

Transitioning From Existing NERC Operating Policies and Planning Standards to the American National Standards Institute (ANSI) Version 0 Reliability Standards

FERC Reliability Team Analysis May 14, 2004

NERC has developed a plan for accelerating the development and adoption of NERC Reliability Standards. The plan involves the development of a baseline set of reliability standards translated, without substantive technical changes, from the existing Operating Policies, Planning Standards and Compliance Templates. The request for the baseline set of Reliability Standards was submitted under the American National Standards Institute (ANSI) accredited Standards Authorization Request (SAR) Process and is referred to as the "Version 0 Reliability Standards."

FERC Staff (Staff) concludes that NERC's plan for Reliability Standards development needs further development, improvement and clarification. The paper below reviews the NERC process for developing the baseline (Version 0) and tougher (Version 1) standards, offers Staff's concerns about the weaknesses and gaps in those standards, and offers Staff's view of the appropriate priorities for reliability-critical topics NERC and the industry should address first as they develop Version 1 Reliability Standards.

Introduction

The Version 0 Reliability Standards will be the translation of (1) the existing Operating Policies (and approved revisions), (2) the existing Planning Standards and (3) the 38 Compliance Templates (operating and planning) approved by NERC April 2004. The Version 0 Reliability Standards will be (1) developed to be measurable and enforceable, (2) developed to be stated in the language of NERC's Functional Model, and (3) developed using the ANSI process. NERC anticipates adoption of the Version 0 Reliability Standards by its Board on February 8, 2005. After Version 0 is adopted, the currently proposed reliability SARs and draft Reliability Standards will continue development as Version 1 Reliability Standards, adding to or replacing the appropriate Version 0 Reliability Standards, as well as possibly adding new reliability standards.

As the Commission has stated,

The Commission recognizes that entities may be subject to regional reliability standards developed by NERC's regional reliability councils or State agencies. The Commission supports variations

where the transmission provider or relevant entity can demonstrate that regional reliability standards are necessary to account for physical differences in the bulk power system and are no less stringent than, and not inconsistent with, NERC’s reliability standards.[footnote omitted]¹

Staff has classified apparent deficiencies in the translation from existing NERC Operating Policies and Planning Standards to the proposed NERC Reliability Standards into four categories:

1. Existing Operating Policies and Planning Standards that Staff could not map to a compliance template and/or proposed reliability SAR
2. Current and proposed Reliability Standards Staff believes need to be strengthened
3. Existing Operating Policies processes that do not appear in the new Reliability Standards
4. New areas where Reliability Standards should be developed

Staff believes the issues and gaps identified here should be explicitly addressed in Version 1 of the NERC Standards.

Current NERC Standards

Category 1: Existing Operating Policies and Planning Standards that Staff could not map to a compliance template and/or proposed reliability SAR

Staff understands that the translation from existing requirements to the new Reliability Standards is not a direct conversion. In an effort to ensure that existing reliability related policies and standards are represented in the NERC Reliability Standards, Staff mapped all existing requirements to a compliance template and/or proposed reliability SAR(s). Existing requirements that Staff was unable to translate a compliance template and/or proposed Reliability SAR are indicated by color.

Existing	Compliance Template	<u>Proposed Reliability SAR</u>
Operating Policies		
Policy 1 — Generation Control and Performance		
A. Control Performance Standard	P1T1	300 - Balance Resources and Demand
B. Disturbance Control Standard	P1T2, P1T4	
C. Frequency Response Standard		300 - Balance Resources and Demand

¹ Policy Statement on Matters Related to Bulk Power System Reliability, 107 FERC ¶61,052 at P18 (2004).

Existing	Compliance Template	Proposed Reliability SAR
D. Time Control Standard		
E. Automatic Generation Control Standard	P1T4	
F. Inadvertent Interchange Standard		
G. Surveys Standard		
Policy 2 — Transmission		
A. Transmission Operations	P2T1, P2T2	200 - Operate Within Interconnection Reliability Operating Limits
B. Voltage and Reactive Control	P2T1, P2T2	200 - Operate Within Interconnection Reliability Operating Limits
Policy 3 — Interchange (Revised 10/03)		
A. Interchange Transaction Implementation	P3T3	400 - Coordinate Interchange
B. Interchange Schedule Implementation	P3T3	400 - Coordinate Interchange
C. Interchange Schedule Standards	P3T3	400 - Coordinate Interchange
D. Interchange Transaction Modifications	P3T3	
Policy 4 — System Coordination		
A. Monitoring System Conditions		200 - Operate Within Interconnection Reliability Operating Limits
B. Operational Security Information	P4T2	100 - Coordinate Operations
C. Maintenance Coordination	P4T4	100 - Coordinate Operations
D. System Protection Coordination		800 - Design, Install, and Coordinate Control and Protection Systems
Policy 5 — Emergency Operations (Under Revision)		
A. Coordination with Other Systems		1000 - Prepare for and Respond to Abnormal or Emergency Conditions 1100 - Prepare for and Respond to Blackout or Island Conditions
B. Insufficient Generating Capacity	P5T1	1000 - Prepare for and Respond to Abnormal or Emergency Conditions
C. Transmission System Relief	P5T1	1000 - Prepare for and Respond to Abnormal or Emergency Conditions
D. Separation from the Interconnection		1000 - Prepare for and Respond to Abnormal or Emergency Conditions 1100 - Prepare for and Respond to Blackout or Island Conditions
E. System Restoration		1000 - Prepare for and Respond to Abnormal or Emergency Conditions 1100 - Prepare for and Respond to Blackout or Island Conditions
F. Disturbance Reporting		900 - Monitor and Analyze Disturbances, Events and Conditions
G. Sabotage Reporting		
Policy 6 — Operations Planning (Under Revision)		
A. Normal Operations		100 - Coordinate Operations

Existing	Compliance Template	Proposed Reliability SAR
B. Emergency Operations	P6T1	1000 - Prepare for and Respond to Abnormal or Emergency Conditions
C. Automatic Load Shedding		1000 - Prepare for and Respond to Abnormal or Emergency Conditions
D. System Restoration	P6T2	1000 - Prepare for and Respond to Abnormal or Emergency Conditions 1100 - Prepare for and Respond to Blackout or Island Conditions
E. Control Center Backup	P6T3	1000 - Prepare for and Respond to Abnormal or Emergency Conditions
Policy 7 — Telecommunications		
A. Facilities		1200 - Cyber Security (Urgent Action) 1300 – Cyber Security (Permanent)
B. System Operator Telecommunication Procedures		1000 - Prepare for and Respond to Abnormal or Emergency Conditions
C. Loss of Telecommunications		1000 - Prepare for and Respond to Abnormal or Emergency Conditions
D. Security		1200 - Cyber Security (Urgent Action) 1300 – Cyber Security (Permanent)
Policy 8 — Operating Personnel and Training		
A. Responsibility and Authority	P8T1	1400 - Certification of the Balancing Authority Function 1500 - Certification of the Interchange Authority Function 1600 - Certification of the Reliability Authority Function
B. Training		
C. Certification	P8T2	1400 - Certification of the Balancing Authority Function 1500 - Certification of the Interchange Authority Function 1600 - Certification of the Reliability Authority Function
Policy 9 — Reliability Coordinator Procedures (Under Revision)		
A. Next Day Operations Planning Process	P9T1, P9T4	100 - Coordinate Operations 200 - Operate Within Interconnection Reliability Operating Limits
B. Current Day Operations - Energy	P9T4	100 - Coordinate Operations 200 - Operate Within Interconnection Reliability Operating Limits 300 - Balance Resources and Demand
C. Current Day Operations - Transmission	P9T2, P9T3, P9T4	100 - Coordinate Operations 200 - Operate Within Interconnection Reliability Operating Limits
Existing		
Proposed Reliability SAR		
Planning Standards		
I. System Adequacy and Security		
A. Transmission Systems	I.A	500 - Assess Transmission Future Needs and Develop Transmission Plans
B. Reliability Assessment	I.B	500 - Assess Transmission Future Needs and

Existing	Compliance Template	Proposed Reliability SAR
		Develop Transmission Plans
C. Facility Connection Requirements		700 - Define (Physical) Connection Requirements
D. Voltage Support and Reactive Power		500 - Assess Transmission Future Needs and Develop Transmission Plans
E. Transfer Capability		600 - Determine Facility Ratings, Operating Limits, and Transfer Capabilities
F. Disturbance Monitoring	I.F	900 - Monitor and Analyze Disturbances, Events and Conditions
II. System Modeling Data Requirements		
A. System Data	II.A	500 - Assess Transmission Future Needs and Develop Transmission Plans
B. Generation Equipment		
C. Facility Ratings	II.C	600 - Determine Facility Ratings, Operating Limits, and Transfer Capabilities
D. Actual and Forecast Demands		500 - Assess Transmission Future Needs and Develop Transmission Plans
E. Demand Characteristics (Dynamic)		
III. System Protection and Control		
A. Transmission Protection Systems	III.A	800 - Design, Install, and Coordinate Control and Protection Systems
B. Transmission Control Devices		800 - Design, Install, and Coordinate Control and Protection Systems
C. Generation Control and Protection		800 - Design, Install, and Coordinate Control and Protection Systems
D. Under Frequency Load Shedding	III.D	800 - Design, Install, and Coordinate Control and Protection Systems
E. Under Voltage Load Shedding	III.E	800 - Design, Install, and Coordinate Control and Protection Systems
F. Special Protection Systems	III.F	800 - Design, Install, and Coordinate Control and Protection Systems
IV. System Restoration		
A. System Blackstart Capability	IV.A	1100 - Prepare for and Respond to Blackout or Island Conditions
B. Automatic Restoration of Load		1100 - Prepare for and Respond to Blackout or Island Conditions

Staff believes that those topics for which an existing policy and/or standard could not be mapped should be addressed in a Reliability Standard. Second, Staff requests that NERC perform and share a mapping or translation for the Version 0 Reliability Standards to ensure that all existing reliability related polices and standards are addressed, or explain the specific matters that will not be included and why.

Staff Observations

Category 2: Current and proposed Reliability Standards Staff believes need to

be strengthened

Staff believes some proposed Reliability Standards, while they may adequately address existing operating polices, should be strengthened. These include:

- 200 - Operate Within Interconnection Reliability Operating Limits
 - Load shedding of 50% of local load should be done within 10 minutes
 - Reactive power and voltage management should be addressed in greater detail
- 600 - Determine Facility Ratings, Operating Limits and Transfer Capabilities
 - This proposed standard requires documentation of the methodologies and assumptions; however, Commission Staff believes there should be greater specification of appropriate methodologies
 - Confirm, test and validate reactive power output in real-time
 - Explicitly identify nuclear power plant voltage support needs and develop operating limits
- 900 - Monitor and Analyze Disturbances, Events and Conditions
 - This proposed standard should include standardization of disturbance recording requirements (e.g., time synchronization requirements to the National Institute of Standards and Technology) and increased data collection requirements (e.g., power system disturbance recorders)
 - Install Wide-Area Monitoring (WAM) systems
- 1000 - Prepare for and Respond to Abnormal or Emergency Conditions
 - Establish clear definitions for normal, alert and emergency operation system conditions and entry points
 - Communication protocols and content should be developed further
- 1100 - Prepare for and Respond to Blackout or Island Conditions
 - Backup Control Center requirements should be considered

Category 3: Existing Operating Policies processes that do not appear in the new Reliability Standards

Because the proposed Reliability Standards are written as “performance based,” certain processes and procedures currently required ensuring compliance with existing policies and standards are purposely omitted in the proposed Reliability Standards. For example, required processes such as Electronic Tagging (E-tag) in existing “Operating Policy 3 – Interchange” are not required as part of the associated proposed standard “400 - Coordinate

Interchange.” Similarly, procedures such as Transmission Loading Relief (TLR), currently covered in existing “Operating Policy 9.C. Current Day Operations – Transmission” are not included in the proposed Reliability Standards. It is Staff’s understanding that existing processes and procedures, such as E-tagging and TLR will be included as separate documents supporting the relevant proposed Reliability Standard.

Staff believes that, when the existing processes and procedures are translated to separate documents in support of the proposed Reliability Standards, NERC should ensure all existing standard elements have an appropriate place in Version 0 and Version 1 Reliability Standards.

Category 4: New areas where Reliability Standards should be developed

The August 14, 2003 Northeast Blackout brought to light several new areas where Reliability Standards are needed. Staff believes that Reliability Standards should be developed for the following topics:

1. Vegetation Management (It is Staff’s understanding that a draft SAR will be forwarded to the SAC before the end of May)
2. Operator Training
3. Control Center Requirements
 - a. Visualization
 - b. Data requirements for real-time operations
4. Alternative to Transmission Loading Relief procedures for managing congestion during system emergencies
5. Guidelines for System Studies and Modeling (scope, conditions and review process)
6. Data Collection and Sharing for Generator Owners
7. Generation Planning and Integration
8. Demand Resource Integration
9. Distributed Generation Integration

Critical Reliability Standards

Staff believes the following items should be the highest priorities for completion first during the NERC Reliability Standards development process:

- Emergency Operations and Communications
- Operator Training
- Voltage and Reactive Power Management
- Wide-Area Monitoring and Visualization
- Defining Operating Limits

- Adequate Operating Tools
- Vegetation Management

ANSI Process Observations

Staff offers the following observations of the ANSI process used for the development of NERC Reliability Standards:

- ANSI process may be need to be streamlined and explicit deadlines should be used to limit the process duration
- The current Ballot Body may not represent the industry and appropriate expertise
- The current process may water down the technical content and requirements of standards