Unofficial Comment Form
Project 2015-09 Establish and Communicate System Operating Limits
(SOL and SOL Exceedance Definitions)

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, SOL and SOL Exceedance definitions. The electronic form must be submitted by 8 p.m. Eastern, Monday, October 30, 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.

Background Information
As part of Project 2015-09, the standard drafting team (SDT) is proposing a revision to the definition of System Operating Limit (SOL), and is proposing a new definition for SOL Exceedance. The rationales for these definitions are captured in the accompanying document. It is critical that commenters read the accompanying definitions rationales prior to completing this comment form to understand why these definitions are being proposed and why they are crafted the way they are. The two definitions SOL and SOL Exceedance work together to clearly identify what SOLs are and what it means to exceed them.

One of the objectives of the SOL and SOL Exceedance definition is to codify the concepts in the whitepaper prepared by the SDT for Project 2014-03 Revisions to TOP and IRO Standards (the “Project 2014-03 Whitepaper”), which served as a conceptual basis for the development of the Transmission Operations (TOP) and Interconnection Reliability Operations and Coordination (IRO) standards that were modified as part of Project 2014-03. The Project 2015-09 SDT recognizes that while the Project 2014-03 Whitepaper provided clarity on the SOL and SOL exceedance concepts, reliability would be further enhanced by modifying the SOL definition in the NERC Glossary and developing a new defined term SOL Exceedance to better align the definitions in the NERC Glossary with that whitepaper and the manner in which the SOL concept is used in the TOP/IRO Reliability Standards. The SDT believes that the proposed SOL and SOL Exceedance definitions and the proposed related FAC standards improve reliability by creating better alignment with the currently effective Transmission Planning, TOP, and IRO standards, improving clarity, and reducing redundancy.

In addition to the System Operating Limit and SOL Exceedance Rationale, the SDT has provided the SOL Definition Impact spreadsheet for review. This spreadsheet identifies every occurrence of the SOL term in the body of standards, which includes those that are subject to enforcement, those that are subject to future enforcement, and those that are filed and pending regulatory approval, and those that are pending regulatory filing. The SOL Definition Impact spreadsheet identifies not only occurrences of the SOL term in the requirements, but also includes occurrences of the term in purposes, measures, VSLs, Attachments, Guidelines and Technical Basis, and other definitions. Each occurrence contains a recommendation of
changes, if any, including recommendations for standards that should be modified to integrate the SOL Exceedance term.

If the industry sees value in modifying the definition of SOL and creating a definition for SOL Exceedance, the SDT expects to follow this posting for comment with a subsequent posting for ballot of the revised SOL definition, the new SOL Exceedance definition, and the revised Reliability Standards that incorporate the new SOL Exceedance definition.

Please provide your responses to the questions listed below along with any detailed comments.

Questions

1. Industry responses to the initial posting for informal comment in July of 2016 indicated general support for revising the SOL definition. Since that time, a few key events have occurred that may relate to the need for modifying the definition of SOL:
   a. In Order 817 FERC approved the TOP and IRO standards which became effective on April 1 of 2017.
   b. The NERC SOL Whitepaper entitled, “System Operating Limit Definition and Exceedance Clarification” which served as a conceptual basis for these TOP and IRO standards was referenced in paragraph 69 of FERC Order 817.
   c. The NERC SOL Whitepaper is included in the list of ERO Enterprise-endorsed Implementation Guidance documents in the Compliance Guidance section of NERC’s website.

Given the above, and considering the rationale provided in the supporting document, do you support the SDT’s proposal to revise the current SOL definition? (Clarification: this question is not asking of you agree with the proposed definition. That will be addressed in a separate question. This question is focused on the need to modify the SOL definition at all.) Please explain your response.

☐ Yes  ☐ No

Comments:
The revision is necessary to better capture industry practice and alignment with TOP/IRO standards.

2. Industry responses to the initial posting for informal comment in July of 2016 indicated general support for creating a new definition for SOL Exceedance. Since that time, a few key events have occurred that may relate to the need for creating a new definition for SOL Exceedance:
   a. In Order 817 FERC approved the TOP and IRO standards which became effective on April 1 of 2017.
   b. The NERC SOL Whitepaper entitled, “System Operating Limit Definition and Exceedance Clarification” which served as a conceptual basis for these TOP and IRO standards was referenced in paragraph 69 of FERC Order 817.
c. The NERC SOL Whitepaper is included in the list of ERO Enterprise endorsed Implementation Guidance documents in the Compliance Guidance section of NERC’s website.

Despite these key events, many TOP and IRO standards require specific action based on SOL exceedances. For example, TOP-001-3 Requirement R14 states, "Each Transmission Operator shall initiate its Operating Plan to mitigate a SOL exceedance identified as part of its Real-time monitoring or Real-time Assessment." The initiation of a TOP’s Operating Plan per Requirement R14 depends completely on that particular TOP’s interpretation of what it means to exceed an SOL. Several other TOP and IRO standards a similarly structured, where the actions taken in accordance with that requirement are governed by the TOP’s or Reliability Coordinator's (RC) interpretation of what it means to exceed an SOL. As explained in the definitions rationales, the SDT contends that the absence of a definition could result in inconsistent interpretations of SOL exceedance that could compromise the intent of the standards and ultimately could compromise reliability. For this reason, the SDT is proposing to define SOL Exceedance and to incorporate that definition into the body of Reliability standards as described in the SOL Definitions Impact spreadsheet.

Given the above, and considering the rationale provided in the supporting document, do you support the SDT’s proposal to create and implement a definition for SOL Exceedance? (Clarification: this question is not asking of you agree with the proposed definition. That will be addressed in a separate question. This question is focused on the need for having a definition of SOL Exceedance.) Please explain your response.

☐ Yes  ☐ No

Comments:

3. The definitions rationales describe the improved clarity and consistency gained by the revised SOL definition. With the proposed definition, it is clear that SOLs are an input to Operational Planning Analyses (OPAs) and Real-time Assessments (RTAs), where the OPA and RTA are used to determine whether those SOLs are being exceeded for the pre- and post-Contingency states, given system conditions. This revised definition is designed to make use of the new TOP and IRO requirements for RCs and TOPs to perform OPAs and RTAs.

Facility Ratings and System Voltage Limits are not determined by a “study”; rather they are inputs to the “study”. On the other hand stability limits are determined through a “study”; however they are still inputs into the OPA and RTA process. FAC-011-4 Requirement R4 and subparts addresses the establishment of stability limits. Under the proposed definition, SOLs are simply the Facility Ratings,
System Voltage Limits, and stability limits used in operations, which necessitates their use as an input into OPAs and RTAs.

Considering the simplified approach to SOLs described here and the explanations provided in the definitions rationales, do you agree with the proposed SOL definition? Please explain your response and/or provide alternative language.

☐ Yes  ☐ No

Comments:
We agree with the proposed definition, but in practice in order to remain within SOLs in operations is often the use of pre-determined transfer and monitoring of specific interfaces (either thermal, voltage stability, or transient stability). The concept is introduced in the rationale for component #5 and #6 of SOL exceedance, but more rationale regarding how a transfer interface is managed versus the simplified SOL definition would be helpful. Also, the use of “lower case” stability limits rather than the defined term causes some confusion. Why use the defined term for FR and SVL, but not stability limits? What is a stability limit for the purpose of the SOL definition?

4. The definitions rationales provide a rationale for the need for a definition for SOL Exceedance. The proposed definition for SOL Exceedance is intended to codify the concepts in the NERC SOL Whitepaper which describes SOL exceedance as unacceptable system performance for the pre- or post-Contingency states with regard to Facility Ratings, System Voltage Limits, and stability limits. The proposed definition of SOL Exceedance along with the proposed definition of SOL describes what SOLs are and what it means to exceed them.

Considering the explanations provided in the definitions rationales, do you agree with the proposed SOL Exceedance definition? Please explain your response and/or provide alternative language.

☐ Yes  ☐ No

Comments:
We think the “or analysis result” is not necessary considering the reference to RTA and OPA. We appreciate the introduction of time to reduce the flow in the assessment of an operating condition. We suggest to reword “A stability limit established to prevent a (instead of the) Contingency from resulting in instability is exceeded”. Also, same comment as for the SOL definition regarding the use of the non-defined term stability limit and the link with the interface concept.

5. The post-Contingency portion of the proposed definition of SOL Exceedance includes three bullet items. This question focuses on the third bullet item:
The calculated post-Contingency state indicates any of the following:

- Defined stability performance criteria are not met

The definitions rationales describe the intent of this bullet. In summary, established stability limits are not addressed by this bullet; established stability limits are addressed by the third and fourth bullet under the pre-Contingency state portion of the SOL Exceedance definition. This bullet is intended to apply only to those TOPs or RCs that additionally use real-time tools to determine whether or not defined stability performance criteria are being met in real-time operations in response to Contingency events. As is described in the definitions rationales, the SDT contends that any instance of not meeting stability performance criteria as indicated by these technologies should be considered as an SOL Exceedance because it triggers the appropriate response of the implementation of an Operating Plan to mitigate the condition. This use of real-time tools in this manner, however, does not make use of an established limit (i.e., a “value”); rather, the system is evaluated against defined stability performance criteria to determine if that criteria is being met or not. (Note that FAC-011-4, Requirement R4, Part 4.1 requires the RC’s SOL Methodology to specify stability performance criteria.) If a TOP or a RC does not use real-time tools in this manner, then this bullet of the proposed SOL Exceedance definition would not apply to that TOP or RC, and the fourth bullet under the pre-Contingency section of the SOL Exceedance definition would govern stability performance.

Considering the explanations provided here and further explained in the definitions rationales, do you agree that the proposed SOL Exceedance definition should include this bullet item? Please explain your response and/or provide alternative language.

☑ Yes
☐ No

Comments:

The SAR is being revised to authorize the SDT to review the existing body of Reliability Standards and NERC Glossary of terms, and where necessary, modify those standards and definitions to incorporate the new terms and/or definition(s) of SOL Exceedance and System Voltage Limit, as well as the revised definition of System Operating Limit. The SDT has identified the standards and terms they contend would benefit from this incorporation and has included them in separate documents with this posting for your review. Do you agree with the SDT’s selections? If not, please explain your response.

☑ Yes
☐ No

Comments:

The SDT should take the opportunity of this revision to ensure that clarity exists when other standards refer to deliverables or language used in the current FAC standards. For example, CIP-002-5.1a
criterion 2.6 refers to a list of facilities critical to the derivation of IROL used in FAC-014, but the current FAC-014 does not explain in any way what critical facilities are versus non-critical facilities.

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

Comments:
The definitions addressed here achieve the objective of “bring clarity and consistency to the notion of establishing SOLs, exceeding SOLs, and implementing Operating Plans to mitigate SOL exceedences.”

It should be noted that the consistency in the definition of SOLs and application of SOLs to determine SOL Exceedances does not translate as a consistent, comparative indicator of reliable system performance. The contingencies applied to establish an SOL Exceedance event are bounded only by a floor of three contingencies mandated by FAC-011. OPAs and RTAs determine SOL Exceedances in accordance with the local SOL methodologies. SOL methodologies may or may not significantly expand the applicable contingencies which define SOL Exceedances. Comparing SOL Exceedances from one SOL methodology to the SOL exceedances of another SOL methodology can be a case comparing apples to oranges.