

# WECC

## Enforcement Fundamentals

#### WECC CMEP Staff

#### Introductions





### **Enforcement Fundamentals Overview**

#### Enforcement Background

- Introduction
- Compliance Monitoring and Enforcement (CMEP) Function Fundamentals

#### Noncompliance Reporting

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- Building the Story
- Description of Noncompliance
- Extent of Condition
- Duration
- Risk to BES
- Root Cause
- Mitigation
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#### Noncompliance Processing

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- Findings
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- PNC Review
- Enforcement
- Disposition
- Closing Case

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- References



## Why do we have reliability standards?



Reliability Standards are the direct result of the Northeast blackout on August 14, 2003, in eastern Canada and the United States.

The result of the blackout was the loss of power for 50 million people using 61,800 MW of electric load.

### **System Outage Task Force Investigation**

**U.S.-Canada Power System Outage Task Force** 

**Final Report** on the Implementation of the Task Force **Recommendations** 

Natural Resources Canada **U.S. Department of Energy** 



Canada

September 2006

#### Force Recommendation

**R1.** Appropriate branches of government in the United States and Canada should take action as required to make reliability standards mandatory and enforceable, and to provide appropriate penalties for non-compliance.

To emphasize the importance of making reliability standards mandatory and enforceable, the Task Force focused its first recommendation on this fundamental goal. The recommendation has five components:

mport A. The U.S. Congress should enact the he follow liability provisions proposed in the ng comprehensive energy

onents and identifies dards in the TTO O regulations for the certification of an ERO, review riously, some of the applications from parties seeking certification, discrete, one-time and certify one ERO. e policies or actions

> On February 3, 2006, FERC issued an order pursuant to Subtitle A (Reliability Standards) of EPAct 2005 setting forth requirements for the certifica tion of an ERO.8 NERC was the only application submitted to FERC seeking certification as

bes the actions taken ent of the Group I recmmendations, and identifies any further actions planned to fully implement the recommendations

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<sup>6</sup>Final Blackout Report, p. 141. Energy Policy Act of 2005, Pub. L. No. 109-58 (2005). <sup>8</sup> Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval, and forcement of the Electric Reliability Standards (FERC Order No. 672), 114 FERC \$ 61,104 (2006).

♦ U.S.-Canada Power System Outage Task Force: Final Report on Implementation of Recommendations ♦ 5

**Final Report on the Implementation of Task Force Recommendations: Recommendation** #1

Appropriate branches of government in the United States and Canada should act as required to make reliability standards mandatory and enforceable and to provide appropriate penalties for noncompliance.

### **Mandatory Standards - US**



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The Federal Power Act (Section 215) approved by Congress requires the Electric Reliability Organization (ERO) to develop mandatory and enforceable Reliability Standards, which are subject to Federal Energy Regulatory Commission (FERC) review and approval.



### Mandatory Standards - BC



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The Utilities Commission Act (UCA) was amended in 2009 to establish the MRS Regulation and establish which parties are required to adopt reliability standards.

The UCA provides the British Columbia Utilities Commission the exclusive jurisdiction to determine whether a "reliability standard" is in the public interest and should be adopted in British Columbia.



# **Electric Reliability Organization**

#### NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

- Independent of owners, operators, users.
- Responsible for developing/enforcing
   Reliability Standards as well as conducting and reporting on periodic short- and long-term assessments of grid reliability, including analysis of emerging risks.
- Adheres to rules governing standards development, compliance enforcement, and budgeting.
- NERC is the ERO for the United States, Canada, and a portion of Baja, California Norte Mexico.

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## **History of NERC**



#### Grid Integration

- 1960s
- NERC formed to address reliability issues stemming from the 1965 blackout and greater utility interdependence that resulted from grid integration.

#### Advent of Competition

- 1990s
- Introduction of new non-utility generators and marketers without an obligation to serve; open access to transmission service and retail deregulation.

#### Mandatory Reliability Standards

- 2005
- NERC designated by FERC as the ERO. Spurred by the 2003 Northeast Blackout.



- 2024
- Impact of growth in renewables drives activities.



### **North American Interconnections**

#### **Four Interconnections**

The power systems in Canada and the United States are organized into four physical regions called "interconnections" that enable the coordination of the entities within each region:

- Western Interconnection
- Eastern Interconnection
- Texas (ERCOT) Interconnection
- Quebec Interconnection



https://www.wecc.org/epubs/StateOfTheInterconnection/Pages/the-Bulk-Power-System.aspx

### **Regional Delegation Agreements**



https://www.wecc.org/epubs/StateOfTheInterconnection/Pages/The-Bulk-Power-System.aspx

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#### **Evolution of WECC**



# WECC

#### 1967

Western Systems Coordinating Council formed by 40 power companies

#### 2002

WECC is formed by the merger of the WSCC with the three regional transmission associations

#### 2007

WECC receives delegated authority from NERC and is designated the Regional Entity for the Western Interconnection. CMEP program established.

#### 2014

WECC becomes 501(c)4 not-for-profit with an independent board and separation from all NERC registered functions.



#### **Western Interconnection**





WECC is the Regional Entity responsible for the reliability of the Western Interconnection, which serves over 80 million people and spans 1.8 million square miles in Canada, Mexico, and the United States.

### **WECC Regional Authorities**







#### ALBERTA

WECC has a service agreement with the Market Surveillance Administrator to monitor compliance for one entity in Alberta, the Alberta Electric System Operator (AESO).

#### **BRITISH COLUMBIA**

WECC has an administration agreement with the British Columbia Utility Commission (BCUC) to monitor compliance for BCUC Registered Entities in British Columbia.

#### MEXICO

WECC has a services agreement with Comisión Reguladora de Energía to be the Compliance Monitor for one entity in Baja California Norte, Mexico (CENACE).

#### **UNITED STATES**

WECC has a delegation agreement with NERC, approved by FERC, to monitor compliance for NERC Registered Entities in the U.S. portion of the Western Interconnection.



## **ERO Funding**



The U.S. government and Canadian provincial governments have directed NERC to allocate costs to the end-users who benefit from a reliable BPS.

NERC does this by allocating its operating costs and those of the six Regional Entities to load-serving entities (LSE) based on the net energy needed for their users' energy requirements. The LSEs are then invoiced for their portion of expenses and money distributed to the Regional Entities such as WECC.

Monetary enforcement penalties paid by a Registered Entity are used to offset future assessments.



### **NERC Rules of Procedure**

NERC NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION						
Rules of Procedure						
Effective: November 28, 2023						

С

Section #	Name
100	Applicability of rules of procedure
200	Definitions of terms
300	Reliability standards development
400	<b>Compliance Monitoring and Enforcement</b>
500	Organization Registration and Certification
600	Personnel Certification and Credential Maintenance Program
700	Reliability Readiness Evaluation and Improvement and Formation of Sector Forums
800	Reliability Assessment and Performance Analysis
900	Training and Education
1000	Stipulation Awareness and Infrastructure Security
1100	Annual NERC Business Plans and Budgets
1200	<b>Regional Delegation Agreements</b>
1300	Committees
1400	Amendments to the NERC Rules of Procedure
1500	Confidential
1600	Requests for Data or Information
1700	Challenges to Determinations

### **Rules of Procedure Approved**

114 FERC ¶ 61, 104 UNITED STATES OF AMERICA FEDERAL ENERGY REGULATORY COMMISSION

18 CFR Part 39

(Docket No. RM05-30-000; Order No. 672)

Rules Concerning Certification of the Electric Reliability Organization; and Procedures for the Establishment, Approval, and Enforcement of Electric Reliability Standards

(Issued February 3, 2006)

AGENCY: Federal Energy Regulatory Commission.

ACTION: Final Rule.

<u>SUMMARY</u>: Pursuant to Subtitle A (Reliability Standards) of the Electricity Modernization Act of 2005, which is Title XII of the Energy Policy Act of 2005 (EPAct) and which added a new section 215 to the Federal Power Act (FPA), the Commission is amending its regulations to incorporate:

(1) Criteria that an entity must satisfy to qualify to be the Electric Reliability
 Organization (ERO) which the Commission will certify as the organization that
 will propose and enforce Reliability Standards for the Bulk-Power System in
 the United States, subject to Commission approval;
 (2) Procedures under which the ERO may propose new or modified Reliability
 Standards for Commission review:

The Rules of Procedure incorporates the criteria, procedures, processes, and regulations necessary for the operation of the ERO into a single document.

These were collectively approved as the "Rules of Procedure." (18 CFR Part 39; Docket No. RM05-30-000; Order No. 672)



# Who Must Comply?

NERC NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION
Rules of Procedure
Effective: November 28, 2023

"Where required by applicable legislation, regulation, rule or agreement, all <u>Bulk Power System</u> owners, operators, and users are required to comply with all approved Reliability Standards at all times."

# What is the Bulk Electric System?



The Bulk Power System (BPS) is defined as the facilities and control systems necessary for operating an interconnected electric energy transmission network (or any portion thereof); and electric energy from generation facilities needed to maintain transmission system reliability.

The **Bulk Electric System (BES)** is all transmission elements operated at 100 kV or higher and real power and reactive power resources connected at 100 kV or higher.

### **How is Reliability Defined?**



WECC

### **Reliability Standards by Region**



Alberta Utilities Commission approves AESO-recommended Reliability Standards based on FERCapproved NERC Reliability — Alberta Reliability Standards can be modified as needed BCUC approves BC Hydro-recommended Reliability Standards based on FERCapproved NERC Reliability Standards— BC Reliability Standards must be adopted as-is and cannot be modified CRE approves recommended Reliability Standards based on FERCapproved NERC Reliability standards— Mexico Reliability Standards can be modified as needed FERC approves Reliability Standards proposes NERC Reliability Standards— BC Reliability Standards must be adopted as-is and cannot be modified

## **US Reliability Standards**

#### **Operations & Planning Standards**

NERC 693 Reliability Standards define the reliability requirements for operating and planning the North American BPS.

Based on FERC Order No. 693, issued by the on March 16, 2007.

Critical Infrastructure Protection Standards

NERC 706 Reliability Standards define the reliability requirements for Critical Infrastructure Protection (CIP) of the North American BPS.

Based on FERC Order No. 706, issued by the on January 18, 2008. Inverter-based Resource Standards

NERC 901 Reliability Standards define the reliability requirements for inverter-based resource operating and planning the North American BPS.

Based on FERC Order No.901, issued by the on October 19, 2023.



## **Reliability Standards Types**

Reference	Standard Family
BAL	Resource and Demand Balancing
CIP	Critical Infrastructure Protection
СОМ	Communications
EOP	<b>Emergency Preparedness and Operations</b>
FAC	Facilities Design, Connections, and Maintenance
INT	Interchange Scheduling and Coordination
IRO	Interconnection Reliability Operations and Coordination
MOD	Modeling, Data, and Analysis
NUC	Nuclear
PER	Personnel Performance, Training, and Qualifications
PRC	Protection and Control
ТОР	Transmission Operations
TPL	Transmission Planning
VAR	Voltage and Reactive

## **Reliability Standards**

#### BAL-005-1 – Balancing Authority Control

#### A. Introduction

- 1. Title: Balancing Authority Control
- 2. Number: BAL-005-1
- 3. Purpose: This standard establishes requirements for acquiring data necessary to calculate Reporting Area Control Error (Reporting ACE). The standard also specifies a minimum periodicity, accuracy, and availability requirement for acquisition of the data and for providing the information to the System Operator.
- 4. Applicability:

4.1. Functional Entities:

4.1.1. Balancing Authority

Effective Date: See Implementation Plan for BAL-005-1

#### **B.** Requirements and Measures

- R1. The Balancing Authority shall use a design scan rate of no more than six seconds in acquiring data necessary to calculate Reporting ACE. [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]
- M1. Each Balancing Authority will have dated documentation demonstrating that the data necessary to calculate Reporting ACE was designed to be scanned at a rate of no more than six seconds. Acceptable evidence may include historical data, dated archive files; or data from other databases, spreadsheets, or displays that demonstrate compliance.
- R2. A Balancing Authority that is unable to calculate Reporting ACE for more than 30consecutive minutes shall notify its Reliability Coordinator within 45 minutes of the beginning of the inability to calculate Reporting ACE. [Violation Risk Factor: Medium] [Time Horizon: Reol-time Operations]
- M2. Each Balancing Authority will have dated records to show when it was unable to calculate Reporting ACE for more than 30 consecutive minutes and that it notified its Reliability Coordinator within 45 minutes of the beginning of the inability to calculate Reporting ACE. Such evidence may include, but is not limited to, dated voice recordings, operating logs, or other communication documentation.
- R3. Each Balancing Authority shall use frequency metering equipment for the calculation of Reporting ACE: [Violation Risk Factor: Medium] [Time Horizon: Real-time Operations]
  - 3.1. that is available a minimum of 99.95% for each calendar year; and,

3.2. with a minimum accuracy of 0.001 Hz.

• Title: Provides the name and focus on standard.

- Standard Number: Abbreviation-Number-Version (i.e., BAL-005-1)
- Purpose: This tells us why the standard was established. This gives us the reason that voters decided this was important to include in compliance standard.
- Applicability: What functions must comply with the standard?
- **Effective Date:** When does the entity need to be ready?
- Requirements and Measures, Regional Variances, Interpretations, Associated Documents, Rationale

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### **WECC Organization**



The Reliability and Security Oversight team monitors and enforces compliance with NERC Reliability Standards among all users, owners, and operators of the BES.

### **Reliability and Oversight Functions**



# **Oversight Planning and Analysis: Registration and Certification**



## **Registration & Certification**

NERC AMERICAN ELECTRIC Appendix 5B **Statement of Compliance Registry Criteria Revision 7** Effective: January 19, 2021 RELIABILITY | ACCOUNTABILITY WECC performs the registration and certification activities in accordance with NERC organization registration and certification procedures, which are incorporated into the Rules of Procedure as Appendix 5.

Requirements and activities for the Organization Registration and Certification Program can be found in the NERC Rules of Procedure (ROP), Section 500 (Organization Registration and Certification) and Appendix 5A and Appendix 5B of the FERCapproved NERC Rules of Procedure.

### **Registration and Certification**

#### Registration

Organization Registration ensures that the entities necessary for the reliable operation of the BES are registered for the appropriate registered function(s).

#### Certification

Organization Certification ensures that entities applying to perform the critical Balancing Authority, Transmission Operator and/or Reliability Coordinator reliability functions can perform those functions.



### **Registration: Registration Process**



### **Registration: Registered Functions**

#### Reliability Service Functions

- Reliability Coordinator (RC)
- Transmission Service Provider (TSP)
- Planning Coordinator (PC)
- Balancing Authority (BA)
- Reserve Sharing Group (RSG)
- Frequency Response Sharing Group (FRSG)
- Regulation Reserve Sharing Group (RRSG)

#### Planning and Operating Functions

- Transmission Owner (TO)
- Transmission Operator (TOP)
- Transmission Planner (TP)
- Generator Owner (GO)
- Generator Operator (GOP)
- Distribution Provider (DP)
- Distribution Provider UFLS (DP-UFLS)

#### Standards and Compliance Function

- Standards Developer
- Compliance Enforcement Authority
- Reliability Assurer

#### **Oversight Planning and Analysis: Registration**

NERC Compliance Registry Summary of Entities and Functions as of March 15, 2024*																
Regional Compliance		D	P													
Enforcement Authority****	BA	DP	DP- UFLS	GO	GOP	PA/PC	RC	RP	RSG	FRSG**	RRSG***	то	ТОР	ТР	TSP	Entities
MRO	19	58	14	160	156	4	3	51	2	0	0	76	35	47	8	243
NPCC	6	35	18	131	129	6	5	6	3	0	0	44	18	24	14	208
RF	13	46	3	214	220	2	2	17	1	0	0	39	14	14	2	308
SERC	34	81	12	191	165	27	7	46	4	0	0	70	42	42	21	295
Texas RE	1	20	16	267	195	1	1	1	0	0	0	30	20	26	1	344
WECC	34	72	8	313	256	32	2	50	2	1	0	80	48	63	34	422
Totals	107	312	71	1276	1121	72	20	171	12	1	0	339	177	216	80	1820

	NERC Compliance Registry Summary of Unique Entities and Functions as of March 15, 2024*****																
C.	P																
BA	DP	DP-	GO	GO	GO GOP	GOP	PA/PC	RC	RP	RSG	FRSG**	RRSG***	то	ТОР	TP	TSP	Entities
	51	UFLS															
104	306	71	1217	1037	68	16	165	10	1	0	330	171	209	76	1710		

https://www.nerc.com/pa/comp/Registration%20and%20Certification%20DL/NERC\_Compliance\_Registry\_Matrix\_Excel.xlsx



#### **Oversight Planning and Analysis: Certification**

#### Certifications

- WECC conducts certifications to ensure that entities applying to perform the BA, TOP, or RC reliability functions can perform those functions.
- The certification process is governed by Section 500, including Appendix 5A (Section IV) of the NERC Rules of Procedure.

#### **Certification Reviews**

- Changes to registered entity's footprint
- Relocation of a Control Center
- Modification of the Energy Management System (EMS) that may materially affect CIP security perimeters or the System Operator's: 1) situational awareness tools, 2) functionality, or 3) machine interfaces

### **Risk Analysis**



### **Risk Analysis**

NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION	NERC	
	NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION	
Dulas of I	Compliance Monitoring and Enf	forcement Program
Rules of I	Appendix 4C to the Rules of Procedure	
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Effective: Nov	Table of Contents	
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WECC uses the ERO Enterprise **Risk-based Compliance Oversight** Framework which focuses on identifying, prioritizing, and addressing risks to the BPS, which enables each Regional Entity to direct resources where they are most needed.



### **Risk Analysis Process**

#### 1. Data Collection

- Gather inputs from CMEP operations
- Request inputs needed from Registered Entity

#### 2. Technical Analysis

- Determine appropriate disposition type based on risk.
- Notify the Registered Entity of
- Assess inherent risks of entities
- System events
- Internal controls
- Misoperations

#### 3. Reporting

- Publish Inherent Risk Assessment (IRA)
- Publish Compliance Oversight Plan (COP)



## **Compliance Oversight Plans**



The Compliance Oversight Plan (COP) is an entity-specific report consisting of entity-specific risks identified through analysis of both Inherent Risk Assessment (IRA) and Performance Considerations.

The COP is dynamic, and changes are likely if a registered entity experiences significant changes or assumes new compliance responsibilities, or if new reliability and security risks emerge.

## **Compliance Oversight: Risk Elements**

Risk Elements	Examples				
<ul> <li>Are developed annually to identify ERO-wide risks to the reliability of the BPS as well as mitigating factors to reduce risk.</li> <li>Can be addressed by various tools such as monitoring, outreach, training, and lessons learned.</li> <li>Are used to develop the CMEP Implementation Plan.</li> </ul>	BA Coordination CIP – External Electronic Communication CIP – Impact Rating Criteria CIP – Monitor and Control Capability Critical Transmission Largest Generator Facility Load Planned Facilities	RAS/SPS System Restoration Total Generation Capacity Transmission Portfolio UFLS Development and Coordination UFLS Equipment UVLS Variable Generation Voltage Control Workforce Capability			

## **Compliance Oversight: Risk Categories**

#### **Risk Categories**

#### Examples

- Indicate unmitigated operational risks based on entities' inherent risks (risk factors) and performance of the operational risk.
- The categories are used to understand, monitor, and mitigate known and future unmitigated, operational, and inherent risks.

- Culture of Compliance
- Monitoring History
- System Events
- Internal Controls
- Misoperations
- GADS
- TADS



### **Compliance Oversight: Risk Factors**

	Risk Factors	Examples
•	Risk factors are inherent to a registered entity's configuration and may affect the reliability of the BPS. Risk factors are used Measure an entity's inherent functional risk Inform the Inherent Risk Assessment	Risk Elements Emerging Risks JRO/CFR or other agreements Weather-related events



### Identified Risk to Audit Scope Example

#### **Targeted Risk**

• Access Revocation

#### **Audit Objectives**

• To verify SUNBEAR has effective controls in place to mitigate risks associated with revocation of unescorted physical access and authorized electronic access upon termination. Audit ScopeCIP-004-7: R5



## **Compliance Monitoring** (Entity Monitoring)



## **Entity Monitoring – Compliance Audits**



Compliance audits provide objective analysis used to facilitate decision making and improve performance and operations in Registered Entities and the reliability of the BPS.

The three primary goals of NERC compliance audits are:

- Quality
- Consistency
- Credibility



### **Compliance Monitoring Processes**

WECC monitors compliance with Reliability Standards using one of eight processes.

Each Regional Entity determines the type and frequency of compliance monitoring processes used based on each Registered Entity's specific risks to the reliability of the BPS.





#### **Entity Monitoring—Team Structure**





#### **Entity Monitoring – Audit Cycle Determination**

#### Three-Year Cycle

NERC Rules of Procedure require Compliance Audits at least every three years for:

- BAs
- RCs
- TOPs

#### **Risk-Based**

Compliance Audits for other entities occur based on level of risk informed by Compliance Oversight Plans.



#### **Entity Monitoring – Compliance Audit Phases**

#### Planning

- Determine risk areas, audit objectives, and audit scope; roster audit team.
- Audit Notice Package (120 days before audit); first RFIs.

#### Fieldwork

• Interviews, site visits, verification of performance and controls.

#### Reporting

 Findings, Recommendations, Areas of Concern, Positive Observations.



### **Compliance Enforcement**



# **Compliance Enforcement Function**



The Compliance Enforcement Authority (CEA) shall determine:

(i) whether there have been violations of Reliability Standards by Registered Entities within the CEA's Area of Responsibility, and

(ii) if so, the appropriate Mitigating Activities, and Penalties and sanctions.

#### **Enforcement Assessment**





### **Enforcement Actions**



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