



# Reliability Technical Conference

**Docket No. AD17-8-000**

**Thursday, June 22, 2017**

**9:30 a.m. – 5:00 p.m.**

**9:30 a.m. Opening Remarks**

**9:45 a.m. Introductions**

**10:00 a.m. Panel I: Overview on the State of Reliability**

**Presentations:** As we consider the 2017 State of Reliability report recently issued by the North American Electric Reliability Corporation (NERC), panelists will be asked to address the following questions:

- a. What trends and risks identified in the 2017 State of Reliability report warrant the most attention and effort at this time?
- b. Data and data analysis are increasingly used to measure and assess the reliability of the Bulk-Power System. What are the gaps in our ability to measure system reliability, especially as the Bulk-Power System evolves?
- c. What, if any, actions are needed to improve the reliability standards? What, if any, non-reliability standard actions should the Commission encourage or take on reliability? How has reliability improved as a result of applying the lessons learned from major events, such as the 2003, 2008, and 2011 blackouts? Are we appropriately taking into account lessons learned from other events and “blue-sky” operations to continuously improve reliability?

- d. What are the implications of expanding distributed energy resources (DER) for the Bulk-Power System? What are the potential challenges and benefits of DER to the reliable operation of the Bulk-Power System? For example, the Commission recently modified the *pro forma* Small Generator Interconnection Agreement to require newly interconnecting small generating facilities to ride through abnormal frequency and voltage events and not disconnect during such events. Recent events, such as disconnections of grid-connected solar resources resulting from the Blue Cut fire in California, have suggested that the methods or devices used by inverter-connected generation to monitor voltage and frequency may be of concern. Are the policies currently in place that direct the behavior of inverter connected generation adequate?

**Panelists:**

- Gerry Cauley, President and Chief Executive Officer, North American Electric Reliability Corporation
- Patricia Hoffman, Principal Deputy Assistant Secretary and Acting Assistant Secretary, Office of Electricity Delivery & Energy Reliability, U.S. Department of Energy
- Chairman Asim Haque of the Public Utilities Commission of Ohio, representing NARUC
- Charles King, Vice President and Chief Information Officer, Kansas City Power & Light Company on behalf of EEI
- Steven Wright, General Manager, Chelan Public Utility District on behalf of Large Public Power Council
- Babak Enayati, Lead R&D Engineer, National Grid on behalf of IEEE
- John Twitty, Executive Director, Transmission Access Policy Study Group
- John Hughes, President & Chief Executive Officer, Electricity Consumers Resource Council

**11:15 a.m. Panel II: International Perspectives**

**Presentations:** Electric grids across the world are changing rapidly, given retirements of coal and nuclear generation, the addition of renewable and distributed generation, the decline in load growth, and increasing automation. In addition, countries around the world are introducing and expanding markets, improving transmission planning across international borders, and expanding pipeline infrastructure to facilitate additional gas-fired generation.

- a. What measures is your country taking to address these types of changes?
- b. How is your country implementing and managing distributed resources?
- c. What have been the challenges under your regulatory scheme? How have you responded?

**Panelists:**

- Brian Hewson, Vice President, Consumer Protection & Industry Performance, Ontario Energy Board
- Commissioner Marcelino Madrigal, Mexican Energy Regulatory Commission
- Klaus Dieter Borchardt, Director for the EU Internal Energy Market, Directorate-General for Energy, European Commission

**12:30 p.m. Lunch Break**

**1:30 p.m. Panel III: The Potential for Long-Term and Large-Scale Disruptions to the Bulk-Power System**

**Presentations:** Large-scale and long-term disruptions to the Bulk-Power System have the potential to cause significant human and economic harm. The Commission is interested in discussing how to address new and emerging risks. Presenters will be asked to discuss the following:

- a. Speakers discussed the loss of the Aliso Canyon gas storage facility in California at the 2016 Reliability Technical Conference. What has industry learned from this event and what mechanisms have been put into place to mitigate the impact of the reliance on a single gas storage facility? How have these lessons learned been applied to similar gas storage facilities and the increased dependence of the Bulk-Power System on natural gas across the country? How can the Commission better address the risks of fuel disruptions to the reliable operation of the Bulk-Power System and its ability to recover?
- b. Hazards from a man-made electromagnetic pulse may have significant consequences on the Bulk-Power System. Discuss the research underway on these hazards and the current gaps in knowledge.
- c. Are there other emerging hazards that could have severe and lasting impacts on the Bulk-Power System? What are the biggest issues industry

could face when bringing back the Bulk-Power System from an extended blackout?

- d. Grid resilience includes the ability to withstand and recover from deliberate attacks, accidents, or naturally occurring threats or incidents. Are there steps the Commission should be taking to improve resilience? Does the grid need more hardening for severe weather or other threats?

**Panelists:**

- Mark Lauby, Senior Vice President and Chief Reliability Officer, North American Electric Reliability Corporation
- Dede Subakti, Director, Operations Engineering Services, California Independent System Operator
- Michael Kelly Rivera, Los Alamos National Laboratory
- Dr. George H. Baker, Senior Advisor, Commission to Assess the Threat to the United States from Electromagnetic Pulse Attack
- Randy Horton, Senior Program Manager, Electric Power Research Institute
- Thomas Popik, Chairman and President, Foundation for Resilient Societies
- Sylvain Clermont, Director, Reliability Standards and Regulatory Compliance, Hydro-Québec TransÉnergie

**3:00 p.m. Break**

**3:15 p.m. Panel IV: Grid Security**

**Presentations:** Cybersecurity continues to be a rapidly evolving risk to the Bulk-Power System. CIP Reliability Standards are designed to mitigate the cybersecurity risks to bulk electric system facilities, systems, and equipment, which, if destroyed, degraded, or otherwise rendered unavailable as a result of a cybersecurity incident, would affect the reliable operation of the Bulk-Power System. The 2015 and 2016 cyber-attacks on the electric grid in Ukraine are examples of how cyber systems used to operate and maintain interconnected networks, unless adequately protected, may be vulnerable to cyber-attack.

- a. While controls in the CIP Reliability Standards reduce the risk of cyber-attacks, additional controls or modifications may further mitigate potential impacts on the operation of the Bulk-Power System. Which controls have been most effective? Are there additional controls, modifications, or voluntary actions that should be considered to improve cybersecurity? What partnerships should the Commission form or strengthen to help improve the overall cybersecurity posture of the Bulk-Power System?

- b. A system is only as secure as the people who run and operate it. What can the Commission do to facilitate or encourage a strong cyber workforce?

**Panelists:**

- Marcus Sachs, Senior Vice President and Chief Security Officer, North American Electric Reliability Corporation
- Manimaran Govindarasu, Professor of Computer Engineering, Iowa State University
- Michael Assante, Director Critical Infrastructure and Curriculum Lead for ICS/SCADA, SANS Institute
- Greg Ford, President and Chief Executive Officer, Georgia System Operations Corporation
- David Ball, Director, AEP Transmission Dispatching, American Electric Power
- Nathan Mitchell, Senior Director, Electric Reliability Standards & Security, American Public Power Association
- Commissioner Robert (Bob) Scott, New Hampshire Public Utilities Commission
- Brandon Wales, Director, Office of Cyber and Infrastructure Analysis, U.S. Department of Homeland Security

**4:45 p.m.    Closing Remarks**

**5:00 p.m.    Adjourn**