ELECTRIC TRANSMISSION 301: NERC and Infrastructure Security

Charles A. Berardesco
Senior Vice President and General Counsel
Agenda

• NERC Overview
• Standards
• Compliance Monitoring and Enforcement Program
• Critical Infrastructure Protection
• Reliability Assessment and Performance Analysis
• Reliability in Canada
• NERC Resource and Contact Information
History of NERC

• Evolution from voluntary, industry-sponsored organization to certified Electric Reliability Organization (ERO)
• Certified as ERO pursuant to section 215 of the Federal Power Act
• Subject to oversight by FERC and Canadian federal and provincial authorities
• Delegation agreements with Regional Entities (REs)
• Reliability Standards became mandatory and enforceable on June 18, 2007
Role of the Regions

- NERC works with eight (8) REs
- Authority delegated pursuant to Section 215(e)(4) of the Act (separate delegation in U.S. and Canada)
- REs enforce Reliability Standards within their geographic boundaries
- May develop Regional Reliability Standards and Regional Variances
- Must comply with the applicable provisions of NERC’s Rules of Procedure and Reliability Standards
NERC’s Statutory Program Areas

• Reliability Standards
• Compliance Monitoring and Enforcement Program
• Organization registration and certification
• Reliability Assessment and Performance Analysis
• Training, Education and Certification
• Situation Awareness
• Infrastructure Security
NERC Perspective on Key Potential Risks

• Changing Resource Mix
  ▪ Coal to natural gas
  ▪ Effect of renewables
  ▪ Effect of distributed generation

• Extreme Physical Events
  ▪ GMD
  ▪ Storms

• Cold Weather Preparedness

• Cyber and Physical Security
  ▪ Responding to nation-state threats
Standards
Stakeholder Accountability

- Standard development process depends on active participation of stakeholders

- Stakeholder technical expertise is essential to standard development process

- Standards must be approved by FERC
  - Order 672: Commission must give “due weight to technical expertise of ERO”
Standards Committee

- Prioritizing standards development activities
- Reviews actions to ensure the standards development process is followed
- Reviews and authorizes Standard Authorization Requests (SARs)
- Manages progress of SARs and standards development efforts
- Reviews and authorizes drafting new or revised standards and their supporting documents
- Makes appointments to drafting teams
Stakeholder Consensus Process

**New/Successive Ballot:**
At this step, the standard is either “new” or significantly changed from the last version posted for comment/ballot. The ballot record starts with no votes and no comments.

**Recirculation Ballot:**
At this step, there have been no significant changes to the standard from the last ballot. The ballot record starts with all votes and comments from the previous ballot.

- Informal Feedback
  - Post Standard for Comment
    - Consider/Respond to Comments
      - Post Standard for Comment/Ballot
        - Consider/Respond to Comments
          - Recirculation Ballot
Major New Standards

- Physical Security
  - Filed with FERC, awaiting approval
  - Requires applicable entities to assess major risk and develop protection plans

- CIP Version 5 Standards
  - Only national and enforceable cyber-security standards
  - Working actively with industry to transition to new standards
  - Response to FERC directives contained in order approving Version 5
Compliance Monitoring and Enforcement Program (CMEP)
CMEP Overview

- Focus on improving bulk power system reliability
  - Prompt reporting
- Protects confidentiality of involved parties
- Regional implementation
  - REs perform compliance monitoring of users, owners and operators on behalf of NERC
- NERC oversight role
  - Active oversight
  - Review of regional implementation
• NERC monitors, assesses and enforces compliance

• CMEP identifies eight (8) monitoring methods:
  - Self-Report
  - Self-Certification
  - Periodic Data Submittal
  - Exception Reporting
  - Complaints
  - Compliance Investigations
  - Compliance Audits
  - Spot Checks

• Over 1,900 entities are subject to over 100 Standards
**Reliability Assurance Initiative**

- Development and enhancement of risk-based compliance and enforcement approaches

- Activities include:
  - The completion of an ERO-wide Compliance Auditor Manual and Handbook
  - ERO-wide consistent methodologies for risk assessment and evaluation of management controls
  - Improvements to self-reporting and streamlined enforcement process, known as Find, Fix, Track and Report
  - Pilots to streamline enforcement and focus resources on those areas that pose a greater risk to reliability and security of the bulk power system
Aggregation Program

**Purpose:**

*Allows applicable registered entities to self-assess issues, identify risk, and mitigate issues posing a minimal risk to reliability*

- Participants will maintain a record of instances of noncompliance with specified Standards
- Minimal risk issues only
- Tracking format by spreadsheet
- Spreadsheet provided to Regional Entities after six months
Enforcement Discretion

**Purpose:**

to identify minimal risk issues which would be recorded and mitigated without triggering an enforcement action

- NERC and the Regional Entities will monitor and log issues tracked for enforcement discretion treatment to refine discretion criteria (including issues regarding risk) and monitor trends
- Only minimal risk issues at this time
End-State RAI Processes

Maturity Continuum

Mature controls / Risk assessment

- Eligible for adjustment in scope, monitoring and related testing
- May be eligible for aggregation/logging
- Presumption of discretion

Controls not provided

- May require increased scope, monitoring or testing
- Not eligible for aggregation/logging
- No presumption of discretion
NERC Critical Infrastructure Protection Department Priorities
CIP Department Priorities

- Critical Infrastructure Protection (CIP) Standards
  - CIP v3 to v Transitioning
- Electricity Sector Information Sharing and Analysis Center (ES-ISAC)
  - ES-ISAC Capability Enhancements
  - Cyber Risk Preparedness Assessments
  - White House Electricity Subsector Cybersecurity Capability Maturity Model
- Coordination of efforts with reorganized Electric Sub-Sector Coordinating Council
- Outreach and Awareness Activities
  - Grid Security Conference
  - Grid Security Exercise
Reliability Assessment and Performance Analysis
Reliability Assessment and Performance Analysis (RAPA)

• Assess, measure, and investigate historic trends and future projections to ensure BPS reliability.
  ▪ Identify the trends
  ▪ Analyze and benchmark the trends
  ▪ Identify solutions and assess needs for BPS reliability improvement
  ▪ Develop solutions to those problems and needs
Reliability and Adequacy Assessments

- Three annual independent reliability assessments prepared, pursuant to authority in FPA 215(g), whereby NERC is required to conduct periodic assessments of the reliability and adequacy of the bulk-power system in North America
  - Long-Term Reliability Assessment
    - 10-year outlook
  - Winter Reliability Assessment
    - Issued in the late fall, which reports on the reliability outlook for the coming winter season
  - Summer Reliability Assessment
    - Issued in the spring, which reports on the reliability outlook for the coming summer season
NERC Reliability Assessments

- Peak demand forecasts
- Resource adequacy
- Transmission adequacy
- Key issues and emerging trends impacting reliability
  - Technical challenges
  - Evolving market practices
  - Potential legislation/regulation
- Regional self-assessment
- Ad-hoc special assessments
Periodic Special Reliability Assessments

- Accommodating High-Levels of Variable Generation
- Impacts of Environmental Regulations
- Smart Grid Reliability Considerations
- Reliability Impacts of Climate Change Initiatives
- Effects of Geomagnetic Disturbances on the BPS
- Natural Gas and Electric Power Dependencies
Performance Analysis of BPS

- Identify and track key reliability indicators as a means of benchmarking reliability performance and measuring reliability improvements
- Include assessing available metrics, developing guidelines for acceptable metrics
- Maintaining reliability performance indicators
- Developing appropriate reliability performance benchmarks
Reliability Risk Analysis and Control

- Works with Events Analysis, Reliability Assessments, and Performance Analysis to identify key reliability risks
- Supports the Reliability Issues Steering Committee (RISC)
- Administers RISC processes for cataloging, analyzing, and controlling reliability risk
Reliability in Canada
Electric Reliability in Canada

- Constitutional authorities
  - Ensures no one dominant/authority perspective
- History of the industry
- Structure and characteristics
- A long history of reliability
- Commitment to, and expectations of, an international ERO
- Ongoing cross-border support and assistance in times of need
A Reliability Assurance Mosaic

- Nine (9) jurisdictions with reliability authority
  - Each has its own regime
  - All committed to working with the ERO
- Some “mature” but all evolving
  - Changes in policies, structures and practices with implications for how reliability is managed
- Compliance oversight and enforcement coming to the fore
Interactions in Canada

- Canadian participation is formally integrated in NERC’s foundation documents
  - But limited Canadian membership/registration in ERO
- Strong, positive engagement with Canadian jurisdictions and stakeholders
  - Federal/Provincial/Territorial (FPT) reliability working group
  - CAMPUT (Canadian Association of Members of Public Utility Tribunals)
  - Key federal departments and agencies (including the Security & Intelligence community)
  - Canadian Electricity Association