

## Periodic Review Recommendation

### FAC-010-3 - System Operating Limits Methodology for the Planning Horizon

#### Introduction

NERC is required to conduct a periodic review of each NERC Reliability Standard at least once every ten years, or once every five years for Reliability Standards approved by the American National Standards Institute as an American National Standard.<sup>1</sup> The Reliability Standard identified below has been included in the current cycle of periodic reviews. The Review Team is instructed to use the background information and the questions below, along with any associated worksheets or reference documents, to guide a comprehensive review that results in a recommendation that the Reliability Standard should be: (1) reaffirmed as is (i.e., no changes needed); (2) revised (which may include revising or retiring one or more requirements); or (3) retired. If the Review Team recommends a revision to the Reliability Standard, it must also develop a draft Standard Authorization Request (SAR) outlining the proposed scope and technical justification for the revision.

A completed Periodic Review Template and any associated documentation should be submitted by email to the NERC Standards Developer assigned to the project.

#### Applicable Reliability Standard: FAC-010-3 - System Operating Limits Methodology for the Planning Horizon

#### Review Team Members (include name and organization):

1. Chair - Jason Smith, Southwest Power Pool
2. Vice Chair - Vic Howell, Peak Reliability
3. Baj Agrawal, Arizona Public Service Company
4. David Bueche, CenterPoint Energy Houston Electric
5. David Hislop, PJM Interconnection
6. Ruth Kloecker, ITC Holdings
7. Dean LaForest, ISO New England
8. Linwood Ross, Duke Energy
9. Aaron Staley, Orlando Utilities Commission
10. Michael Steckelberg, Great River Energy
11. Dede Subakti, California Independent System Operator

#### Date Review Completed:

<sup>1</sup> NERC Standard Processes Manual 45 (2013), posted at [http://www.nerc.com/pa/Stand/Documents/Appendix\\_3A\\_StandardsProcessesManual.pdf](http://www.nerc.com/pa/Stand/Documents/Appendix_3A_StandardsProcessesManual.pdf).

## Executive Summary of Periodic Review of SOL Standards

The FAC Standard Periodic Review Team (PRT) has completed its initial review of the FAC-010-3, FAC-011-3, and FAC-014-2 Reliability Standards. In addition to the specific periodic review areas presented in the sections below, the review focused on reconciling these three standards with new and revised TPL, TOP and IRO standards that did not exist at the time that the three FAC Standards were drafted and approved.

The PRT concluded that System Operating Limits (SOLs) and the requirements in FAC-010-3 which specify development of an SOL methodology for the planning horizon are not necessary inputs to the Bulk-Electric System (BES) planning process. BES planning is covered under the new TPL-001-4 Standard which provides comprehensive requirements for a variety of contingencies. Therefore, the PRT recommends initiation of a FAC standards project to retire FAC-010-3.

The PRT also recommends initiation of a FAC standards project to revise requirements in FAC-011-3 and FAC-014-2 and to revise the definition of SOL as discussed in separate Periodic Review Recommendations (PRRs). The PRT believes that existing requirements in these standards and the SOL definition contribute to confusion and a lack of consistency in establishing, communicating, and operating within SOLs. The PRT recommends revising the SOL definition to eliminate confusion and to align with the concepts described in the NERC *System Operating Limit Definition and Exceedance Clarification White Paper*<sup>2</sup> ("NERC SOL White Paper"). They also recommend the development of requirements to clearly delineate specific functional entity responsibility for determining and communicating each type of SOL (Facility Rating, voltage limits, voltage Stability, transient Stability) where not already addressed in existing standards (e.g. FAC-008) as well as additional clarification on what qualifies as an Interconnection Reliability Operating Limit (IROL).

### Background Information *(to be completed initially by NERC staff)*

1. Are there any outstanding Federal Energy Regulatory Commission directives associated with the Reliability Standard? (If so, NERC staff will attach a list of the directives with citations to associated FERC orders for inclusion in a SAR.)

Yes

No

2. Have stakeholders requested clarity on the Reliability Standard in the form of an Interpretation (outstanding, in progress, or approved), Compliance Application Notice (CAN) (outstanding, in progress, or approved), or an outstanding submission to NERC's Issues Database? (If there are,

<sup>2</sup>

[http://www.nerc.com/pa/Stand/Prjct201403RvsnstoTOPandIROStndrds/2014\\_03\\_fifth\\_posting\\_white\\_paper\\_sol\\_exceedance\\_20150108\\_clean.pdf](http://www.nerc.com/pa/Stand/Prjct201403RvsnstoTOPandIROStndrds/2014_03_fifth_posting_white_paper_sol_exceedance_20150108_clean.pdf)

NERC staff will include a list of the Interpretation(s), CAN(s), or stakeholder-identified issue(s) contained in the NERC Issues Database that apply to the Reliability Standard.)

Yes

No

3. Is the Reliability Standard one of the most violated Reliability Standards? If so, does the root cause of the frequent violation appear to be a lack of clarity in the language?

Yes

No

Please explain:

4. Does the Reliability Standard need to be modified or converted to the results-based standard (RBS) format as outlined in *Attachment 1: Results-Based Standards*? Note that this analysis is twofold and requires collaboration among NERC staff and the Review Team. First, does the *substance* of the Reliability Standard comport to the RBS principles described in Attachment 1? Second, does the *formatting* of the Reliability Standard need to be changed to comply with the RBS format used for new and revised Reliability Standards? If the answer to either part of this question is “Yes,” the standard should be revised. In the comment field, please indicate what kind of revision will be necessary.

Yes

No

Please explain:

**General Format.** Requirements throughout the standard are not in RBS format as noted by The Independent Experts Review Project Report.

**Requirement R3.** The Independent Experts Review Project concluded that this Requirement is more appropriate as a guideline.

### Questions for the Subject Matter Expert (SME) Review Team

If NERC staff answered “Yes” to any of the questions above, the Reliability Standard probably requires revision. The questions below are intended to further guide the SME review. Some of the questions reference documents provided by NERC staff as indicated in the Background questions above.

1. **Paragraph 81:** Does one or more of the requirements in the Reliability Standard meet criteria for retirement or modification based on Paragraph 81 concepts? Use *Attachment 2: Paragraph 81 Criteria* to make this determination.

Yes

No

Please summarize your application of Paragraph 81 Criteria, if any:

Paragraph 81 Criteria B7 seeks to identify requirements that are redundant with other requirements and are, therefore, unnecessary. FAC-010-3 is redundant with TPL-001-4 as shown in the mapping tables below.

**Requirement R2.** The requirement and subparts specify that the Planning Coordinator's SOL methodology shall provide for reliable BES performance over a variety of System conditions and probable contingencies. The performance requirements are fully covered in TPL-001-4 as follows:

Requirement R2 Mapping	
FAC-010-3	TPL-001-4
2.1 Pre-contingency state	Table 1, Category P0
2.2 - 2.4 Single Contingency performance	Table 1, Category P1 and P2
2.5 - 2.6 Multiple Contingencies	Table 1, Category P3 through P7

**Requirement R3.** The requirement and subparts specify the parameters that must be included in the Planning Coordinator's SOL methodology. Specific details are provided in TPL-001-4, making this requirement no longer necessary.

Requirement R3 Mapping	
FAC-010-3	TPL-001-4
3.1 Study Model	Requirement R1
3.2 Selection of applicable contingencies	Table 1
3.3 Level of detail of system models	Requirement R1 (and referenced MOD standards)
3.4 Uses of Remedial Action Schemes	Covered under definition and Project 2010-05.3
3.5 Anticipated system conditions	R2 Part 2.1, 2.2, 2.4, 2.5
3.6 Criteria for determining IROL and T <sub>v</sub>	R5, R6

2. **Clarity:** If the Reliability Standard has an Interpretation, CAN, or issue associated with it, or is frequently violated because of ambiguity, it probably needs to be revised for clarity. Beyond these indicators, is there any reason to believe that the Reliability Standard should be modified to address a lack of clarity? Consider:
- Is this a Version 0 Reliability Standard? **No**
  - Does the Reliability Standard have obviously ambiguous language or language that requires performance that is not measurable? **Yes (see below)**
  - Are the requirements consistent with the purpose of the Reliability Standard? **Yes**

Should the Reliability Standard should be modified to address a lack of clarity?

- Yes
- No (The PRT recommends retirement of FAC-010-3)

Please summarize your assessment:

R2.3 and subparts are ambiguous and require performance that is not measurable. For example, it is not possible to clearly measure performance for planned or controlled interruption of “some local network customers” as stated in R2.3.1. TPL-001-4 contains clearer requirements, which supports the recommendation to retire FAC-010-3.

3. **Definitions:** Do any of the defined terms used within the Reliability Standard need to be refined?

- Yes
- No

Please explain:

FAC-010-3 is recommended for retirement. Suggested changes to defined terms used in the related FAC standards are discussed in the FAC-011-3 and FAC-014-2 Periodic Review Recommendations.

4. **Compliance Elements:** Are the compliance elements associated with the requirements (Measures, Data Retention, Violation Risk Factors (VRF), and Violation Severity Levels (VSL)) consistent with the direction of the Reliability Assurance Initiative and FERC and NERC guidelines? If you answered “No,” please identify which elements require revision, and why:

- Yes
- No

FAC-010-3 is recommended for retirement.

FAC-010-3 as written does not meet FERC and NERC guidelines because each requirement does not have a corresponding measure.

5. **Consistency with Other Reliability Standards:** Does the Reliability Standard need to be revised for formatting and language consistency among requirements within the Reliability Standard or consistency with other Reliability Standards? If you answered “Yes,” please describe the changes needed to achieve formatting and language consistency:

Yes

No

FAC-010-3 is recommended for retirement.

**Functional Entity Terms.** FAC-010-3 refers to the *Planning Authority* throughout the standard instead of the appropriate term from the NERC Functional Model which is the *Planning Coordinator*.

**Regional Differences Section:** WECC has initiated a project to retire the Regional Differences section.

6. **Changes in Technology, System Conditions, or other Factors:** Does the Reliability Standard need to be revised to account for changes in technology, system conditions, or other factors? If you answered “Yes,” please describe the changes and specifically what the potential impact is to reliability if the Reliability Standard is not revised:

Yes

No

7. **Consideration of Generator Interconnection Facilities:** Is responsibility for generator interconnection Facilities appropriately accounted for in the Reliability Standard?

Yes

No

*Guiding Questions:*

If the Reliability Standard is applicable to GOs/GOPs, is there any ambiguity about the inclusion of generator interconnection Facilities? (If generation interconnection Facilities could be perceived to

be excluded, specific language referencing the Facilities should be introduced in the Reliability Standard.)

If the Reliability Standard is not applicable to GOs/GOPs, is there a reliability-related need for treating generator interconnection Facilities as transmission lines for the purposes of this Reliability Standard? (If so, GOs and GOPs that own or operate relevant generator interconnection Facilities should be explicit in the applicability section of the Reliability Standard.)

### Recommendation

The answers to the questions above, along with a preliminary recommendation of the Review Team, will be posted for a 45-day comment period, and the comments will be publicly posted. The Review Team will review the comments to evaluate whether to modify the initial recommendation, and will document the final recommendation, which will be presented to the Standards Committee.

**Preliminary Recommendation (to be completed by the Review Team after its review and prior to posting the results of the review for industry comment):**

- REAFFIRM
- REVISE
- RETIRE

Technical Justification (*If the Review Team recommends that the Reliability Standard be revised, a draft SAR may be included and the technical justification included in the SAR*):

As discussed above, FAC-010 requirements for the planning entity to have a methodology for determining SOLs in the planning horizon provide little or no reliability benefit. Various criteria contained in other Reliability Standards are used to assess and plan for reliable BES performance in the planning horizon, including Available Transfer Capability, steady-state voltage criteria, and Stability criteria. SOLs determined in accordance with FAC-010 requirements are not a necessary input to planning processes and, in general, the methodology used to determine these SOLs is duplicative of requirements for planning assessments contained in TPL-001-4. For these reasons, FAC-010-3 should be retired.

Some Reliability Standards in the existing body of standards refer to SOLs established by the Planning Coordinator or Transmission Planner. The PRT recommends that the scope of the future standards project to revise FAC standards include a review of the existing body of standards and, where

necessary, development of new or revised requirements to provide for continuity and the flow of reliability information from the planning horizon to the operating horizon.

**Preliminary Recommendation posted for industry comment (date):** May 4, 2015 - June 17, 2015

---

**Final Recommendation (to be completed by the Review Team after it has reviewed industry comments on the preliminary recommendation):**

- REAFFIRM *(This should only be checked if there are no outstanding directives, interpretations or issues identified by stakeholders.)*
- REVISE
- RETIRE

Technical Justification *(If the Review Team recommends that the Reliability Standard be revised, a draft SAR may be included and the technical justification included in the SAR):*

**Date submitted to NERC Staff:**



## Attachment 1: Results-Based Standards

The fourth question for NERC staff and the Review Team asks if the Reliability Standard needs to be converted to the results-based standards (RBS) format. The information below will be used by NERC staff and the Review Team in making this determination.

Transitioning the current body of standards into a clear and concise body of world-class standards will require a comprehensive application of the RBS concept. RBS concepts employ a defense-in-depth strategy for Reliability Standards development where each requirement has a role in preventing system failures, and the roles are complementary and reinforcing. Reliability Standards should be viewed as a portfolio of requirements designed to achieve an overall defense-in-depth strategy and comply with the quality objectives identified in the resource document titled, "[Acceptance Criteria of a Reliability Standard](#)."

Accordingly, the Review Team shall consider whether the Reliability Standard contains results-based requirements with sufficient clarity to hold entities accountable without being overly prescriptive as to how a specific reliability outcome is to be achieved. The RBS concept, properly applied, addresses the clarity and effectiveness aspects of a standard.

A Reliability Standard that adheres to the RBS format should strive to achieve a portfolio of performance-, risk-, and competency-based mandatory reliability requirements that support an effective defense-in-depth strategy. Each requirement should identify a clear and measurable expected outcome, such as: a) a stated level of reliability performance, b) a reduction in a specified reliability risk, or c) a necessary competency.

- a. **Performance-Based**—defines a particular reliability objective or outcome to be achieved. In its simplest form, a results-based requirement has four components: who, under what conditions (if any), shall perform what action, to achieve what particular result or outcome?
- b. **Risk-Based**—preventive requirements to reduce the risks of failure to acceptable tolerance levels. A risk-based reliability requirement should be framed as: who, under what conditions (if any), shall perform what action, to achieve what particular result or outcome that reduces a stated risk to the reliability of the bulk power system?
- c. **Competency-Based**—defines a minimum set of capabilities an entity needs to have to demonstrate it is able to perform its designated reliability functions. A competency-based reliability requirement should be framed as: who, under what conditions (if any), shall have what capability, to achieve what particular result or outcome to perform an action to achieve a result or outcome or to reduce a risk to the reliability of the bulk power system?

Additionally, each RBS-adherent Reliability Standard should enable or support one or more of the eight reliability principles listed below. Each Reliability Standard should also be consistent with all of the reliability principles.

1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards.
2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand.
3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably.
4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained, and implemented.
5. Facilities for communication, monitoring, and control shall be provided, used, and maintained for the reliability of interconnected bulk power systems.
6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions.
7. The reliability of the interconnected bulk power systems shall be assessed, monitored, and maintained on a wide-area basis.
8. Bulk power systems shall be protected from malicious physical or cyber attacks.

If the Reliability Standard does not provide for a portfolio of performance-, risk-, and competency-based requirements or consistency with NERC's reliability principles, NERC staff and the Review Team should recommend that the Reliability Standard be revised or reformatted in accordance with the RBS format.

## Attachment 2: Paragraph 81 Criteria

The first question for the Review Team asks if one or more of the requirements in the Reliability Standard meet(s) criteria for retirement or modification based on Paragraph 81 concepts.<sup>3</sup> Use the Paragraph 81 criteria explained below to make this determination. Document the justification for the decisions throughout and provide them in the final assessment in the Periodic Review Template.

For a Reliability Standard requirement to be proposed for retirement or modification based on Paragraph 81 concepts, it must satisfy **both**: (i) Criterion A (the overarching criterion); and (ii) at least one of the Criteria B listed below (identifying criteria). In addition, for each Reliability Standard requirement proposed for retirement or modification, the data and reference points set forth below in Criteria C should be considered for making a more informed decision.

### ***Criterion A (Overarching Criterion)***

The Reliability Standard requirement requires responsible entities (“entities”) to conduct an activity or task that does little, if anything, to benefit or protect the reliable operation of the BES.

Section 215(a) (4) of the United States Federal Power Act defines “reliable operation” as: “... operating the elements of the bulk power system within equipment and electric system thermal, voltage, and stability limits so that instability, uncontrolled separation, or cascading failures of such system will not occur as a result of a sudden disturbance, including a cybersecurity incident, or unanticipated failure of system elements.”

### ***Criteria B (Identifying Criteria)***

#### **B1. Administrative**

The Reliability Standard requirement requires responsible entities to perform a function that is administrative in nature, does not support reliability and is needlessly burdensome.

This criterion is designed to identify requirements that can be retired or modified with little effect on reliability and whose retirement or modification will result in an increase in the efficiency of the ERO compliance program. Administrative functions may include a task that is related to developing procedures or plans, such as establishing communication contacts. Thus, for certain requirements, Criterion B1 is closely related to Criteria B2, B3 and B4. Strictly administrative functions do not inherently negatively impact reliability directly and, where possible, should be eliminated or modified for purposes of efficiency and to allow the ERO and entities to appropriately allocate resources.

<sup>3</sup> In most cases, satisfaction of the Paragraph 81 criteria will result in the retirement of a requirement. In some cases, however, there may be a way to modify a requirement so that it no longer satisfies Paragraph 81 criteria. Recognizing that, this document refers to both options.

**B2. Data Collection/Data Retention**

These are requirements that obligate responsible entities to produce and retain data which document prior events or activities, and should be collected via some other method under NERC's rules and processes.

This criterion is designed to identify requirements that can be retired or modified with little effect on reliability. The collection and/or retention of data do not necessarily have a reliability benefit and yet are often required to demonstrate compliance. Where data collection and/or data retention is unnecessary for reliability purposes, such requirements should be retired or modified in order to increase the efficiency of the ERO compliance program.

**B3. Documentation**

The Reliability Standard requirement requires responsible entities to develop a document (*e.g.*, plan, policy or procedure) which is not necessary to protect reliability of the bulk power system.

This criterion is designed to identify requirements that require the development of a document that is unrelated to reliability or has no performance or results-based function. In other words, the document is required, but no execution of a reliability activity or task is associated with or required by the document.

**B4. Reporting**

The Reliability Standard requirement obligates responsible entities to report to a Regional Entity, NERC or another party or entity. These are requirements that obligate responsible entities to report to a Regional Entity on activities which have no discernible impact on promoting the reliable operation of the BES and if the entity failed to meet this requirement there would be little reliability impact.

**B5. Periodic Updates**

The Reliability Standard requirement requires responsible entities to periodically update (*e.g.*, annually) documentation, such as a plan, procedure or policy without an operational benefit to reliability.

This criterion is designed to identify requirements that impose an updating requirement that is out of sync with the actual operations of the BES, unnecessary, or duplicative.

**B6. Commercial or Business Practice**

The Reliability Standard requirement is a commercial or business practice, or implicates commercial rather than reliability issues.

This criterion is designed to identify those requirements that require: (i) implementing a best or outdated business practice or (ii) implicating the exchange of or debate on commercially sensitive information while doing little, if anything, to promote the reliable operation of the BES.

### **B7. Redundant**

The Reliability Standard requirement is redundant with: (i) another FERC-approved Reliability Standard requirement(s); (ii) the ERO compliance and monitoring program; or (iii) a governmental regulation (*e.g.*, Open Access Transmission Tariff, North American Energy Standards Board (“NAESB”), etc.).

This criterion is designed to identify requirements that are redundant with other requirements and are, therefore, unnecessary. Unlike the other criteria listed in Criterion B, in the case of redundancy, the task or activity itself may contribute to a reliable BES, but it is not necessary to have two duplicative requirements on the same or similar task or activity. Such requirements can be retired or modified with little or no effect on reliability and removal will result in an increase in efficiency of the ERO compliance program.

### ***Criteria C (Additional data and reference points)***

Use the following data and reference points to assist in the determination of (and justification for) whether to proceed with retirement or modification of a Reliability Standard requirement that satisfies both Criteria A and B:

#### **C1. Was the Reliability Standard requirement part of a FFT filing?**

The application of this criterion involves determining whether the requirement was included in a FFT filing.

#### **C2. Is the Reliability Standard requirement being reviewed in an ongoing Standards Development Project?**

The application of this criterion involves determining whether the requirement proposed for retirement or modification is part of an active Standards Development Project, with consideration for the status of the project. If the requirement has been approved by Registered Ballot Body and is scheduled to be presented to the NERC Board of Trustees, in most cases it will not need to be addressed in the periodic review. The exception would be a requirement, such as the Critical Information Protection (CIP) requirements for Version 3 and 4, that is not due to be retired for an extended period of time. Also, for informational purposes, whether the requirement is included in a future or pending Standards Development Project should be identified and discussed.

#### **C3. What is the VRF of the Reliability Standard requirement?**

The application of this criterion involves identifying the VRF of the requirement proposed for retirement or modification, with particular consideration of any requirement that has been assigned as having a Medium or High VRF. Also, the fact that a requirement has a Lower VRF is not dispositive that

it qualifies for retirement or modification. In this regard, Criterion C3 is considered in light of Criterion C5 (Reliability Principles) and C6 (Defense in Depth) to ensure that no reliability gap would be created by the retirement or modification of the Lower VRF requirement. For example, no requirement, including a Lower VRF requirement, should be retired or modified if doing so would harm the effectiveness of a larger scheme of requirements that are purposely designed to protect the reliable operation of the BES.

**C4. In which tier of the most recent Actively Monitored List (AML) does the Reliability Standard requirement fall?**

The application of this criterion involves identifying whether the requirement proposed for retirement or modification is on the most recent AML, with particular consideration for any requirement in the first tier of the AML.

**C5. Is there a possible negative impact on NERC's published and posted reliability principles?**

The application of this criterion involves consideration of the eight following reliability principles published on the NERC webpage.

**Reliability Principles**

NERC Reliability Standards are based on certain reliability principles that define the foundation of reliability for North American bulk power systems. Each reliability standard shall enable or support one or more of the reliability principles, thereby ensuring that each standard serves a purpose in support of reliability of the North American bulk power systems. Each reliability standard shall also be consistent with all of the reliability principles, thereby ensuring that no standard undermines reliability through an unintended consequence.

Principle 1. Interconnected bulk power systems shall be planned and operated in a coordinated manner to perform reliably under normal and abnormal conditions as defined in the NERC Standards.

Principle 2. The frequency and voltage of interconnected bulk power systems shall be controlled within defined limits through the balancing of real and reactive power supply and demand.

Principle 3. Information necessary for the planning and operation of interconnected bulk power systems shall be made available to those entities responsible for planning and operating the systems reliably.

Principle 4. Plans for emergency operation and system restoration of interconnected bulk power systems shall be developed, coordinated, maintained, and implemented.

Principle 5. Facilities for communication, monitoring, and control shall be provided, used, and maintained for the reliability of interconnected bulk power systems.

Principle 6. Personnel responsible for planning and operating interconnected bulk power systems shall be trained, qualified, and have the responsibility and authority to implement actions.

Principle 7. The reliability of the interconnected bulk power systems shall be assessed, monitored, and maintained on a wide-area basis.

Principle 8. Bulk power systems shall be protected from malicious physical or cyber attacks. (footnote omitted).

**C6. Is there any negative impact on the defense in depth protection of the BES?**

The application of this criterion considers whether the requirement proposed for retirement or modification is part of a defense in depth protection strategy. In other words, the assessment is to verify whether other requirements rely on the requirement proposed for retirement or modification to protect the BES.

**C7. Does the retirement or modification promote results or performance based Reliability Standards?**

The application of this criterion considers whether the requirement, if retired or modified, will promote the initiative to implement results- and/or performance-based Reliability Standards.