

FERC Reliability Technical Conference

Panel I: 2015 State of Reliability Report

Remarks of Gerry Cauley, President and CEO

North American Electric Reliability Corporation

June 4, 2015

Chairman Bay, Commissioners, and fellow panelists, we appreciate the opportunity to appear before the Commission today to discuss the progress and ongoing challenges of assuring the reliability of the bulk power system. I am pleased to report that the current state of reliability in North America continues to show strong performance. The Electric Reliability Organization (ERO) provides a continent-wide framework based on partnerships, industry knowledge and skills, and information sharing that contributes to this success. NERC continues to mature as the ERO — improving the standards and compliance processes, enhancing the collection of cyber and physical threat information and continuing to deliver independent assessments on issues that have the potential to impact grid reliability.

NERC has matured many of its processes in the last year, with significant developments in most of the areas identified for discussion at today's conference, including our compliance monitoring and enforcement program, security standards and assessments. In particular, I'd like to focus on key improvements in the areas of risk analysis, including event analysis. Based on the ERO's event analysis data, event severity dropped in 2014, which shows continued improvement in bulk power system reliability. In the past, we have targeted problem areas, such as on the 345KV circuit breaker issue, where we identified a developing trend and issued an advisory alerting the industry to the potential of breakers failing prematurely. The systematic and disciplined approach to the collection of grid performance data using tools such as the Transmission Availability Data System (TADS) and the Generator Availability Data System (GADS) have facilitated a focus on improving reliability in areas such as AC substation equipment failures and generator preparedness in extreme weather conditions. The collection and detailed analysis of relay misoperations data has resulted in targeted programs focused on reducing the number and severity of transmission outages. Shining light on some of these previously opaque problems has created increased awareness and the desire for collaboration, bringing all those who share these common challenges to the table; stakeholders, vendors and the regulators solving problems collectively.

To carry out its responsibility to focus NERC and industry resources on the most critical issues, the Reliability Issues Steering Committee, or RISC, completed an assessment of risks to reliability and made a set of recommendations to the NERC Board in November of 2014.

As RISC began developing the recommendations, a few common themes emerged. One theme was the complex interdependences between the electric industry and other industries, specifically natural gas. Recent events, including the 2014 polar vortex, have shown that electricity production is now highly

dependent on the availability of a dependable gas infrastructure with sufficient capacity to deliver supplies where and when they are needed.

The next theme was resiliency. It is imperative that the industry is prepared to meet extreme events on the system, from extreme weather events to coordinated physical or cyber-attacks. A further theme was the importance of assessments and the development of tools to facilitate planning assessments. The evaluation of resources, market conditions, and infrastructure assessments of gas, electric and water are important to determine future impacts and trends in reliability. Additionally, future studies need to incorporate the impacts of fuel deliverability and the dependencies on the telecommunications infrastructure, including data and voice.

A final theme was operational reliability, which involves situational awareness for system operators, including dispatch flexibility and controllability issues. It is important that system operators maintain line of sight/visibility to all system conditions that may impact their operational decisions. Upon NERC Board acceptance of the RISC recommendations, NERC included specific activities to address high impact risks to reliability in its business planning and budget cycle, including the development of corporate goals and standing committee work plans.

Tom Burgess will speak to you shortly on the detailed findings from the 2015 *State of Reliability* report. The purpose of the report is to review ongoing trends and objectively provide an integrated view of reliability performance. The analysis of BPS performance developed as part of the *State of Reliability* report provides an industry reference of historical reliability, offers analytical insights regarding industry action, and enables the identification and prioritization of specific steps that can be taken to manage risks to reliability. The results provide a contiguous series of analyses, a basis for predicting reliability behavior, and a baseline of BPS reliability characteristics.

These reports have tracked key improvements in many areas, but I'd like to point out two key success areas – vegetation management and load loss due to transmission outages. Since instituting enforceable vegetation management standards, NERC has seen increased awareness and industry focus on maintaining transmission rights of way, and performance in this area has improved greatly over the last few years. Since FAC-003-1 became effective in 2007, transmission outages from grow-ins have consistently decreased, with only one grow-in outage in the past five years. Prior to 2010, there were 63 reported grow-in outages. In addition, we have continued to track a reduction in load loss due to transmission outages, now three years running. Collectively, these examples provide a clear indicator of improved grid reliability performance as a result of our programs and initiatives.

NERC's priorities remain focused on issues posing the greatest risk to the reliability of the North American bulk power system. I recently testified, along with Mike Bardee, at the House Energy and Power Subcommittee. I repeat here, what I said there – in my 35 year career dedicated to grid reliability and

security, there has never been a more challenging period for reliability and security than we find ourselves today. I would like to stress two critical challenges which remain at the forefront – cybersecurity and essential reliability services (ERS).

Cybersecurity is a constant and evolving threat, requiring diverse defense strategies. NERC continues to facilitate implementation of the Critical Infrastructure Protection (CIP) Version 5 Standards that initially become enforceable in April 2016. Work also continues on implementing CIP-014, the physical security standard, with the first requirement becoming enforceable in October 2015. I am proud of the fact that the energy sector remains the only sector with mandatory, enforceable standards to address security issues.

Standards are one piece of this complex, dynamic, and comprehensive approach to grid security and reliability. The threat of cyber and physical attacks on the grid by nation states, terrorist groups, and criminal actors is at an all-time high. We are working hard to assist industry in securing the grid. I believe the first line of defense is strong sharing of information regarding threats and vulnerabilities. Any one entity, public or private, does not have a complete picture of all cyber and physical security threats and activities. Unfettered information sharing among entities responsible for protecting the grid, including between government and industry partners, helps us all understand a more complete picture of how to protect the grid. However, sharing of sensitive grid security information must be effectively safeguarded from public disclosure that can lead to the information falling into hands of bad actors.

The Electricity Sector Information Sharing and Analysis Center (ES-ISAC) is an essential information sharing hub which provides situational awareness, incident management, coordination, and communication capabilities within the electricity sector through timely, reliable, and secure information exchange. Our partnership with industry and the government continues to grow through the Electricity Sub-Sector Coordinating Council (ESCC) which addresses resiliency and reliability issues and is an outstanding example of a strong public-private sector partnership.

Along with standards and information sharing, NERC continues to pursue opportunities for learning about security threats and vulnerabilities. NERC's Grid Security Conference and GridEx III, a continent-wide exercise for participants across North America, provide important forums for education and training on key security issues and provide input for lessons learned.

As NERC confronts evolving cybersecurity challenges, we are also concerned about the continuing transformation to the resource mix and the impacts on essential reliability services (ERS). ERS are the building blocks for reliability and they include voltage support, ramping capability and frequency support. Ongoing retirements of fossil-fueled and nuclear capacity and growth in natural gas and renewable resources directly impact the behavior of the bulk power system. NERC identified key system enhancements in planning and operations needed to promote reliable operations and maintain essential reliability services, building on a November 2013 report on California ISO's experience in accommodating large

amounts of variable resources. The impacts of variable generation and changing reliability behavior of resources must be considered in power system planning and design as well as the necessary operating practices, tools, training, and methods to maintain long-term BPS reliability. Further, policy makers should be keenly aware that system changes may be needed to accommodate these resources and maintain stability. This takes time and interconnection-wide coordinated planning. Where warranted, potential enhancements to NERC Reliability Standards or guidelines to maintain BPS reliability will be considered. NERC is continuing to lead efforts to refine understanding of ERS and implications on bulk system reliability to proactively enable reliable transition as these changes unfold.

Today you will hear more from NERC experts concerning many other initiatives to assure reliability of the BPS, and our focus on continuous improvement, accountability, and excellence. We value our partnership with the Commission, and thank you for your support of the ERO's mission. I look forward to your questions and a robust discussion on the state of reliability in North America.