2018 Reliability Technical Conference

Docket No. AD18-11-000

Tuesday, July 31, 2018
9:00 a.m. – 5:00 p.m.

9:00 a.m. Opening Remarks and Introductions

9:15 a.m. Panel I: The Changing ERO Enterprise, Standards, and Reliability

Presentations: The Electric Reliability Organization (ERO) Enterprise, including the North American Electric Reliability Corporation (NERC) and the Regional Entities, has undergone significant changes in the past year and embarked on new initiatives. Panelists will be asked to address the following:

a. What are or should be NERC's top priorities for the next one to three years? What trends and risks identified in the recently issued 2018 State of Reliability Report warrant the most attention and effort at this time?

b. Through its Standards Efficiency Review, NERC has embarked on an effort to evaluate current Reliability Standards using a risk-based approach to identify potential efficiencies through retirement or modification of Reliability Standard requirements. What is the status of this effort, and how will the Standards Efficiency Review contribute to reliability moving forward?

c. Discuss how the ERO model has evolved and how it can be further improved. What lessons can be drawn from the experiences of the Regional Entities with respect to the effectiveness of the ERO and how it can adapt to improve reliability and security of the grid? Describe the results and implications of NERC's benchmarking both of grid reliability and NERC performance.

d. The Western Interconnection is undergoing a significant shift, including the announced establishment of new Reliability Coordinators and the expansion of organized electricity markets. What are the key reliability questions to be considered in evaluating these changing structures?

e. Last year, NERC signed a memorandum of understanding (MOU) with the Comisión Reguladora de Energía and the Centro Nacional de Control de Energía to establish a framework for a cooperative relationship between Mexico and NERC. How is that partnership developing? What reliability efforts are underway as a result of the MOU?

Panelists:

- Jim Robb, CEO, NERC
- Tim Gallagher, President and Chief Executive Officer of ReliabilityFirst
- Sylvain Clermont, Director, Operational Technology Convergence, Hydro-Québec TransÉnergie, on behalf of the Canadian Electricity Association
- Commissioner Marcelino Madrigal Martinez, Mexican Energy Regulatory Commission (CRE)
- William Fehrman, President and CEO of Berkshire Hathaway Energy, on behalf of the Edison Electric Institute (EEI)
- Eric Schmitt, Vice President of Operations, California ISO
- Steven Naumann, Vice President, Transmission and NERC Policy, Exelon Corporation
- Jack Cashin, Director of Policy Analysis and Reliability Standards, American Public Power Association

10:45 a.m. Break

11:00 a.m. Panel II: Advancing Reliability and Resilience of the Grid

Presentations: In its January 8, 2018 order (January 8 Order) in Docket No. AD18-7-000, the Commission stated: "The resilience of the bulk power system is a priority of this Commission and a critical issue for the Amer ican people and for our economy and national security." The Commission also stated that a goal of the proceeding, among other things, was to develop a common understanding among the Commission, industry, and others of what resilience means and requires. This panel will address how reliability and resilience are related, how entities currently plan and operate the grid considering both reliability and resilience, how both can be measured and assessed, and what further steps can be taken to advance both reliability and resilience. Panelists will be asked to address the following:

a. The NERC Reliability Standards require that the grid be able to maintain reliable operations for certain disruptions and require that entities maintain and test plans to restore and recover from blackouts. What level of resilience do the NERC Reliability Standards' planning and operating requirements mandate? What attributes of the bulk power system, or components of the bulk power system, could the Reliability Standards address that would both improve reliability and also enhance the resilience of the grid? What other actions do the ERO and industry take, or could these entities take, to enhance resilience, including the development and application of new or existing Reliability Standards and best practices?

b. What data and metrics are available to measure and track the resilience of the grid? For example, is it possible to expand the definition of an adequate level of reliability, used as the basis for the NERC Reliability Standards, to include resilience? What gaps exist in the data and metrics that could shed light on the resilience of the grid, and how can these gaps be filled?

c. What opportunities exist for NERC and the Regional Entities to work with states and other jurisdictions collaboratively to improve resilience of the grid? Should the Reliability Standards be modified to define and require minimum parameters for system resilience? Should these specifically address high-impact, low-frequency events (e.g., physical and cyberattacks, accidents, extended fuel supply disruptions, or extreme weather events)?

Panelists:

- Mark Lauby, Senior Vice President and Chief Reliability Officer, NERC
- Wes Yeomans, Vice President of Operations, the New York Independent System Operator
- Peter Brandien, Vice President of System Operations, ISO New England
- Bob Bradish, Vice President, Transmission Planning and Engineering, American Electric Power
- Carol Chinn, Chief Information and Compliance Officer, Florida Municipal Power Agency, on behalf of Transmission Access Policy Study Group (TAPS)
- Tom Galloway, President and CEO at North American Transmission Forum
- Alison Silverstein, Independent Consultant

12:30 p.m. Lunch

1:30 p.m. Panel III: Managing the New Grid

Presentations: This panel will explore Power System Planning and Operations challenges and opportunities as a result of the changes in the generating resource mix, taking into account steps NERC, the Regional Entities, industry, and the Commission have taken. These steps include assessing the impacts of power plant retirements and the increasing dependence of the grid on natural gas, solar, and wind power. Panelists will be asked to address the following:

a. Discuss the trends in Essential Reliability Services (ERS) – frequency response, ramping and voltage support – in each of the three U.S. interconnections. Discuss observed trends and likely future challenges to ensuring the availability of ERS moving forward. Are ERS adequately quantified to augment existing measures of reliability such as reserve margin? Is there an opportunity to further refine ERS so they can be used to develop and deploy solutions to the specific challenges facing the grid?

b. What actions could be taken to ensure that sufficient ERS are available as the resource mix continues to evolve? Are there specific benefits or risks posed by variable energy resources and distributed energy resources? What potential roles can customers play? Is there a need to better quantify ERS so they can be provided though a market mechanism rather than a Reliability Standard?

c. What lessons can be drawn and what measures should the Commission and NERC take from the August 2016 Blue Cut Fire and October 2017 Canyon Fire events regarding the risks of inverter-connected and non-synchronous technologies for both reliability and resilience? Are there potential benefits of such technologies that can be applied to improve system performance?

d. How is industry preparing for the changing demands on the Bulk-Power System in light of the growth of distributed energy resources (DER) and storage? How can these, and other supporting, technologies be deployed to improve reliability and resilience? Are changes to the NERC Reliability Standards necessary to continue to protect the reliability of the Bulk Power System?

e. As non-traditional sources of generation are added to the Bulk-Power System and the distribution system, what real-time data and EMS applications, or changes to Reliability Standards, would promote better grid operations, and improve reliability and resilience? What operating and planning adaptations can be considered best practices?

f. Other nations have experience in addressing the introduction of significant DER and renewable resources on their electric systems. What policies are currently in place in markets outside of the United States, including Europe and Japan, to accommodate changes to the electricity system from a traditional centralized, one-way electrical grid to one where DER is rapidly being adopted?

Panelists:

- John Moura, Director, Reliability Assessment and System Analysis, NERC
- Dr. Damir Novosel, President, Quanta Technology, on behalf of IEEE Power & Energy Society
- Roy Jones, Chief Executive Officer, Electricities of North Carolina, on behalf of the Large Public Power Council (LPPC)
- Jay Bartlett, President and CEO of Wabash Valley Power Association, on behalf of National Rural Electric Cooperative Association (NRECA)
- Nicholas Miller, Principal, HickoryLedge LLC
- Peter Gregg, President & CEO, Ontario's Independent Electricity System Operator (IESO)

3:00 p.m. Break

3:15 p.m. Panel IV: Addressing the Evolving Cybersecurity Threat

Presentations: There is a widespread understanding among policymakers and industry that cyberattacks are a persistent and growing threat to the reliable or resilient operation of the Bulk-Power System. This panel will shed light on opportunities to collaboratively address existing and emerging cyber threats and vulnerabilities. Examples of recently publicized cyberattacks against industrial control systems include compromises of vendor systems and the cyber supply chain, and increasingly destructive malware. Additionally, vulnerabilities have been revealed in the structure of the processors underlying most cyber systems themselves. Panelists will be asked to address the following:

a. How are current trends in cyber threats and vulnerabilities affecting the behavior of grid owners and operators? How can grid operators be better prepared to protect their systems from these threats? How do you recommend organizations mitigate cyber risks? How can the Critical Infrastructure Protection Reliability Standards (CIP Standards) be improved to assist responsible entities in addressing emerging cyber threats? What information-sharing practices are required? How are best practices developed, applied, and improved?

b. How can changing technology (e.g., cloud computing, virtualization, "Internet of Things," "Industrial Internet of Things") introduce new vulnerabilities that may impact the security of the Bulk-Power System? How could cloud computing, virtualization, and other technologies be deployed securely to help manage the emerging grid?

c. The Commission engages with other agencies and industry in mitigating the risk posed by cyber threats – including promoting information sharing, identifying and assessing threats, sharing lessons learned and best practices. How can we improve these efforts?

d. How can cyber incident response plans be improved to address the evolving cyber threat landscape? For example, when a cyber system is compromised, anti-malware software may not identify the system as compromised, and the only indicator may be the system's abnormal behavior.

e. When considering the emerging cyber threats to industrial control systems, what strengths and weaknesses in the body of CIP Reliability Standards are revealed? What role can the voluntary development, application, and sharing of best practices play?

Panelists:

- Bill Lawrence, Director of the E-ISAC, NERC
- Carol Hawk, Acting Deputy Assistant Secretary for Cybersecurity for Energy Delivery Systems, U.S. Department of Energy
- Vincent Sritapan, HSARPA Program Manager, Department of Homeland Security
- Matt Rathbun, Chief Security Officer, Microsoft
- Paul Crist, Vice President, Technology Services and CTO, Lincoln Electric System
- Ben Miller, Director, Threat Operations Center Dragos, Inc.
- Marie O'Neill "Neill" Sciarrone, COO, Trinity Cyber LLC

4:45 p.m. Closing Remarks

5:00 p.m. Adjourn