Unofficial Comment Form
Project 2015-09 Establish and Communicate System Operating Limits

Do not use this form for submitting comments. Use the electronic form to submit comments on the Project 2015-09 Establish and Communicate System Operating Limits project. The electronic form must be submitted by 8 p.m. Eastern, Monday, November 13, 2017.

Documents and information about this project are available on the project page. If you have questions, contact either Senior Standards Developer, Darrel Richardson at (609) 613-1848 or Al McMeekin at (404) 446-9675.

Preface
The Reliability Standards that address System Operating Limits (SOLs) – FAC-010, FAC-011, and FAC-014 have remained essentially unchanged since their initial versions. Since that time, many improvements have been made to the body of Reliability Standards, specifically those in the TPL, TOP, and IRO families of standards. The former TPL-001, -002, -003, and -004 Reliability Standards have been replaced with TPL-001-4, all of the TOP standards were replaced with the currently effective TOP-001, TOP-002, and TOP-003, and several IRO standards have been replaced as well. One of the primary objectives of Project 2015-09 is to make changes to the FAC standards to create better alignment with the currently effective TPL, TOP, and IRO standards and the revised definitions of Operational Planning Analysis (OPA) and Real-time Assessments (RTA).

Please provide your responses to the questions listed below along with any detailed comments.
FAC-010-3 System Operating Limits Methodology for the Planning Horizon

Background Information
In 2015, the FAC Standard Periodic Review Team (PRT) completed a review of the FAC-010-3, FAC-011-3, and FAC-014-2 Reliability Standards. 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. Regarding FAC-010-3, the PRT concluded that the requirements in FAC-010-3, which specify the development of an SOL methodology for the planning horizon, are not necessary inputs to the Bulk-Electric System (BES) planning process.

In May of 2015, the PRT posted a preliminary recommendation to retire FAC-010-3. Industry comments on this recommendation indicated a general agreement with the PRT position.

NERC Project 2015-09 was initiated later in 2015 to address all PRT recommendations through the formation of a standard drafting team (SDT). The SDT further concluded that the requirements in FAC-010-3 are redundant with TPL-001-4 and no longer provide a necessary reliability function. Furthermore, the SOL Methodology for the planning horizon does not serve a purpose within the operations horizon. Therefore, the SDT proposes the retirement of FAC-010-3 in its entirety.

In addition to the proposed retirement of FAC-010-3, the SDT proposal for a new FAC-015-1 Reliability Standard, along with the proposed revisions contained in FAC-011-4 and FAC-014-3, represent an improvement for planning and operations to better coordinate analysis input assumptions and System performance criteria to address the reliability issues that are ultimately faced in Real-time operations. This proposed construct does not make use of an SOL Methodology applicable to the planning horizon as required to the currently effective FAC-010-3 due to its overall redundancy with TPL-001-4.

Questions
1. The SDT is recommending retirement of FAC-010-3 and has provided justification in the “FAC-010/FAC-015 Rationale” and “FAC-010-3 Mapping Document.” Do you agree that the proposed retirement of FAC-010-3 does not create a reliability gap? Please provide supporting rationale.
   □ Yes
   □ No

   Comments:
   We strongly support the retirement of FAC-010-3 and the SDT rationale.


**FAC-011-4 System Operating Limits Methodology for the Operations Horizon**

**Background Information**
The SDT contends that the requirements in FAC-011-4 improve clarity, reduce redundancy, and create better alignment and continuity with the currently-effective TOP and IRO standards. One of the primary changes in FAC-011-4 is seen in the focus on the establishment of Facility Ratings (FAC-011-4 Requirement R2), System Voltage Limits (FAC-011-4 Requirement R3), and stability limits (FAC-011-4 Requirement R4). The other requirements in FAC-011-4 do not represent a significant departure from the currently-effective FAC-011-3. The SDT’s intent is that the Facility Ratings, the System Voltage Limits, the stability limits, and the IROLs that are used in operations are those that are established in accordance with the proposed FAC-011-4, and are those that are monitored and assessed through OPAs and RTAs to ultimately determine whether the System is performing reliably.

Currently effective FAC-011-3 Requirement R2 requires that the “Reliability Coordinator’s SOL Methodology shall include a requirement that SOLs provide BES performance consistent with the following...” Sub requirements R2.1 and R2.2 proceed to describe the BES performance that is required for the pre-Contingency state (R2.1) and for the post-Contingency state for single Contingencies (R2.2). The mapping document for Requirement R2 and its sub requirements describes the SDT’s assertion that “BES performance” as stated in FAC-011-3, Requirement R2, R2.1 and R2.2 is not determined through SOLs in and of themselves, rather, that “BES performance” is determined through OPAs and RTAs, where SOLs are an input to the OPAs and RTAs. This is a similar construct to the TPL-001-4 wherein Facility Ratings, voltage criteria, and stability criteria are inputs to the Planning Assessment.

Stability limits that are used in OPAs and RTAs are established by developing stability performance criteria and then running studies to determine stability limits that result in System performance within the criteria. These stability limits can be established prior to OPAs and RTAs, or they can be established as part of OPAs and RTAs. The timing of the establishment of stability limits is not as important as the accuracy and applicability of the stability limits. On the other hand, Facility Ratings and System Voltage Limits are direct inputs into the OPAs and RTAs and do not require a “study” such as an OPA or an RTA to establish them. For example, “BES performance” for Facility Ratings is determined through OPAs and RTAs which assess the flow on Facilities in the pre- and post-Contingency states. When unacceptable “BES performance” is identified in an OPA, Transmission Operators (TOPs) and Reliability Coordinators (RCs) are required by the Reliability Standard to develop an Operating Plan to address that unacceptable “BES performance”. Similarly, when unacceptable “BES Performance” is identified in the RTA, TOPs and RCs are required to implement an Operating Plan to address the unacceptable “BES performance.” In accordance with the NERC SOL Whitepaper (and the proposed definition of SOL Exceedance), unacceptable “BES performance” for either the pre-Contingency state or the post-Contingency state translates to SOL exceedance, which serves to prompt the development (for OPAs) or implementation (for RTAs) of Operating Plans. This is a similar construct to the TPL-001-4 whereby unacceptable system performance prompts the development and implementation of a Corrective Action Plan in the Planning Assessment.

The definitions of OPA and RTA include the analyses of the pre- and post-Contingency states, and include language that addresses the expected conditions (OPA) and actual conditions (RTA) such as Facility
outages, load, and generation dispatch. OPAs and RTAs are the assessments for System performance and require the development of Operating Plans (for OPAs) and implementation of Operating Plans (for RTAs) to address any potential (for OPAs) or actual (for RTAs) SOL exceedances identified in the OPA or RTA. As such, the drafting team did not carry forward into FAC-011-4 the concepts of FAC-011-3, Requirement R2, R2.1 and R2.2 pertaining to BES performance. The following part of R2.1 “In the determination of SOLs, the BES condition used shall reflect current or expected system conditions and shall reflect changes to system topology such as Facility outages.” has been retained in FAC-011-4, Requirement R4 Part 4.4 for stability limits which may be “determined” or “calculated” prior to the OPA and RTA. The FAC-011-3 mapping document provides a more detailed justification for not carrying Requirement R2, R2.1 and R2.2 forward in its current form.

FAC-011-3, Requirement R2, R2.3 describes an acceptable System response to single Contingencies. Requirement R2, R2.4 contains the statement, “To prepare for the next Contingency, system adjustments may be made, including changes to generation, uses of the transmission system, and the transmission system topology.” Again, these sub requirements of Requirement R2 address the establishment of SOLs that “provide a certain level of BES performance”. Requirement R2, R2.3 and R2.4 were originally written to be congruous with concepts in the TPL standards that existed at that time. Today, these concepts are found in Table 1 of TPL-001-4. The TPL standards have been improved over the last several years, so the language in FAC-011-3 Requirement R2 does not correlate one-to-one with the various items in Table 1 of TPL-001-4:

<table>
<thead>
<tr>
<th>FAC-011-3 Requirements</th>
<th>Corresponding Items in TPL-001-4 Table 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>R2.3.1. Planned or controlled interruption of electric supply to radial customers or some local network customers connected to or supplied by the Faulted Facility or by the affected area.</td>
<td>1. Items “b, c, and e” under the Steady State &amp; Stability section:</td>
</tr>
<tr>
<td>R2.3.2. Interruption of other network customers, (a) only if the system has already been adjusted, or is being adjusted, following at least one prior outage, or (b) if the real-time operating conditions are more adverse than anticipated in the corresponding studies</td>
<td>b. Consequential Load Loss as well as generation loss is acceptable as a consequence of any event excluding P0.</td>
</tr>
<tr>
<td>R2.3.3. System reconfiguration through manual or automatic control or protection actions.</td>
<td>c. Simulate the removal of all elements that Protection Systems and other controls are expected to automatically disconnect for each event.</td>
</tr>
<tr>
<td>R2.4. To prepare for the next Contingency, system adjustments may be made, including changes to generation, uses of the transmission system, and the transmission system topology.</td>
<td>e. Planned System adjustments such as Transmission configuration changes and re-dispatch of generation are allowed if such adjustments are executable within the time duration applicable to the Facility Ratings.</td>
</tr>
</tbody>
</table>
2. The far right column in Table 1 addresses the allowance of Non-Consequential Load Loss for various Contingency events. For P1 events, Non-Consequential Load Loss is not allowed; however, there is a footnote 12 caveat noted. (See below)

3. For P3 and P6 events (two consecutive single Contingencies with system adjustments between the first -1 event and the second -1 event), Non-Consequential Load Loss is allowed; however, there is a footnote 9 caveat noted (See below)

Footnote 9 – An objective of the planning process should be to minimize the likelihood and magnitude of interruption of Firm Transmission Service following Contingency events. Curtailment of Firm Transmission Service is allowed both as a System adjustment (as identified in the column entitled ‘Initial Condition’) and a corrective action when achieved through the appropriate re-dispatch of resources obligated to re-dispatch, where it can be demonstrated that Facilities, internal and external to the Transmission Planner’s planning region, remain within applicable Facility Ratings and the re-dispatch does not result in any Non-Consequential Load Loss. Where limited options for re-dispatch exist, sensitivities associated with the availability of those resources should be considered.

Footnote 12 – An objective of the planning process is to minimize the likelihood and magnitude of Non-Consequential Load Loss following planning events. In limited circumstances, Non-Consequential Load Loss may be needed throughout the planning horizon to ensure that BES performance requirements are met. However, when Non-Consequential Load Loss is utilized under footnote 12 within the Near-Term Transmission Planning Horizon to address BES performance requirements, such interruption is limited to circumstances where the Non-Consequential Load Loss meets the conditions shown in Attachment 1. In no case can the planned Non-Consequential Load Loss under footnote 12 exceed 75 MW for US registered entities. The amount of planned Non-Consequential Load Loss for a non-US Registered Entity should be implemented in a manner that is consistent with, or under the direction of, the applicable governmental authority or its agency in the non-US jurisdiction.

Automatic control actions relevant to the establishment of stability limits are addressed in FAC-011-4, Requirement R4, Part 4.6 which requires the SOL Methodology to describe the allowed uses of Remedial Action Schemes (RAS) and other automatic post-Contingency mitigation actions as part of stability limit establishment. Accordingly, any RAS or automatic mitigation scheme (which includes those that interrupt customers or reconfigure the System) are required to be reflected in the establishment of stability limits.
However, insofar as FAC-011-3, Requirement R2, R2.3 and R2.4 correlate to “how the system is supposed to be operated”, the operational decisions related to customer interruption and System reconfiguration are governed by the Operating Plan. The SDT contends that TOPs need to have the flexibility in their Operating Plan(s) to address the wide-ranging operational issues they may encounter, including the interruption of other network customers if the RTA identifies unacceptable System performance. This may be necessary to return the System to an acceptable state of pre and post-Contingency System performance for subsequent RTAs (i.e., N-1 secure state) after a Contingency event occurs. In the SDT’s opinion, FAC-011-3, Requirement R2, R2.3.1 would be better addressed by a reliability guideline regarding Consequential Load Loss; however, the SDT notes that recent clarifications to the definition of Bulk Electric System (BES) excluded the Facilities described in Requirement R2, R2.3.1. As such it would be counter-intuitive and confusing to reference such Facilities in a NERC reliability guideline. FAC-011-3, Requirement R2, R2.3.2 (b) has become obsolete since the 30-minute RTA requirements in the IRO and TOP standards have become effective. Since the RTA is conducted at least once every 30 minutes and requires implementation of an Operating Plan for unacceptable system performance, the Real-time conditions will not be “more adverse than anticipated in the corresponding studies”. Accordingly, the SDT sees no need for retaining these requirements which may restrict how TOPs are allowed to operate the System (e.g. interruption of customers/load). Such guidance is better suited for a reliability guideline on Operating Plans rather than a NERC Reliability Standard.

Questions

2. Given the background discussion and the justification provided in the mapping document for FAC-011-3, Requirement R2, R2.1 and R2.2, do you agree that BES performance is adequately covered and that no reliability gaps are introduced from the removal of those concepts in a revised FAC-011-4? If not, please explain specifically what aspects of the removal you disagree with and propose alternative language.

☐ Yes
☐ No

Comments:

3. Given the background discussion and the justification provided in the mapping document for FAC-011-3, Requirement R2, R2.3 and R2.4, do you agree that BES performance is adequately covered and that no reliability gaps are introduced from the removal of those concepts in a revised FAC-011-4? If not, please explain specifically what aspects of the removal you disagree with and propose alternative language.

☐ Yes
☐ No

Comments:
We think the removal of BES performance from R2 is relevant, but that the performance requirements associated with determination of stability limits associated with SOLs are vague compared to the TPL assessments. Is the SDT intent to let full flexibility to the RC with regards to stability performance requirements per requirement 4.1? For example, is a unit pulling out of synchronism something up to the RC to demonstrate as acceptable for the purpose of determining SOLs/IROLs for a given interface?

4. Are there any reliability objectives of FAC-011-3, Requirement R2, R2.3 and R2.4 that you maintain need to be preserved in requirements relating to the development of Operating Plans which would reside outside the FAC family of standards? Please explain your response.

☐ Yes
☐ No

Comments:
We think actions allowed in real-time operations should not be part of FAC-011, but captured by TOP/IRO standards. We think there is ambiguity and a lack of consistency in the industry around allowed system adjustments and preparation for the next contingency (old R2.4) with refers indirectly to N-1-1 situations. Although it is clear that FAC-011 requires, at a minimum, to consider a set of single contingencies to address stability limits, it is not clear at all what are the minimum requirements applicable if the contingency was to occur... and how “preparing for the next contingency” is addressed by the current standards.

5. In the Final Report on the August 14, 2003 Blackout in the United States and Canada: Causes and Recommendations, the Federal Energy Regulatory Commission (FERC) classified underfrequency load-shedding schemes (UFLS) as a “safety net” and stated that UFLS should not be a tool used by Bulk Electric System operators in the derivation of stability limits. In Order 763, FERC asserted that UFLS “provide last resort system preservation measures.” The SDT agrees with the FERC, and has footnoted Requirement R4, Part 4.6 of proposed FAC-011-4 to state:

“The planned use of underfrequency load-shedding (UFLS) is not allowed in the establishment of stability limits.”

With regard to undervoltage load-shedding schemes (UVLS), FERC states in Order 818 (Order) that they are “[not] persuaded by [the] argument that UVLS programs should be considered in operations planning and real-time operations. We understand that [the argument] refers to the consideration of UVLS programs in the derivation of Interconnection Reliability Operating Limits (IROLs) for Category B contingencies as defined in the currently-effective transmission planning standard TPL-002-0b (commonly known as N-1 contingencies under normal system operation).” With this understanding, we disagree [...] on the relevance of using UVLS in the derivation of IROLs for N-1 contingencies. The 2003 Canada-United States Blackout Report stated that “[s]afety nets should not be relied upon to establish transfer limits.” This statement is consistent with the performance criteria established in TPL-002-0b and TPL-001-4, which generally prohibit the loss of non-consequential load for certain N-1 Contingencies. We conclude that UVLS programs under PRC-010-1 are examples of such “safety nets”
and should not be tools used by bulk electric system operators to calculate operating limits for N-1 contingencies.”

While the Order clearly addresses the prohibition of using UVLS for calculating SOLs for single (N-1) Contingencies, the Order does not address the use of UVLS for calculating SOLs for Contingencies more severe than single (N-1) Contingencies, for example for N-1-1 operations scenarios or for N-2 Contingencies such as breaker failure Contingencies or common tower Contingencies that may be deemed credible for operations. For this reason, the proposed FAC-011-4, Requirement R4, Part 4.6 does not specifically address the use of UVLS, but allows the RC to describe its allowed use as an “other automatic post-Contingency mitigation action” within its SOL Methodology.

Do you agree that the SDT should allow the use of UVLS in the establishment of stability limits? If not, please explain and provide alternative language.

☐ Yes
☐ No

Comments:
We agree with the allowed use of UVLS under certain conditions, but we strongly disagree with the way the SDT has addressed the allowed use of UFLS and UVLS in the new FAC-011. Since R5 gives some flexibility to the RC to choose its method for considering various types of contingencies (N-1, N-2, etc.) for both OPA/RTA and stability limits, the acceptable actions in R4.6 should not be limited as they can vary a lot depending on the types of contingencies considered. For example, a RC considering only the minimum single contingencies from R5.1 may not be allowed to use UFLS and UVLS actions for N-1… but another RC may choose to establish stability limits and limit transfers accordingly to address more stringent and rare multiple contingencies for which additional means like the action of UFLS/UVLS may be allowed (if that same RC would choose not to plan a stability limit for those contingencies, it would be acceptable to use UFLS/UVLS as a safety net?). Similarly, the reference to UVLS in SVL requirement R2 is not adequate, as SVL may comprise multiple levels, some for acceptable for single contingencies (without UVLS), some with some UVLS actions allowed for multiple contingencies.

We think that the consequence of the action (e.g. the use of non-consequential load loss as in TPL) should be used throughout the standards to allow the use of actions for specific contingencies (rather than referring to RAS, UFLS or UVLS).

6. If you have any other comments that you haven’t already provided in response to questions 2-5, please provide them here.

Comments:
1- We support the harmonization and approach to the new standards for the establishment of SOLs. However, we do have an important concern regarding the way the use of UVLS and UFLS in the establishment of stability limits was incorporated in the FAC-011-4 requirements. Although the
requirements give good flexibility to the RC in identifying the set of contingencies applicable for SOL determination, they also impose performance requirements (SVLs and limited use of UFLS/UVLS) that do not make any distinction between the mandatory single contingencies and the complimentary multiple contingencies. Since the RC has flexibility to identify the relevant contingencies beyond the minimum requirements from R5.1.1, it should also have flexibility in the performance requirements for the allowed use of mitigation actions.

2- We think the level of description in sub-requirements R3.X for System Voltage Limits is a burden without added benefit to reliability. Why so much details for SVL and not for Facility Ratings? R3.5-3.7 are not needed. If coordination is an issue, it should be addressed in a single requirement for the whole standard. R3.2 is redundant with the application of FR in R2. R3.3 is an issue that should be addressed with the allowed used of UVLS under certain circumstances, not captured by SVL requirements. Different SVLs may be used for different contingencies, not just N-1. R3.4 is redundant with SVL definition.

3- R4.2 is a redundant cross-reference with 4.1 and R5 and does not bring any benefit to the remaining of the standard. R4.3 also is redundant since the RC has to describe how stability limits are established per R4 whether or not multiple TOPs are involved.

4- Concerning the selection of contingencies, it is understood that the RC has full flexibility to determine the appropriate multiple contingencies for its System, correct? If that is the case, the proposed standard should allow the same flexibility for the performance requirements associated with those contingencies, namely the use of UVLS and UFLS.

5- Although we appreciate the standard’s flexibility regarding the stability performance requirements in R4.1, there seems to be a lack of guidelines and minimum expected performance as in TPL (no mention of Cascading, instability, etc.).
**FAC-014-3 Establish and Communicate System Operating Limits**

**Background Information**

FAC-014-2 provides the requirements for the establishment and communication of SOLs by operating and planning entities. The requirements in this standard prescribe the responsibilities for establishing SOLs and list the defined set of entities which receive the established SOLs and other related information. This standard works with FAC-010-3 and FAC-011-3 in a coordinated effort to establish and distribute SOL information.

Given the SDT proposal to retire FAC-010-3 and to adopt FAC-015-1 (whitepaper), there is no longer a need for planning entities (Planning Authorities and Transmission Planners) to establish and distribute SOLs. As a result, the SDT proposes revising the function of FAC-014 in revision three to provide the requirements necessary for operating entities to establish SOLs and to disburse their SOLs, and other related information, to a defined set of entities. With removing the need for planning entities to have an SOL methodology and to establish and communicate SOLs, Requirements R2, R3 and R4 from FAC-014-2 are removed in the SDT’s proposed FAC-014-3. Also, Requirement R6, and subparts 6.1 and 6.2, are augmented and included in the SDT’s proposed FAC-015-1, Requirement R6. The remaining operations related requirements in FAC-014-2 were kept or altered for improvement in the SDT’s proposed FAC-014-3 revision. Questions related to the removal of Requirements R2, R3, and R4 from FAC-014-2 are not included in this comment form. Rather, they are included in the comment forms related to the retirement of FAC-010-3 and the addition of FAC-015-1. Accordingly, please refrain from addressing the removal of these requirements when providing comments for FAC-014-3.

**Questions**

7. The SDT is proposing to divide existing Requirement R1 of FAC-014-2 into three requirements in FAC-014-3 to clearly indicate which entities have the responsibility for establishing Interconnection Reliability Operating Limits (IROLs) [the RC], System Operating Limits (SOLs) [the TOP] and stability limits that impact more than one TOP in its Reliability Coordinator Area [the RC] into proposed Requirements R1, R2, and R4, respectively. Do you agree with the proposed changes? If not, please explain.

☐ Yes  ☒ No

Comments:

We agree with R1 and R2, but we don’t see the need to specifically require the RC to establish stability limits per R4 when more than one TOP is impacted. This should be addressed through the determination of SOL/IROLs per R1 and R2 in FAC-014 and the requirement that the methodology from FAC-011 include the method for determining stability limits. There is an unnecessary redundancy.
8. Existing FAC-014-2, Requirement R5, R5.2 requires the Transmission Operator (TOP) to provide its SOLs to its Reliability Coordinator (RC) and Transmission Service Providers (TSPs) that share its portion of the RC Area. The SDT is proposing in Requirement R3 of FAC-014-3 to exclude the TSPs from that communication chain. Other requirements in existing standards (MOD-028-2, Requirement R7, MOD-029-2a, Requirement R4, and MOD-030-3, Requirement R2.6) require the TOP to provide the Total Transfer Capabilities (TTCs), Total Flowgate Capabilities (TFCs), along with supporting information and assumptions to TSPs. Because the TTCs and TFCs already reflect the impact(s) of any SOLs, the SDT deemed retention of the existing language unnecessary. Do you agree with the proposed change? If not, please explain.

☐ Yes
☐ No

Comments:

9. The SDT relocated the reliability objectives of existing Requirement R6 of FAC-014-2 into Requirement R6 of proposed Reliability Standard FAC-015-1 such that all Planning Coordinator and Transmission Planner responsibilities will be housed within one standard. Do you agree with the proposed change? If not, please explain.

☐ Yes
☐ No

Comments:

10. If you have any other comments that you haven’t already provided in response to questions 7-9, please provide them here.

Comments:

The use of the existing wording from FAC-014-2 “Facilities that are critical to the derivation of the IROL” causes a lot of confusion as to the mean of the word “critical”. The corresponding list of Facilities is referenced by other standards (e.g. CIP-002) with a major impact on compliance to those standards. With lack of clarity and guidelines on the intent regarding the “critical Facilities” that should be included per this requirement. The addition of “stability limits” causes even more confusion, as it is now understood that Facilities impacting SOLs stability limits not considered IROLs should be included on that list. The SDT should rework the purpose and rationale behind those requirements.
FAC-015-1 Coordination of Planning Assessments with the Reliability Coordinator’s SOL Methodology

Background
The drafting team contends that the proposed requirements in FAC-015-1 improve coordination of limits and criteria between the planning and operating standards. The primary focus of FAC-015-1 is to coordinate limits and criteria utilized in Planning Assessments with those identified within or established in accordance with the Reliability Coordinator’s SOL Methodology. FAC-015 coordinates Facility Ratings, System steady-state voltage limits, and stability performance criteria (i.e. limits and criteria) utilized in Planning Assessments with the Facility Ratings, System Voltage Limits, and stability performance criteria utilized in the operations horizon. The requirements are drafted to provide for a construct where the limits and criteria utilized in Planning Assessments are at least as limiting if not more limiting that those used in operations. Failing to have limit and criteria consistency between planning and operations might result in unacceptable System performance in the operations time horizon for the same conditions that were previously deemed acceptable when assessed in the planning horizon (i.e., planning the System less conservatively than the System is operated). This will minimize the potential for unnecessary corrective actions up to and including load shed that could result from planning the system with limits and criteria less conservative.

The SDT has specifically identified the Planning Assessment of the Near-Term Transmission Planning Horizon as the assessment that carries the requirements as these are the closest assessments before transitioning into the operations horizon. The SDT also arranged the standard such that Requirements R1 – R3 focus on Facility Ratings, System steady-state voltage limits, and stability performance criteria individually. The SDT added the statement “the Planning Coordinator shall provide a technical justification to its Reliability Coordinator” to allow for flexibility in the rare circumstances when less limiting Facility Ratings, System steady-state voltage limits, and stability performance criteria must be utilized (e.g. uprating a line in a future project). This ensures that the RC will also be aware of these rare circumstances.

Requirement R4 requires provision of the coordinated limits and criteria by the PCs to its TPs. Requirement R5 requires the TP to use limits and criteria that are equally limiting or more limiting than the coordinated Facility Ratings, System steady-state voltage limits, and stability criteria provided by its PC.

Requirement R6 requires the PC to communicate any instability, Cascading, or uncontrolled separation identified in either its Planning Assessment of the Near-Term Transmission Planning Horizon or its Transfer Capability assessment to each impacted RC and TOP. IRO-017-1, Requirement R3 requires PCs and TPs to provide their Planning Assessments to impacted RCs. However, Requirement R2, Part 2.4 and Requirement R4 in TPL-001-4 which outline the Stability analysis portion of the Planning Assessment, do not provide for the level of detail prescribed in FAC-015-1, Requirement R6. Therefore this requirement was drafted to ensure the appropriate details regarding potential instability identified in the Stability portion of the Planning Assessment for the Near-Term Planning Horizon are provided to impacted RCs and TOPs. The information itemized in Requirement R6 is a key consideration for RCs and TOPs in the establishment of stability SOLs and IROLs.
Requirement R6 lists items that a PC is required to provide each impacted RC and TOP. This requirement serves as an enhancement of FAC-014-2, Requirement R6, and the information is intended to be used by impacted RCs and TOPs for their consideration in subsequent development of stability limits, IROLs and associated Operating Plans. Requirement R6, Part 6.4 requires the PC to communicate “any Remedial Action Scheme action, under voltage load shedding (UVLS) action, under frequency load shedding (UFLS) action, interruption of Firm Transmission Service, or Non-Consequential Load Loss required to address the instability, Cascading or uncontrolled separation.” This item was included because planners are allowed to invoke these items in accordance with TPL-001-4 to meet the prescribed performance requirements. The drafting team contends it is critical that impacted RCs and TOPs are made aware when the items listed in Requirement R6, Part 6.4 have been invoked to address or avoid instability, Cascading or uncontrolled separation. Otherwise, impacted RCs and TOPs may not have any idea that such risks are present and that they are addressed through the use of the measures listed in Part 6.4. This unawareness can compromise the RC’s and TOP’s abilities to ensure that stability limits, IROLs, and associated Operating Plans are developed as necessary to address the risks identified by the PCs.

Questions

11. FAC-015-1 is predicated on the principle that Facility Ratings, System steady-state voltage limits, and stability criteria used in Planning Assessments for the Near-Term Transmission Planning Horizon should be more conservative/restrictive/limiting than those found in (or established in accordance with) the RC’s SOL Methodology, allowing for justified exceptions. Do you agree with this principle? If not, please explain.

☐ Yes
☐ No

Comments:

12. Do you agree that coordination of Facility Ratings, System steady state voltage limits, and stability performance criteria as required in Requirements R1-R3 should be limited to Planning Assessments of the Near-Term Transmission Planning Horizon? If yes, please provide supporting rationale; if no, please explain and provide alternative language.

☐ Yes
☐ No

Comments:
We expect the FR and limits used in the TPL assessments to be very similar if not identical in most cases between the near-term and long-term horizons. Since most major transmission projects are identified in the long-term horizon and take several years to be completed, it would make no sense for the PC/TP to use less limiting criteria for the long-term horizon than the near-term horizon or the RC’s...
13. In Requirements R1 – R3, the SDT is proposing to allow a PC to provide a technical justification to its RC for using less limiting Facility Ratings, System steady-state voltage limits, and stability performance criteria than those specified in its RC’s SOL Methodology. Do you agree that this provides adequate flexibility (in the rare circumstances when less limiting Facility Ratings, System steady-state voltage limits, and stability performance criteria must be utilized; e.g., up-rating a line in a future project) without compromising reliability? If yes, please provide supporting rationale; if no, please explain and provide alternative language.

☐ Yes
☐ No

Comments:
A sound technical justification may indeed be appropriate in certain cases and this flexibility is well captured by the standard.

14. Do you agree that the information identified in Requirement R6 is necessary for each impacted RC and TOP to properly evaluate instability, Cascading, or uncontrolled separation identified in planning assessments for use in establishing stability limits and IROLs in the operations horizon? If not, please explain and provide alternative language.

☐ Yes
☐ No

Comments:

15. Do you agree that the Planning Assessment of the Near-Term Transmission Planning Horizon and the Transfer Capability assessment, as stipulated in Requirement R6, are the appropriate assessments for identifying any instability, Cascading, or uncontrolled separation in the planning horizon? If yes, please provide supporting rationale; if no, please explain and provide alternative language.

☐ Yes
☐ No

Comments:

16. If you have any other comments that you haven’t already provided in response to questions 11-15, please provide them here.
Comments:

More clarification is needed related to the identification of Facility Ratings. As the Transmission Owners are already obligated to provide planning and operating ratings under FAC-008-3 and MOD-032-1, the burden of establishing a technical justification for potentially different ratings used in planning and operations should be placed upon Functional Entities who own facilities (such as Transmission or Generation). The drafting team should clarify that asset owners typically provide multiple ratings for a given asset based on various conditions and the intent of this standard is to ensure how the RC and PC pick those ratings is consistent.
**Definition: System Voltage Limit**

**Background Information**
The SDT proposes to add the term “System Voltage Limit” to the NERC Glossary with the following definition:

*The maximum and minimum steady-state voltage limits (both normal and emergency) that provide for acceptable System performance.*

The SDT modified the previously proposed definition based on feedback from the previous informal comment period: “The maximum and minimum steady-state voltages (both Normal and Emergency) that provide for reliable system operations.”

The vast majority of commenters indicated support for developing a definition for System Voltage Limits but noted a few concerns with the proposed definition. In response to those comments, the SDT made the following revisions:

- The word “limits” was added to clarify that it is a numeric value.
- The terms “Normal” and “Emergency” were changed to lower case as “Normal” is not defined in the NERC Glossary, and the SDT concluded that the NERC defined term “Emergency” was not appropriate.
- The phrase “reliable system operations” was replaced with “acceptable System performance” because the SDT determined that this language was more reflective of the desired intent behind the definition.
- The SDT used the NERC Glossary term “System” as the definition implies that System Voltage Limits should result in acceptable performance (from a voltage perspective) of the overall System.

Additionally, the System Voltage Limit definition allows for differing time components that may be associated with short term or dynamic ratings. The SDT acknowledges that TPL-001-4 Requirement R5 requires criteria for “post-Contingency voltage deviations”. The current proposed changes to FAC-011-4 and the proposed definition of System Voltage Limits does not specifically include “post-Contingency voltage deviations”, however the SDT determined the proposed changes to the FAC standards do not prevent an entity from monitoring and operating within “post-Contingency voltage deviations” that may be more limiting than the System Voltage Limits.

According to the definition, it is acceptable for a RC’s SOL Methodology to allow for System Voltage Limits to include a normal limit and multiple emergency limits, which may have associated time values similar to the way emergency Facility Ratings are associated with time values. The SDT asserts that the definition as worded allows for the term to be applied in both the operations and planning time horizons.
Questions

17. Do you agree with the proposed definition of System Voltage Limit? If not, please explain and provide alternative language.

☐ Yes
☐ No

Comments:

Implementation Plan

Question

18. Do you agree with the Implementation Plan? If not, please provide the basis for your disagreement and an alternate proposal.

☐ Yes
☐ No

Comments:

Cost Effectiveness

Question

19. The SDT asserts the combination of proposed FAC-011-4, FAC-014-3, and FAC-015-1 provide entities with flexibility to meet the reliability objectives in the project Standards Authorization Request (SAR) in a cost effective manner. Do you agree? If you do not agree, or if you agree but have suggestions for improvement to enable additional cost effective approaches to meet the reliability objectives, please provide your recommendation and, if appropriate, technical justification.

☐ Yes
☐ No

Comments: