the one that occurred in November 1965 and overall to ensure reliability of the bulk power system. The bulk power system is defined as generation and transmission of electricity greater than 100kV, in contrast to the distribution of electricity to homes and businesses at lower voltages.

In 2006, NERC was designated the Electric Reliability Organization (ERO) by the Federal Energy Regulatory Commission (FERC) in accordance with the Energy Policy Act of 2005, and NERC's reliability standards were approved by FERC and became mandatory across the bulk power system in mid-2007. In carrying out its activities, NERC works with and through its regions and stakeholders, which include large and small customers and state regulators in addition to investor-owned utilities, municipal utilities, co-ops, independent generators, power marketers, ISOs and RTOs, and federal entities like TVA, Bonneville and the Western Area Power Administration. Equivalent entities from Canada are also a part of NERC's stakeholders.

As part of NERC's mission to ensure the reliability of the bulk power system in North America, NERC conducts detailed analyses of system disturbances to determine root causes, uncover lessons learned, and issue relevant findings as advisories, recommendations and essential actions to the industry. Through the analysis by NERC and the Regional Entities, possible violations of standards may be revealed. If such violations are identified, they are addressed through NERC's Compliance Monitoring and Enforcement Program.

The bulk power system in North America is one of the largest, most complex, and most robust systems ever created by man. It provides electricity to more than 334 million people, is capable of generating more than 830 gigawatts of power, moves that electricity across more than 211,000 miles of high voltage transmission lines and represents more than $1 trillion in assets. The electricity being used in this room right now is being generated and transmitted in real time over a complex series of lines and stations from possibly as far away as Montana or British Columbia.

The knowledge that disturbances on the grid can impact operations and customers thousands of miles away has influenced the electric industry's culture of coordinated planning, operations and protecting the bulk power system.

NERC's event analysis process reviews numerous events that occur on the bulk power system. These events can range from loss of a single component to loss of large amounts of load or generation. The events analysis process provides us with a path to learn from what happened with the goal of sharing those lessons with others to prevent it from happening again.

The key ingredients of an effective event analysis program are to:

- Identify what transpired – sequence of events;
- Understand the causes of events;
- Identify and ensure timely implementation of corrective actions;
- Develop and disseminate recommendations and valuable lessons learned to the industry to enhance operational performance and avoid repeat events;
- Develop the capability for integrating risk analysis into the event analysis process; and
- Distribute key results to facilitate enhancements in and support of the various NERC programs and initiatives (e.g., performance metrics, standards, compliance monitoring and enforcement, training and education, etc.)

As a learning organization, NERC's event analysis serves an integral function of providing insight and guidance by identifying and disseminating valuable information to users, owners, and operators of the bulk power system that enable improved, enhanced and more reliable operation. As such, event analysis is one of the pillars of a strong ERO.

NERC's February 2011 Inquiry

Ice, snow, and extreme cold weather severely affected multiple regional entities and multiple states in early February which led to high customer demand for electricity and the significant unexpected loss of generation capacity. As a result, operators issued Energy Emergency Alerts (EEA), public appeals for reduction of electricity use, and ultimately implemented extensive load shedding to maintain grid reliability

Throughout the event, NERC's situation awareness group, in coordination with the Regional Entities and reliability coordinators who direct grid operations, received information on the current state of reliability and the impact to the bulk power system in the affected areas. This information was shared through established communication processes with representatives from FERC, the Department of Energy (DOE) and the Department of Homeland Security (DHS). On February 7, 2011, NERC announced it would examine the bulk power system impacts from the recent extreme weather conditions to determine the adequacy of preparations and potential improvements. On February 11, 2011 NERC issued a letter providing formal notice of its intent to conduct an Event Analysis on the preparation and performance of the system during these cold weather events. As part of this notice, NERC requires applicable registered entities impacted by the February event to secure and maintain all documents and data associated with the event to support the event analysis.

The NERC inquiry encompasses two efforts to meet both short-term and long-term objectives related to the event.

The first is a formal analysis to identify the causes of the various generation and transmission issues that occurred on the bulk power system related to the February event, determine what steps need to be taken, and communicate lessons learned from the event to minimize the risk of these scenarios recurring in the future. The Texas Reliability Entity, Inc., and the Western Electricity Coordinating Council, along with affected entities and system operators, are already working with NERC on analysis of the events. While controlled rotating interruptions are deployed by system operators as a means to maintain bulk power system reliability by providing adequate levels of operating reserves, further review is underway to determine what happened in these specific circumstances, and to identify lessons learned and improve future operations.

Secondly, for a longer term outlook, NERC's Reliability Assessment and Performance Analysis group will review the projected electric and gas interdependencies and vulnerabilities given the shift toward greater reliance on natural gas to produce electricity in certain areas. This assessment will be a broad look at areas in North America where extreme cold weather or loss of a major gas supply could impact electricity production, review existing procedures for coordination between planners and operators in both industries and input into NERC's standards if needed. Building upon NERC's *2010/2011 Winter Reliability Assessment*,[1] which noted the long-term outage of gas pipelines or import paths could lead to the loss of significant amounts of generating capacity, NERC will identify the reliability affects of gas/electricity interdependencies through multiple scenarios, including extreme cold weather scenarios, pipeline interruption, and overall vulnerability identification across North America. Further, NERC will develop an industry reference guide in coupled workings of the bulk power and natural gas systems.

Past cold weather events

While the depth and pace of the severe cold temperatures were an unusual event, cold weather events have occurred before. It is important for the NERC analysis to review what was done correctly in this event, as well as what can be improved upon so other users, owners and operators of the bulk power system facing cold waves in the future can learn from the impacts of this event. It is essential to identify what changes can be made from a process-perspective to appropriately anchor these learnings to preclude similar future events. For examples, some past cold weather events include:

- In January 2007, there was a cold weather event impacting Arizona's Salt River Project SRP). The extreme cold weather, loads greater than forecasted, and the loss of eight critical generating resources forced adjacent control areas into a "capacity limited" condition. Backup generation failed to start, which exacerbated the situation.

- In February 2006, Public Service Colorado (PSCO) began to experience electric generation plant failures due to the combination of cold weather, high humidity and other mechanical issues. During the event, 18 generators tripped off line or were capacity

[1] The *2010/2011 Winter Reliability Assessment* is available at: http://www.nerc.com/files/2010_Winter_Assessment_V7_ERRATA.pdf.

limited. The controlled load shedding conducted by PSCO involved approximately 100,000 customers for approximately 30 minutes each.

- In 1994, a major cold wave swept across the Midwest and Mid-Atlantic states. Utilities were faced with unusually high demands for electricity and cold weather related problems with generators and fuel supplies. Two control areas had to resort to manual curtailment of firm customers resulting in rotating outages to ensure the reliability of the bulk power system. Significant amounts of electricity were transferred to the Midwest and East that were running short of generation capacity.

Assembly of the basic facts, including load, resources, reserves, generator availability, fuel supply and delivery problems, the effectiveness of public appeals, curtailment of interruptible loads and rotating outages were all reviewed. These issues resulted in recommendations and lessons learned. In 1994, use of NERC's Operating Criteria and Guidelines, along with industry's own practices and procedures were found to contribute positively to the resolution of this event.

This history is not presented as an exact comparison to what occurred in February 2011. It is offered to emphasize a number of questions that must be answered. We need to understand the unique circumstances of the cold weather event that impacted much of New Mexico and Texas, and determine why lessons from the past were either unable to be applied or were not applied in this event. Were there problems with the electric/gas interfaces? Why were coal plants affected? Was this an issue solely about winterization of equipment? Why was this not addressed? What was the timing? In answering these questions, NERC will look at all regions affected by this event to identify those steps that may not have been taken, as well as steps that were taken to protect the reliability of the bulk power system.

NERC's Events Analysis Process

Working with teams in each of NERC's eight regions, NERC experts have analyzed numerous events. System owners and operators are required to report the occurrence of defined bulk power system disturbances and unusual occurrences to the applicable Regional Entity and NERC in accordance with various NERC and Regional reliability standards and other requirements. Each of these standards specifies timeframes within which initial and final Event Reports are required. Additional reporting requirements may also be required.

Operators of the system, Regional Entities and NERC need to become aware quickly of events and disturbances that take place throughout the bulk power system. This 'initial impression' information and insight needs to be produced and delivered quickly and made available to personnel with planning and operations responsibilities across the system. This initial information sets forth a workable structure for very short-term analyses and reports, which can be followed by more intensive studies.

During the event triage process, NERC's events analysis staff and the involved Region(s) collaboratively determined the appropriate level of any event analysis that should be conducted. Most single-Region analyses are conducted by the Regions or, for less significant events, the

registered entity with overview by the Region and NERC. Multi-regional events such as this recent event fall under the direction of NERC events analysis.

The ERO enterprise-wide event analysis program is based on the recognition that bulk power system events that occur, or have the potential to occur, have varying levels of significance. The manner in which system owners and operators and NERC evaluate and process these events is intended to reflect the significance of the event or specific system conditions germane to the reliability of the bulk power system and the circumstances involved.

The role of NERC and its coordination with other organizations

Numerous organizations have indicated their interest and concern over the February 2011 events. As noted, NERC and the Regions review these events, and have an established process for the analysis of the event and the issuance of lessons learned. Successful event analysis relies on effective coordination through which registered entities, Regional Entities, and NERC work together to achieve a common goal. The process requires clarity, certainty, and consistent adherence to reliability principles by bulk power system operators that perform a wide array of reliability functions

FERC provides oversight and in most cases, closely participates in these efforts, including whether aspects of those events constitute possible violations of reliability standards. FERC and NERC have different areas of responsibility. As the economic regulator, FERC has the responsibility for wholesale electric markets and oversight of interstate gas transmission as well as oversight of NERC for bulk power system reliability. NERC's responsibilities are directly focused on analysis of the specific system conditions and their impact to the reliability on the bulk power system.

On February 14, FERC issued an order directing its staff to initiate an inquiry into outages and disruptions of service in Texas and the Southwest. The FERC order recognized the importance of NERC's analysis and also FERC's jurisdiction under the Natural Gas Act and the Natural Gas Policy Act. Per FERC's order, FERC's broader inquiry is to be coordinated with NERC's efforts, as well as inquiries by affected States. We expect the coordination of this process between FERC and NERC will be similar to what was used for the 2003 Northeast blackout. During that effort, FERC performed an inquiry; while NERC performed events analysis and submitted it to FERC for their use as needed. Both FERC and NERC share a commitment to ensure the reliability of the bulk power system.

Conclusion

I want to reemphasize that NERC views the cold weather impacts of February 2011 as significant. We are acutely aware of the impact and frustration that occurs when the electric infrastructure does not provide reliable service to end-use customers. While NERC is focused on the impacts to the bulk power system, when events such as this occur on a multi-state, multi-regional level, it is clear there are numerous lessons to be learned. The events of February 2011 give me cause for significant concern. These are not new issues. We've had severe weather before. We must continue to ensure industry is learning from the past, and must not allow institutional knowledge to fade. These issues must be kept at the forefront.