

## Standard Development Timeline

This section is maintained by the drafting team during the development of the standard and will be removed when the standard is adopted by the NERC Board of Trustees (Board).

### Description of Current Draft

Completed Actions	Date
Standards Committee approved Standard Authorization Request (SAR) for posting	08/19/15
SAR posted for comment	08/20/15 – 09/21/15
Draft Reliability Standard posted for Informal Comment Period	07/14/16 – 08/12/16
45-day formal comment period with ballot	09/29/17 – 11/14/17
45-day formal comment period with ballot	08/24/19 – 10/17/18

Anticipated Actions	Date
45-day formal comment period with additional ballot	June 2020
10-day final ballot	August 2020
NERC Board adoption	November 2020

## A. Introduction

1. **Title:** Establish and Communicate System Operating Limits
2. **Number:** FAC-014-3
3. **Purpose:** To ensure that System Operating Limits (SOLs) used in the reliable operation of the Bulk Electric System (BES) are determined based on an established methodology or methodologies and that Planning Assessment performance criteria is coordinated with these methodologies.
4. **Applicability:**
  - 4.1. **Functional Entities:**
    - 4.1.1. Planning Coordinator
    - 4.1.1.4.1.2. Reliability Coordinator
    - 4.1.3. Transmission Operator
    - 4.1.2.4.1.4. Transmission Planner
5. **Effective Date:** See Implementation Plan for [Project 2015-09](#).

## B. Requirements and Measures

- R1.** Each Reliability Coordinator shall establish Interconnection Reliability Operating Limits (IROLs) for its Reliability Coordinator Area in accordance with its System Operating Limit ~~M~~methodology (SOL ~~M~~methodology). [*Violation Risk Factor: High*] [*Time Horizon: Operations Planning*]
- M1.** Acceptable evidence may include, but is not limited to, dated electronic or hard copy documentation that demonstrates the Reliability Coordinator established IROLs in accordance with its SOL ~~M~~methodology.
- R2.** Each Transmission Operator shall establish System Operating Limits (SOLs) for its portion of the Reliability Coordinator Area in accordance with its Reliability Coordinator's SOL ~~M~~methodology. [*Violation Risk Factor: Medium*] [*Time Horizon: Operations Planning*]
- M2.** Acceptable evidence may include, but is not limited to, dated electronic or hard copy documentation that demonstrates the Transmission Operator established SOLs in accordance with its Reliability Coordinator's SOL ~~M~~methodology.
- R3.** ~~The Each~~ Transmission Operator shall provide its SOLs to its Reliability Coordinator ~~in accordance with its Reliability Coordinator's SOL Methodology.~~ [*Violation Risk Factor: Medium*] [*Time Horizon: Operations Planning, Same-day Operations, Real-Time Operations*]

- M3.** Acceptable evidence may include, but is not limited to, dated electronic or hard copy documentation that demonstrates the Transmission Operator provided its SOLs in accordance with its Reliability Coordinator’s SOL ~~M~~ methodology.
- R4.** Each Reliability Coordinator shall establish stability limits ~~to be used in operations~~ when the limit impacts adjacent Reliability Coordinator Areas or more than one Transmission Operator in its Reliability Coordinator Area ~~or other Reliability Coordinator Areas~~ in accordance with its SOL ~~M~~ methodology. [*Violation Risk Factor: High*] [*Time Horizon: Operations Planning*]
- M4.** Acceptable evidence may include, but is not limited to, dated electronic or hard copy documentation that demonstrates the Reliability Coordinator established stability limits in accordance with Requirement R4.
- R5.** Each Reliability Coordinator shall provide: [*Violation Risk Factor: High*] [*Time Horizon: Operations Planning, Same-day Operations, Real-Time Operations*]
- 5.1** Each Planning Coordinator and each Transmission Planner within its Reliability Coordinator Area, the SOLs for its Reliability Coordinator Area (including the subset of SOLs that are IROLs) at least once every twelve calendar months.
- 5.2** Each impacted Planning Coordinator and each impacted Transmission Planner within its Reliability Coordinator Area, the following information for each established stability limit and each established IROL at least once every twelve calendar months:
- 5.2.1** The value of the stability limit or IROL;
- 5.2.2** Identification of the Facilities that are critical to the stability limit or IROL;
- 5.2.3** The associated IROL  $T_v$  for any IROL;
- 5.2.4** The associated Contingency(ies);
- 5.2.5** A description of ~~the associated~~ system conditions associated with that are specific to the stability limit or IROL; and
- 5.2.6** The type of limitation represented by the stability limit or IROL (*e.g.*, voltage collapse, angular stability).
- 5.3** Each impacted Transmission Operator within its Reliability Coordinator Area, the value of the stability limits established pursuant to Requirement R4 and each IROL established pursuant to Requirement R1, in an agreed upon time frame necessary for inclusion in the Transmission Operator’s Operational Planning Analyses, Real-time monitoring, and Real-time Assessments.
- 5.4** Each impacted Transmission Operator within its Reliability Coordinator Area, the information identified in Requirement R5 Parts 5.2.2 – 5.2.56 for each established stability limit or each IROL, and any updates to that information within an agreed

upon time frame necessary for inclusion in the Transmission Operator's Operational Planning Analyses.

**5.5** Each requesting Transmission Operator within its Reliability Coordinator Area, requested SOL information for its Reliability Coordinator Area, on a mutually agreed upon schedule.

**M5.** Acceptable evidence may include, but is not limited to, dated electronic or hard copy documentation, posting to a secure website, or other electronic means, that demonstrates the Reliability Coordinator provided the information in accordance with Requirement R5.

~~**R6.** Each Transmission Operator and Reliability Coordinator shall use the Bulk Electric System performance criteria specified in the Reliability Coordinator's SOL Methodology when performing OPAs, RTAs, and Real-time monitoring to determine SOL exceedances. [Violation Risk Factor: High] [Time Horizon: Operations Planning, Same-day Operations, Real-time Operations]~~

~~**M6.** Acceptable evidence may include, but is not limited to, dated electronic or hard copy documentation, that demonstrates the Transmission Operator and Reliability Coordinator determined SOL exceedances in accordance with its Reliability Coordinator's SOL Methodology when performing Real-time monitoring, Real-time Assessments, and Operational Planning Analyses. used the Bulk Electric System performance criteria specified in the Reliability Coordinator's SOL methodology when performing OPAs, RTAs and Real-Time Monitoring.~~

~~**R6.** Each Planning Coordinator and each Transmission Planner shall implement a documented process to use Facility Ratings, System steady-state voltage limits and stability criteria in its Planning Assessment of Near Term Transmission Planning Horizon that are equally limiting or more limiting than the criteria for Facility Ratings, System Voltage Limits and stability described in its respective Reliability Coordinator's SOL methodology. [Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]~~

~~• The Planning Coordinator may use less limiting Facility Ratings, System steady-state voltage limits and stability criteria if it provides a technical rationale to each affected Transmission Planner, Transmission Operator and Reliability Coordinator.~~

~~• The Transmission Planner may use less limiting Facility Ratings, System steady-state voltage limits and stability criteria if it provides a technical rationale to each affected Planning Coordinator, Transmission Operator and Reliability Coordinator.~~

~~**M6.** Acceptable evidence may include, but is not limited to, dated electronic or hard copy documentation demonstrating the Planning Coordinator and Transmission Planner implemented its documented process in accordance with Requirement R6.~~

~~**R7.** Each Planning Coordinator and each Transmission Planner shall annually communicate the following information for Corrective Action Plans developed to address any instability identified in its Planning Assessment of the Near-Term Transmission~~

Planning Horizon to each impacted Transmission Operator and Reliability Coordinator. This communication shall include: [Violation Risk Factor: Medium] [Time Horizon: Long-term Planning]

7.1 The Corrective Action Plan developed to mitigate the identified instability, including any automatic control or operator-assisted actions (such as Remedial Action Schemes, under voltage load shedding, or any Operating Procedures);

7.2 The type of instability addressed by the Corrective Action Plan (e.g. steady-state and/or transient voltage instability, angular instability including generating unit loss of synchronism and/or unacceptable damping);

7.3 The associated stability criteria violation requiring the Corrective Action Plan (e.g. violation of transient voltage response criteria or damping rate criteria);

7.4 The planning event Contingency(ies) associated with the identified instability requiring the Corrective Action Plan;

7.5 The System conditions and Facilities associated with the identified instability requiring the Corrective Action Plan.

M7. Acceptable evidence may include, but is not limited to, dated electronic or hard copy documentation demonstrating the Planning Coordinator and Transmission Planner communicated the information in accordance with Requirement R7.

R8. Each Planning Coordinator and each Transmission Planner shall annually communicate any instability, Cascading or uncontrolled separation that adversely impact the reliability of the Bulk Electric System identified in its Planning Assessment of the Near-Term Transmission Planning Horizon to each impacted Transmission Owner and Generation Owner. This communication shall include those Facilities that comprise the Contingency(ies) (planning events only) and any Facilities critical to the instability, Cascading or uncontrolled separation identified. [Violation Risk Factor: Medium] [Time Horizon: Long- term Planning]

M8. Acceptable evidence may include, but is not limited to, dated electronic or hard copy documentation demonstrating the Planning Coordinator and Transmission Planner communicated the information in accordance with Requirement R8.

## C. Compliance

### 1. Compliance Monitoring Process

#### 1.1. Compliance Enforcement Authority:

“Compliance Enforcement Authority” means NERC or the Regional Entity, or any entity as otherwise designated by an Applicable Governmental Authority, in their respective roles of monitoring and/or enforcing compliance with mandatory and enforceable Reliability Standards in their respective jurisdictions.

#### 1.2. Evidence Retention:

The following evidence retention period(s) identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full-time period since the last audit.

The applicable entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

- The Reliability Coordinator, ~~or~~ Transmission Operator, Transmission Planner, Planning Coordinator shall keep data or evidence of Requirements R1 through R8 for the current year plus the previous 12 calendar months.

#### 1.3. Compliance Monitoring and Enforcement Program

As defined in the NERC Rules of Procedure, “Compliance Monitoring and Enforcement Program” refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated Reliability Standard.

### Violation Severity Levels

R #	Violation Severity Levels			
	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	N/A	N/A	N/A	The Reliability Coordinator failed to establish Interconnection Reliability Operating Limits (IROLs) for its Reliability Coordinator Area in accordance with its System Operating Limit Methodology (“SOL <del>M</del> ethodology”) as established in FAC-011-4.
R2.	N/A	N/A	N/A	The Transmission Operator failed to establish SOLs for its portion of the Reliability Coordinator Area in accordance with its Reliability Coordinator’s SOL <del>M</del> ethodology.
R3.	N/A	N/A	The Transmission Operator provided its SOLs to its Reliability Coordinator, but failed to provide its SOLs at the periodicity at which the <u>Reliability Coordinator</u> needs	The Transmission Operator failed to provide its SOLs to its Reliability Coordinator.

			such information to perform its reliability functions.	
<b>R4.</b>	N/A	N/A	N/A	The Reliability Coordinator failed to <del>determine-establish</del> stability limits to be used in operations when the limit impacts <u>an adjacent Reliability Coordinator or</u> more than one Transmission Operator in its Reliability Coordinator Area in accordance with its SOL <del>M</del> methodology.
<b>R5.</b>	The Reliability Coordinator failed to provide one of the items listed in Requirement R5, Parts 5.1 through 5.65.	The Reliability Coordinator failed to provide two of the items listed in Requirement R5, Parts 5.1 through 5.65.	The Reliability Coordinator failed to provide three of the items listed in Requirement R5, Parts 5.1 through 5.65.	The Reliability Coordinator failed to provide four or more of the items listed in Requirement R5, Parts 5.1 through 5.65.
<b>R6.</b>	N/A	N/A	<u>The Planning Coordinator or a Transmission Planner used less limiting Facility Ratings, System steady state voltage limits or stability criteria than the criteria for Facility Ratings, System Voltage Limits or stability described in its respective Reliability Coordinator’s SOL methodology, but failed to</u>	<u>The Planning Coordinator or a Transmission Planner failed to implement a process to ensure that Facility Ratings, System steady state voltage limits or stability criteria used in Planning Assessment are equally limiting or more limiting than the criteria for Facility Ratings, System Voltage Limits or stability</u>

			<u>provide a technical rationale for allowing the use of less limiting Facility Ratings, System Voltage Limits or stability criteria</u> N/A	<u>described in its respective Reliability Coordinator’s SOL methodology.</u> <del>A Transmission Operator or Reliability Coordinator failed to use the Bulk Electric System performance criteria specified in the Reliability Coordinator’s SOL Methodology.</del>
<b>R7.</b>	<u>The Planning Coordinator or a Transmission Planner communicated the identified instability to each impacted Reliability Coordinator and Transmission Operator, but the communication did not contain one of the elements listed in Requirement R7, Parts 7.1 through 7.5.</u>	<u>The Planning Coordinator or a Transmission Planner communicated the identified instability to each impacted Reliability Coordinator and Transmission Operator, but the communication did not contain two of the elements listed in Requirement R7, Parts 7.1 through 7.5.</u>	<u>The Planning Coordinator or a Transmission Planner communicated the identified instability to each impacted Reliability Coordinator and Transmission Operator, but the communication did not contain three elements listed in Requirement R7, Parts 7.1 through 7.5.</u>	<u>The Planning Coordinator or a Transmission Planner communicated the identified instability to each impacted Reliability Coordinator and Transmission Operator, but the communication did not contain four or more of the elements listed in Requirement R7, Parts 7.1 through 7.5.</u>  <u>OR</u> <u>The Planning Coordinator or a Transmission Planner failed to communicate any identified instability, to each impacted Reliability Coordinator and Transmission Operator.</u>

<p><u>R8.</u></p>			<p><u>The Planning Coordinator or a Transmission Planner provided the instability, Cascading or uncontrolled separation information listed in Requirement R8 to the applicable Transmission Owner, and Generation Owner, but failed to provide them annually.</u></p>	<p><u>The Planning Coordinator or a Transmission Planner failed to provide the instability, Cascading or uncontrolled separation information listed in Requirement R8 to the applicable Transmission Owner, and Generation Owner.</u></p>
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**D. Regional Variances**

None.

**E. Interpretations**

None.

**F. Associated Documents**

Implementation Plan

## Version History

Version	Date	Action	Change Tracking
1	November 1, 2006	Adopted by Board	New
2		Changed the effective date to January 1, 2009 Replaced Levels of Non-compliance with Violation Severity Levels	Revised
2	June 24, 2008	Adopted by Board: FERC Order	Revised
2	January 22, 2010	Updated effective date and footer to April 29, 2009 based on the March 20, 2009 FERC Order	Update
2	April 29, 2015 – July 23, 2015	Incorrectly included TOP as the applicable function for Requirement R5. 7/23/15: Corrected to designate R5 as: RC, PA and TP.	Revised
3		Project 2015-09 Adopt revised standard.	Revised