

# Contingency Planning: Applying Lessons and Developing Resilience

By **TOM GALLOWAY**

**A**s the energy grid becomes more automated, efficient, and digital, it is emerging as a platform for bringing customers the enhanced technology solutions they want. It also makes us more reliant on digital infrastructure and expands the cyberattack surface for our adversaries. Because electric company operators have to be right 100 percent of the time but our adversaries only have to be right once, the electric power sector recognizes the importance of preparing for situations without the benefit of digital control.

We all know that the bulk electric system is remarkably resilient—it is designed to provide multiple layers of defense and is supported by business continuity plans to address loss of critical equipment, control center functions, and energy management system (EMS) capabilities. However, high-impact, low-frequency threats could degrade operating conditions and could impact system reliability. Because energy grid security is a top priority for the electric power industry, we are evaluating new supplemental operating strategies, procedures, and capabilities to support bulk power system operations in extreme circumstances.

The industry-wide GridEx III exercise held in November 2015 helped to define the challenges and to underscore the need to explore degraded-state operations. The response to the cyberattack on grid operations in Ukraine in December

2015 showed that electric systems can be run, albeit in a sub-optimal state, when control systems are damaged or compromised.

Since then, the Electricity Subsector Coordinating Council (ESCC) has asked the North American Transmission Forum (NATF) to assess the operating strategies and reliability tools that are available to the electric power industry should the operations of the bulk electric system be compromised. NATF also is identifying additional areas of work and research to respond if EMS is rendered inoperable.

Working with experts from electric companies across North America, NATF has assessed what would be necessary to operate the energy grid in a degraded state. While there is no single recovery method that is appropriate for all scenarios, we have found key principles that support this contingency planning, including:

- developing alternate communication capabilities to notify stakeholders they can offer or request support; and
- planning and practicing how supplemental operations will be implemented and how they will impact personnel, data distribution, and resources.

Looking ahead, NATF, electric companies, industry partners, and the federal government are researching alternate voice and data communications applications, developing

additional situational awareness tools, building formal strategies and plans for supplemental operations and information sharing, and working with vendors to harden EMS components and streamline recovery processes. Automation of EMS has dramatically advanced the efficiency of the energy grid; however, as these systems continue to develop, they should be designed to accommodate supplemental operations strategies.

Building additional resilience and recovery into the bulk electric system will be an ongoing effort. Whether resorting to manual operations, leveraging secondary and tertiary back-up systems, or operating in other degraded states, the industry is carefully evaluating “extraordinary measures” that can be planned for and practiced so they are not being contemplated for the first time during an incident. **EP**



**TOM GALLOWAY** is president and CEO of North American Transmission Forum (NATF), a voluntary membership community committed to excellence in electric transmission system reliability and resiliency. NATF members represent more than 85 percent of U.S. and Canadian peak-load and high-voltage transmission circuit miles.

*The Electricity Subsector Coordinating Council (ESCC) serves as the principal liaison between the federal government and the electric power sector, with the mission of coordinating efforts to prepare for, and respond to, national-level disasters or threats to critical infrastructure. The ESCC includes electric company CEOs and trade association leaders representing all segments of the industry.*

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