ELECTRIC TRANSMISSION 301: NERC and Infrastructure Security

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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

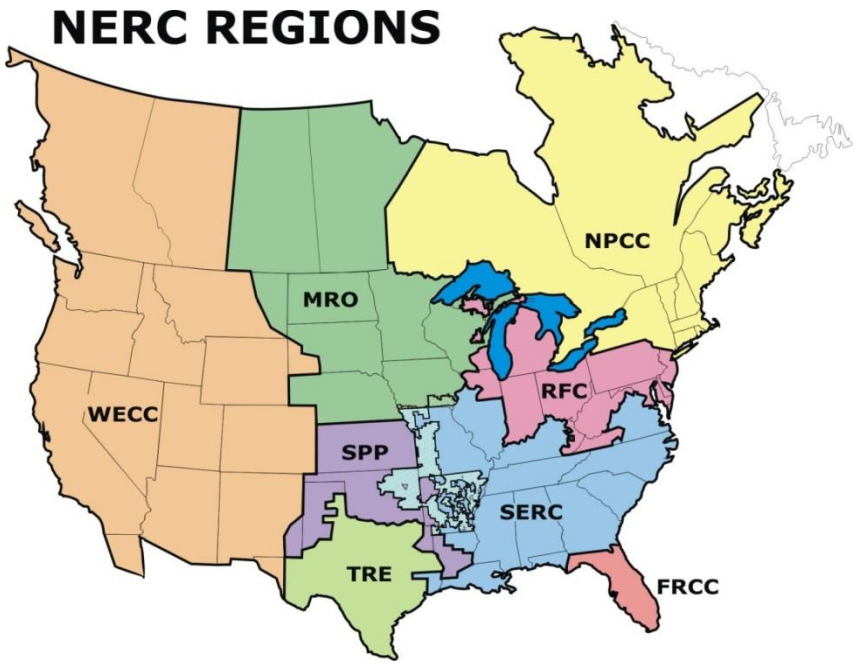
NERC Overview

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

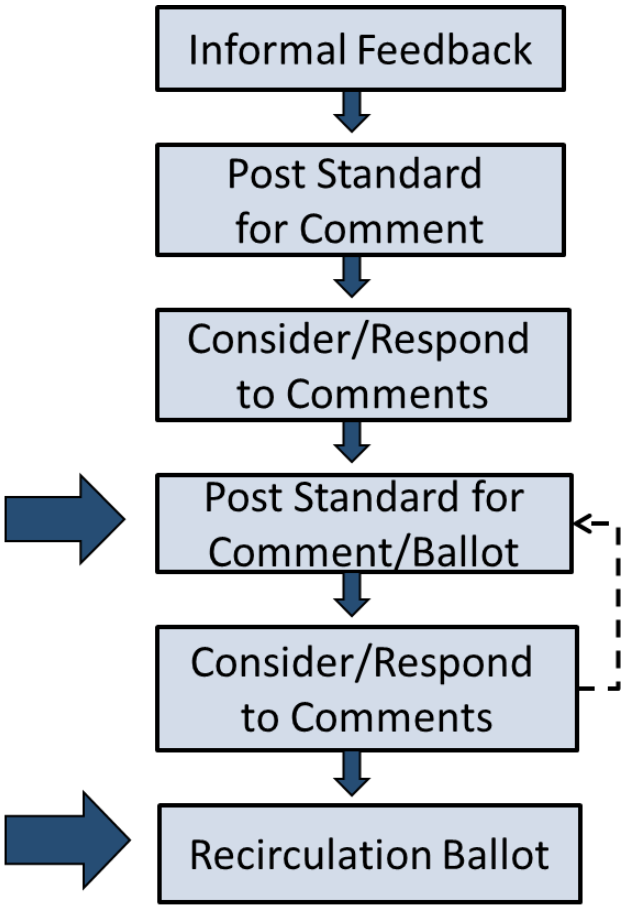
Stakeholder Consensus Process

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.



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

CMEP Overview (Cont'd)

- 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

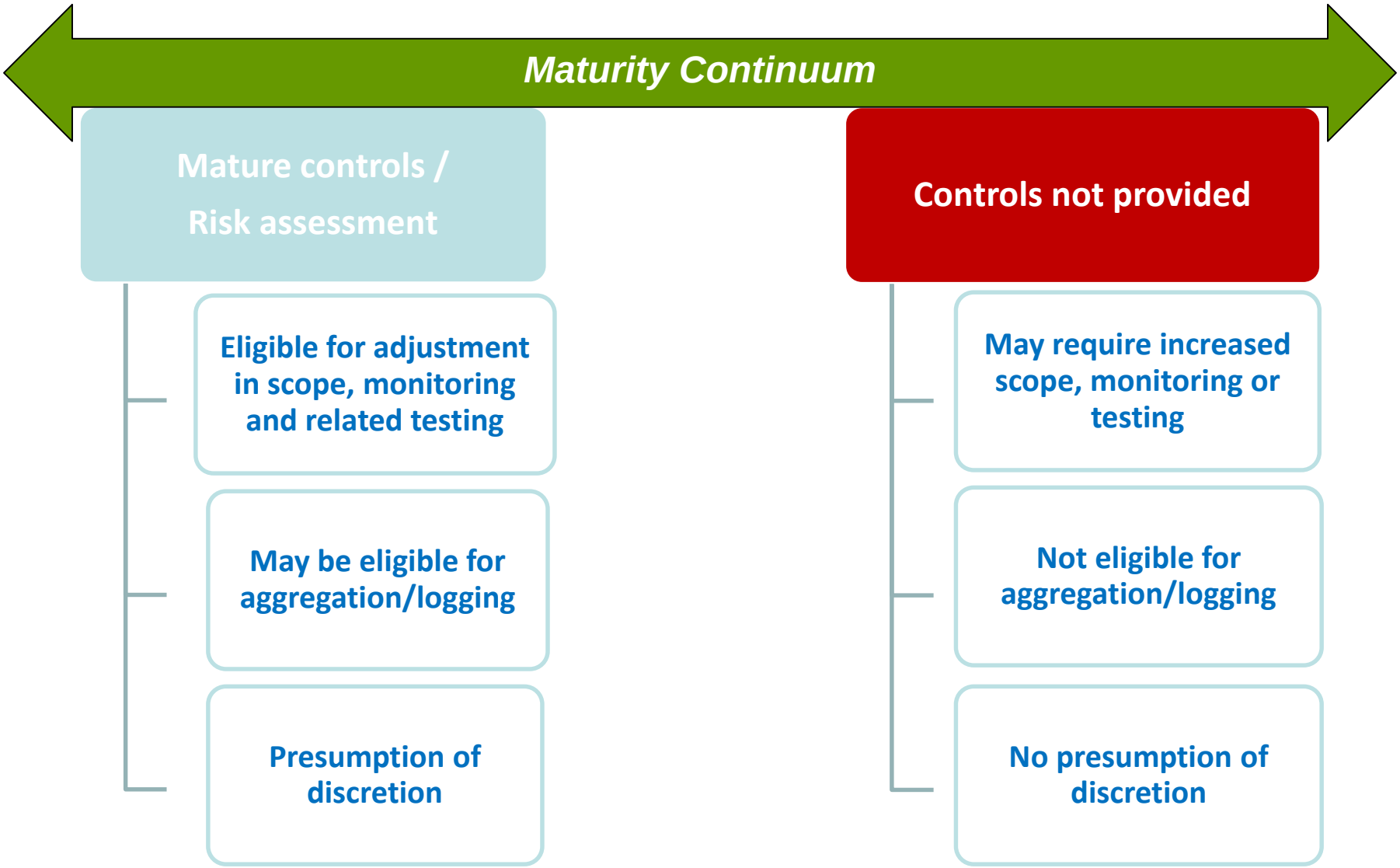
Enforcement Discretion

***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



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