

SCAMPS

2010 Annual Meeting

**SERC Reliability Standards:
Guidance for Compliance**

July 26, 2010

Ed Kilby
Utility Technology
Engineers-Consultants




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From Congress to FERC


From FERC to NERC

From NERC to SERC

From SERC to Us

*(Reliability Compliance from Then to Now
and For The Future???)*

UTILITY TECHNOLOGY
ENGINEERS-CONSULTANTS



Agenda

1. Congress Action 2005
2. FERC, NERC, SERC – Who are they?
3. NERC Compliance Standards
4. Who to Register
5. Standards Development
6. Compliance vs. Non-Compliance – COST?
7. What Results & Who Pays?

1. Congress Action 2005 – Why?

Where were you on Thursday, August 14, 2003, at approximately 4:11 p.m. EDT?

Seven horizontal lines for handwritten notes.

1. Congress Action 2005 – Why?

Where were you on Thursday, August 14, 2003, at approximately 4:11 p.m. EDT?

Cascading Blackout – 4:10:39 p.m. - 4:40 p.m.

- ❖ Impact
 - ❖ US 45 Million People
 - ❖ CN 10 Million People
- ❖ 3,500 MW power surge
- ❖ Shut Down
 - ❖ 508 Generating Units
 - ❖ 265 Power Plants
- ❖ From Connecticut to Wisconsin & Ontario to Ottawa
- ❖ US cost Est. \$4 to 10 Billion

Seven horizontal lines for handwritten notes.

1. Congress Action 2005 – Why?

- ❖ Blackouts Started in 1965
- ❖ Highly Interconnected Electric System
- ❖ NERC formed, Voluntary, Self-Regulated
- ❖ Created Recommended Practices & Standards
- ❖ No System to Formally Penalize Non-compliance

Causes of Outage in 2003 & Other Blackouts

- ❖ Per FERC - 3 "Ts" (Trees, Tools, and Training)
 - ❖ Cause – High-voltage power lines contacted "overgrown trees"
- ❖ Relays/Protection Could Have Contained Spread
- ❖ Systemic No Single Point of Failure

Seven horizontal lines for handwritten notes.

1. Congress Action 2005 – Why?

Bulk Electric System (BES)¹ – As defined by the Regional Reliability Organization, the electrical generation resources, transmission lines, interconnections with neighboring systems, and associated equipment, generally operated at voltages of 100 kV or higher. *Radial transmission facilities serving only load with one transmission source are generally not included in this definition.*

Bulk Power System (BPS)² - Facilities and control systems necessary for operating an interconnected electric energy supply and transmission network (or any portion thereof), and electric energy from generating facilities needed to maintain transmission system reliability. *The term does not include facilities used in the local distribution of electric energy.*

¹NERC Glossary of Terms Used in Reliability Standards – February, 12, 2008
²Section 215(a)(1) and restated and expanded in NERC Rules of Procedure – Statement – March 21, 2008

1. Congress Action 2005 – Why?

- ❖ The North American BES/BPS - One of The Largest, Most Complicated Systems in The World
- ❖ Most Reliable System in The World
- ❖ Yet Blackouts & System Events Are Inevitable
- ❖ Even With Sound Standards - Events Can Occur
- ❖ Results in Disturbances When Standards Are Not Complied To
- ❖ Legislation makes – Compliance to Reliability Standards Both MANDATORY AND ENFORCEABLE

1. Congress Action 2005 – What?

Recommendations – Result of Event

- ❖ Reliability Standards Become Mandatory & Enforceable
- ❖ Establish an Electric Reliability Organization (ERO) (Independent)
- ❖ Strengthen NERC Managed Compliance Program
- ❖ Ensure Cost Recovery For Reliability Expenses
- ❖ Use Penalties As Encouragement For Compliance
- ❖ Correct Direct Causes of August 14, 2003 & Learn from Every Event

1. Congress Action 2005 – What?

Federal Power Act Section 215, 16 U.S.C. §824o, EPOA 2005
Implements a new reliability structure that applies to "users,
owners and operators of the Bulk-Power System" ("BPS"),
including certain public power systems

An "electric reliability organization" (ERO) (the North American
Electric Reliability Corporation, or NERC) develops and enforces
mandatory reliability standards

www.nerc.com

1. Congress Action 2005 – What?

Congress can not legislate "no
more blackouts" but it thinks it
did...

Mark E. Hegerle
Director, Division of Compliance
FERC Office of Electric Reliability
March 16, 2010 - Atlanta, GA

2. FERC, NERC, SERC – Who are they?

FERC - Federal Energy Regulatory Commission

- "Enforcement Agency"
- "Penalty authority: up to \$1 million per violation per day"
- "Penalty reasonable for seriousness of violation"
- "Penalty consider timely remediation efforts"
- "Encourage Culture of Compliance"

NERC - National Electric Reliability Council

ERO - Electric Reliability Organization

SERC – Southeast Reliability Council

2. FERC, NERC, SERC – Who are they?

NERC - National Electric Reliability Council



2. FERC, NERC, SERC – Who are they?

SERC – Southeast Reliability Council



3. NERC Compliance Standards

- ❖ BAL Resource & Demand Balancing
- ❖ COM Communications
- ❖ CIP Critical Infrastructure Protection
- ❖ EOP Emergency Preparedness & Operations
- ❖ FAC Facilities Design, Connections, & Maintenance
- ❖ INT Interchange Scheduling & Coordination
- ❖ IRO Interconnection Reliability Operations & Coordination
- ❖ MOD Modeling, Data, & Analysis
- ❖ NUC Nuclear
- ❖ PER Personnel, Performance, Training, & Qualifications
- ❖ PRC Protection & Control
- ❖ TOP Transmission Operations
- ❖ TPL Transmission Planning
- ❖ VAR Voltage & Reactive

3. NERC Compliance Standards

Culture of Compliance

- ❖ Compliance is the objective of the enforcement program
- ❖ Effective Compliance Practice Requires:
 - ❖ Senior Management Involvement & leadership
 - ❖ Preventive Procedures In Place
 - ❖ Prompt Detection, Correction, & Self-Reporting
 - ❖ Quick Remediation Response
 - ❖ No one model - Entity Is in Best Position Define Risks Avoidance
 - ❖ Training, Training, More Training

4. Who Must Register – Entities that are.....

Organizations will be responsible to register and to comply with approved reliability standards to the extent that they are owners, operators, and users of the bulk power system, perform a function listed in the functional types identified in Section II of this document, and are material to the reliable operation of the interconnected bulk power system as defined by the criteria and notes set forth in this document.¹

¹ Statement of Compliance Registry Criteria (Revision 5.0)

4. Who Must Register – Entities that function as.....

Function Type	Acronym	Definition/Discussion
Balancing Authority	BA	The responsible entity that integrates resource plans ahead of time, maintains load-interchange-generation balance within a BA area, and supports interconnection frequency in real-time.
Distribution Provider	DP	Provides and operates the "wires" between the transmission system and the end-use customer. For those end-use customers who are served at transmission voltages, the Transmission Owner also serves as the DP. Thus, the DP is not defined by a specific voltage, but rather as performing the Distribution function at any voltage.
Generator Operator	GOP	The entity that operates generating unit(s) and performs the functions of supplying energy and interconnected operations services.
Generator Owner	GO	Entity that owns and maintains generating units.
Interchange Authority	IA	The responsible entity that authorizes implementation of valid and balanced interchange schedules between Balancing Authority Areas, and ensures communication of interchange information for reliability assessment purposes.
Load-Serving Entity	LSE	Secures energy and transmission service (and related interconnected operations services) to serve the electrical demand and energy requirements of its end-use customers.

Statement of Compliance Registry Criteria (Revision 5.0)

4. Who Must Register – Entities that function as.....

Planning Authority	PA	The responsible entity that coordinates and integrates transmission facility and service plans, resource plans, and protection systems.
Purchasing-Selling Entity	PSE	The entity that purchases or sells and takes title to energy, capacity, and interconnectal operations services. PSE may be affiliated or unaffiliated merchants and may or may not own generating facilities.
Reserve Sharing Group	RSG	A group whose members consist of two or more Balancing Authorities that collectively maintain, allocate, and supply operating reserves required for each BA's use in recovery from contingencies within the group. Scheduling energy from an adjacent BA to aid recovery need not constitute reserve sharing provided the transaction is ramped in over a period the supplying party could reasonably be expected to load operation in (e.g., ten minutes). If the transaction is ramped in quicker, (e.g., between zero and ten minutes) then, for the purposes of disturbance control performance, the areas become a RSG.
Resource Planner	RP	The entity that develops a long-term (generally one year and beyond) plan for the resource adequacy of specific loads (customer demand and energy requirements) within a PA area.
Transmission Owner	TO	The entity that owns and maintains transmission facilities.
Transmission Operator	TOP	The entity responsible for the reliability of a local transmission system and operates or directs the operations of the transmission facilities.
Transmission Planner	TP	The entity that develops a long-term (generally one year and beyond) plan for the reliability (adequacy) of the interconnected bulk electric transmission system within its portion of the PA area.
Transmission Service Provider	TSP	The entity that administers the transmission tariff and provides transmission service to transmission customers under applicable transmission service agreements.

4. Who Must Register – Entities that function as.....

Standard Number	Requirement Number	Violation Risk Factors	DP	LSE	BA	GO	GP	IA	PA	PSE	RC	RP	RR	RSG	TO	TOP	TP	TSP
FAC-002-0	R1.	MEDIUM	DP	LSE	BA													
FAC-002-0	R1.1.	MEDIUM	DP	LSE	BA													
PRC-004-1	R3.		DP										RR	RSG				
PRC-015-0	R1.	MEDIUM	DP		BA													
TOP-001-1	R4.		DP	LSE	BA													
BAL-001-0	R1.	LOWER			BA													
BAL-001-0	R2.	LOWER			BA													
CIP-001-1	R1.		LSE	BA	GO	GP	IA			RC		RR		TO	TOP		TSP	
CIP-001-1	R2.		LSE	BA	GO	GP	IA			RC		RR		TO	TOP		TSP	
CIP-001-1	R3.		LSE	BA	GO	GP	IA			RC		RR		TO	TOP		TSP	
CIP-001-1	R4.		LSE	BA	GO	GP	IA			RC		RR		TO	TOP		TSP	

4. Who Must Register – Entities that function as.....

SERC Continues to Grow Their Staff as They Look for Additional Participants

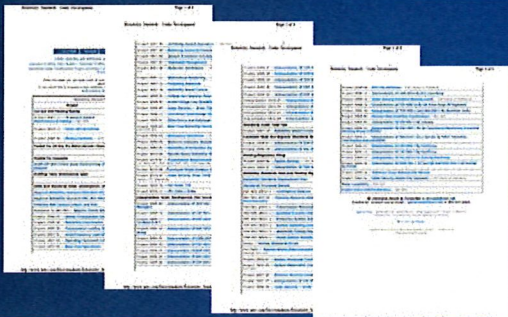
FERC "no gaps in compliance and responsibility"



Region "proactively pursuing an accurate registration"

New Staff to Identify Missing Entities – Solicit Help From Registered Entities

5. Standards Development

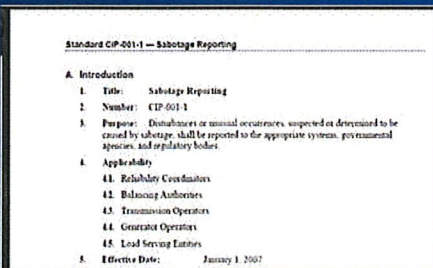


5. Standards Development

New or Revisions to Standards Will Continue

- ❖ Experienced Based (Event Knowledge)
- ❖ Methodology Based
- ❖ Technology Based
 - ❖ Smart Grid
 - ❖ Communication (Wireless)
 - ❖ Protection Requirements

6. Compliance vs. Non-Compliance – COST?



6. Compliance vs. Non-Compliance – COST?

D. Requirements

- R1 Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator and Load Serving Entity shall have procedures for the recognition of and for making their operating personnel aware of substation events in its facilities and outside substation affecting large portions of the transmission system.
- R2 Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator and Load Serving Entity shall have procedures for the transmission of information concerning substation events to appropriate parties in the transmission system.
- R3 Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator and Load Serving Entity shall provide its operating personnel with substation in-plant guidelines, including procedures to conduct the operational disturbance due to substation events.
- R4 Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator and Load Serving Entity shall establish communication channels, as applicable, with local Federal Bureau of Investigation (FBI) or Royal Canadian Mounted Police (RCMP) officials and develop reporting procedures as appropriate to their circumstances.

C. Measures

- M1 Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator and Load Serving Entity shall have and provide upon request a procedure (either electronic or hard-copy) to: Address Requirement 1.
- M2 Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator and Load Serving Entity shall have and provide upon request the procedures or guidelines that will be used to ensure that a given Requirement 2 and 3.
- M3 Each Reliability Coordinator, Balancing Authority, Transmission Operator, Generator Operator and Load Serving Entity shall have and provide upon request evidence that such evidence, but is not limited to procedures, policies, a letter of understanding, communication records, or other reports that evidence that will be used to confirm that a has established communication contacts with the applicable local FBI or RCMP officials to communicate substation events (Requirement 4).

Adopted by Board of Trustees, February 19, 2010
Effective Date: N/A Page 1 of 4

6. Compliance vs. Non-Compliance – COST?

Lessons Learned from 2007-2008 Compliance Assessments
(February 22, 2009)

The following are some examples of standards and requirements for which possible violations have been identified in multiple instances across the SERC Region during compliance assessments conducted during 2007 and early 2008. Clarifications and suggestions are provided for one or more, but not the exclusive, methods to demonstrate compliance with a particular requirement.

- CIP-001 (Substation Reporting)
 - Requirement 4 - No evidence that contact has been established with the FBI for purposes of reporting substation events. Some entities are confused because their first responders are local authorities (sheriff, Local Police), not the FBI. Contact must be established with the FBI, as well as the local authorities. The FBI may direct that local authorities be contacted, who will in turn contact the FBI, but this direction must be documented. Document attempts to contact the FBI to establish substation reporting communications and FBI responses to such contacts. This insufficient to merely identify the phone number or website for the FBI.
 - Requirement 1 - Failure to include process for identification of substation
 - Requirements 1 and 3 - Entry procedures don't address how or how communication of substation event (providing personnel with response guidelines and making operating personnel (not only personnel) aware of events - communication across organization rather than just to law authorities and management. Anyone in an organization should receive a threat or notice of a substation event. All employees must know the procedure for communicating the threat to the proper personnel. Communication of an event or threat must be made to all personnel and to neighboring entities, as applicable.

6. Compliance vs. Non-Compliance – COST?

Most Violated Standards Since 6/18/07
Source: NERC

- ❖ PRC-005 (440)
- ❖ CIP-001 (346)
- ❖ FAC -008 (130)
- ❖ FAC -009 (99)
- ❖ TOP -002 (98)
- ❖ EOP -005 (97)
- ❖ EOP -001 (76)
- ❖ FAC-001 (66)
- ❖ PRC-008 (58)
- ❖ PRC-004 (14)

6. Compliance vs. Non-Compliance – COST?

- ❖ NOP Penalties Filed to Date (153)
- ❖ Covering 984 Violations
- ❖ NOPs – Penalty Range
 - ❖ \$0 Penalty – (720)
 - ❖ \$1,000 to \$10,000 – (51)
 - ❖ \$10,001 to \$99,999 – (33)
 - ❖ \$100,000 to \$250,000 – (13)
- ❖ Orders Extending Time For Action – (8)

7. What Results & Who Pays?

What is the Result?

- ❖ More Reliable Bulk Power System
- ❖ Less Frequent Events
- ❖ Isolated Events
- ❖ WE Are Less Inconvenienced
- ❖ Cost of Non Compliance is Minimized

Who Pays?

Registered Entities

- ❖ Annual Assessment
- ❖ Cost of Compliance
- ❖ Cost of Non Compliance – Penalty Fees

- ❖ Ultimately WE Pay – The Rate Payer

Web Contacts



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