

## Electric Reliability Standards

### Utilities Addressing Compliance with Mandatory NERC Rules

By Tobias Whitney

In March 2007, 83 North American Electric Reliability Corporation (NERC) standards were approved by the U.S. Federal Energy Regulatory Commission (FERC). They are the first set of legally enforceable standards for the North American bulk power system. On June 18, compliance with these reliability standards shifted from voluntary to mandatory as dictated by the U.S. Energy Policy Act of 2005. There are more than 1,400 entities within the North American bulk power system that must adhere to the NERC reliability standards.

The 83 NERC reliability standards define the operational and planning requirements of utilities that use the bulk power system in North America (see Table 1). These requirements help ensure reliable planning and operation of the bulk power system, preventing power failures and blackouts such as the August 2003 event that affected 50 million people in the Northeastern and Midwestern United States and Canada.

#### Compliance and Monitoring

To effectively monitor those 1,400 entities within the system, NERC works with eight regional reliability councils to monitor compliance with the standards and impose enforcement actions when violations are identified. As delegated by FERC, each council carries out the compliance monitoring and enforcement program for its region and is responsible for reviewing and enforcing compliance with all registered entities within the region. NERC oversees each council's compliance monitoring and enforcement process.

#### CIP Standards

The Critical Infrastructure Protection (CIP) Standards remain unapproved by FERC, which stated in its "Notice of Proposed Rulemaking" (NOPR) that NERC will need to make several improvements and clarifications to the standard. NERC anticipates FERC will approve the standards by the first quarter of 2008.

#### NERC Reliability Standard Categories

- Balancing
- Critical infrastructure protection
- Communications
- Emergency operations
- Facilities
- Interchange
- Interconnection reliability
- Modeling and analysis
- Personnel
- Protection and control
- Transmission operations
- Transmission planning
- Voltage and reactive

**Table 1:** The 83 NERC reliability standards are divided into 13 categories.

In addition, key committee members in the U.S. House recently stated that the proposed CIP standards are not adequate, and the industry should be prepared to address more assets than are specified in the standards. In short, the minimum bar has been set, but utilities should expect it to rise in the near future.

This puts most utilities in a difficult spot because the implementation timeline for bulk electric system asset owners has not been modified to allow for the delay in final approval. Penalties for noncompliance, once approved, will be the same as penalties associated with the 83 approved standards.

#### CIP Compliance Planning

Most in the industry assume the NERC CIP standards will be approved as written. The industry is beginning to address compliance to minimize exposure. The following is being done:

1. Senior leadership responsible for ensuring compliance are being identified.
2. Critical facilities that may affect the reliability and stability of the grid are being identified.
3. Key supervisory, control and monitoring systems are being identified for their impact on sustaining reliable operations.
4. Security policy and procedures are being developed and enhanced to comply.
5. Enhanced background checks are being performed to ensure that only authorized employees are operating the grid.



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These actions are just a starting point on the road to compliance. Utilities are challenged to address substation and generation assets with regard to compliance. Larger utilities may have dozens of critical substations and numerous generation facilities that require costly fixes to meet the standard. Technologies used may include:

- Video surveillance and electronic access control systems
- Remote access, VPN and enhanced firewall systems
- Intrusion detection systems and antivirus applications
- Test networks and backup systems

## Risks of Exposure

Bulk power system owners, operators and users are required to register with NERC, comply with all approved reliability standards and report all violations of the reliability standards to their regional reliability council. Penalties can vary depending on the level and frequency of noncompliance. Other factors considered include the risk to the grid, whether an organization self-reported, the timeliness of reporting, the size of the organization and the quality of the mitigation plan. Enforcement measures for noncompliance include fines of between \$1,000 and \$1 million a day; sanctions that impose limitations or restrictions on activities; and remedial action directives designed to correct conditions, practices or other actions posing a threat to reliability.

## Assistance

Workshops have been conducted to educate the industry on the reliability standards and related compliance monitoring and reporting responsibilities of the bulk power system entities. NERC also established a program to assist bulk power system participants with compliance, including identifying issues before they become critical, sharing best practices, supporting training and education, and benchmarking industry performance with these reliability standards.

## Cyber Security Standards

In addition to complying with NERC's mandatory standards, all bulk power systems in North America are required to identify and protect critical cyber assets that control or impact the reliability of the bulk electric systems. All balancing authorities, transmission operators, reliability coordinators and transmission service providers must be auditably compliant with the cyber security standards by mid-2010. Auditably compliant means the responsible entity meets the full intent of the requirement and can demonstrate compliance.

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